SEVENTH FIVE YEAR PLAN

1985-90

MID-TERM APPRAISAL

GOVERNMENT OF INDIA
PLANNING COMMISSION

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C O N T E N T S

Chapter 1

THE ECONOMY : PERFORMANCE AND PROSPECTS

1.1 In the first two years of the plan the pace of public investment has been maintained at the required level. Infrastructural constraints have been lightened and industrial growth has been sustained at unprecedently high levels for three years running. Anti-poverty and employment programmes have been generally strengthened and human resource development has been given new direction with the new National Policy on Education.

1.2 In this, the third year of the Plan many parts of the country are experiencing a drought of exceptional severity. In others floods have caused severe damage. The underlying strength and resilience of the economy, the policy making apparatus and development administration have together made it possible to cope with these natural disasters without disrupting the development process. Speedy and effective measures have been taken to provide relief, organise food supplies and contain inflationary pressures in critical markets. The infrastructural sectors have risen to the challenge posed by the reduced availability of hydel energy and heavier demands for transportation. Industrial growth in the first part of the year has been at an exceptionally high level.

1.3 The principal weakness at the sectoral level lies in agriculture. The slow growth in production can be attributed largely to aberrant weather. What is more worrying is the evidence that the growth in irrigation, the area under high-yielding varieties and fertiliser consumption are short of plan targets. Given that measures to reduce population growth rates have not been as successful as anticipated, the social implications can be serious. Measures to increase agricultural growth and to reduce population growth, therefore need to be stepped up.

1.4 The second major problem lies in the pressure on resources for the public sector plan. Though the pace of plan expenditure has been satisfactory so far, the manner in which it has been financed differs substantially from what was anticipated. The main areas of concern relate to the shortfalls in the

surpluses of public enterprises, the steep growth in non-plan expenditure and the extent of deficit financing. The last may be a major factor in generating inflationary potential in the economy. Inflation rates will have to be watched carefully, particularly in 1988-89 and correct measures initiated.

1.5 The balance of payments also is a matter for concern and has remained off course in the first two years of the Plan, because of disappointing export growth, increasing oil consumption and larger non-bulk import requirements. It remained manageable however, as exports picked up, import growth slowed down and international oil prices dropped in 1986-87. Although strains have developed in the wake of the severe drought this year, they are likely to be contained because of substantial food stocks and the expected appreciable growth in exports. These favourable factors notwithstanding, active policy intervention will be required to maintain the exernal deficit within safe limits because of the size of the trade gap itself and emerging uncertainties in the world economy.

1.6 Thus at the mid-term of the Seventh Plan the critical tasks for economic management are:

- correct the shortfalls in the creation of agricultural potential.
- maintain the postive developments in industry and infrastructure,
- mobilise resources for these purposes in a non-inflationary manner, and
- cope with emerging pressures on the balance of payments.

Growth and Structure of the Economy

1.7 The Seventh Plan aimed at an overall growth rate of 5% per annum over the Plan period. Agriculture was to grow at 2.5% per annum (in terms of value added), while mining, manufacturing and infra-structure sectors were to grow at much higher rates. The growth rates targetted for the Seventh Plan and those realised over the first two years of the Plan are given in Table 1.1 .

Table 1.1 : Realised Growth Rates

(% change over the previous year)

Sector	7th Plan Target	1985-86	1986-87 (Quick Estimates)
Agriculture	2.5	0.3	-2.6
Mining	11.7	7.0	11.3
Manufacturing	5.5	8.8	9.0
Electricity	7.9	8.2	10.0
Construction	4.8	3.9	2.6
Transport	7.1	9.0	8.4
Other Sectors	6.1	6.5	6.5
All sectors	5.0	4.8	4.0

Note: (i) The growth rates are based on the latest revised National Accounts Series of C.S.O.

(ii) GDP in the base year of the Plan turned out to be higher than what was estimated at the time of the formulation of the Plan,and hence the realised growth rates are on a higher base.

1.8 Thus, it can be seen that in the first two years of the Plan, the overall rate of growth has been short of the target for the Plan. The year 1987-88, being a severe drought year, the overall growth rate will be depressed and the structure of income will be further dislocated. The structural dislocation comes from a very low to negative growth in agriculture, brought about largely by adverse weather. Significantly, higher than targetted growth in manufacturing (8.9 per cent average for the first two years against the Plan target of 5.5 per cent) as well as higher than targetted growth in the infrastructure sectors is a welcome feature and largely attributable to Seventh Plan strategy and policies.

1.9 In the case of electricity, total generation has increased by 9-10 per cent each year. The PLF of thermal plants has risen sharply from 50.1 percent in 1984-85 to 53.2 percent in 1986-87. This year it is expected to touch 55 percent, maintaining the growth in electricity supply at 6 to 7 per cent despite the sharp reduction in hydel generation. Railway freight loadings have increased in the past 2 years by an amount as large as the total increase in loadings over the previous 4 years. Productivity, as measured by the NTKm per wagon day has increased from 1150 in 1984-85

to 1390 in 1986-87. This lightening of infrastuctural constraints is one of the major factors underlying improved performance in industry.

1.10 In spite of the disappointing performance of agriculture, the economy averaged a growth rate of 4.4 per cent during the first two years of the Plan mainly because of better performance of manufacturing, infrastructure and services sector. The growth rate this year may not exceed 2.0 per cent because of the effects of the severe drought on agriculture. If normal weather conditions prevail in the next two years (and at the present stage there is no reason for supposing that they will not), a relatively high growth rate can be expected next year and the year after. It may be noted that GDP growth in the two previous post-drought years was 8 per cent (in 1983-84) and 7.4 per cent (in 1980-81). Since the non-agricultural sectors are growing more rapidly now, a sharper recovery may be expected next year, provided of course that the monsoon is normal.

1.11 The sustainability of the Seventh Plan target rate of growth of 5 per cent over the five year period depends on whether the required levels of physical production and investement can be attained. The critical issue is our ability to produce the required output of foodgrains and oilseeds (around 175 million tonnes of foodgrain and 16 million tonnes of oilseeds) in the terminal year of the Plan. As is argued later in Chapter 4 on Agriculture, the attainability of these targets depends on our reaching the irrigation target specified in the Plan and the projected yield levels. However on present trends there could be a shortfall in irrigation which would reduce foodgrain output by 2 to 2.5 million tonnes. This would reduce the realisable growth rate to below 5 per cent. Hence mainataining the growth objectives of the Seventh Plan will require a special effort to expedite irrigation projects and vigorous implementation of the special programmes directed at raising productivity in rice production in the Eastern region and in oilseeds production. In addition measures to ensure the required growth in fertiliser consumption and remove the problems that have cropped up in seed production and distribution will be necessary. If, due to resource constraints or other factors these steps are not taken, the 5 per cent growth target is difficult to sustain.

1.12 Another constraint could be the availability of electricity whose output is likely to fall marginally short of the required level of 278 billion Kwh in the terminal year. The peaking deficit may be more substantial. The overall gap between power requirement and availability has been estimated at

about 8 per cent in 1985-86 and about 10 per cent in 1986-87 also. Measures to improve the performance assume critical importance in this sector. No substantial supply constraints are likely with regard to major minerals and manufactured goods.

1.13 The investment levels postulated in the Seventh Plan are likely to be realised with only a marginal shortfall. However this projection is based on the assumption that the level of public savings will be raised through resource mobilisation and curbs on government consumption expenditure. If this is not done and investment in agriculture, irrigation and infrastructure falls seriously short of requirements, the growth targets will not be realised.

1.14 An important implication of the structural displacement of the economy in the first three years of the Plan should be a matter for concern. A sluggish growth or fall in agricultural production affects the income and employment of a large section of the population, particularly those who are below the poverty line. Though direct data on income/consumption and employment are not available, the sluggishness in agriculture would have seriously impeded the employment and poverty alleviation objectives of the Seventh Plan. Hence the objective in the remaining years must be to pull up the agricultural sector and to see that the overall 5 per cent growth is achieved with corresponding balance in sectoral structure.

Implications of Five Per Cent Growth :

1.15 Maintaining a five per cent growth target for the Seventh Plan period as a whole will require the policy measusres that have been described above. In the absence of these measures the overall rate of growth would be significantly lower. The profile of production growth required to attain an overall growth rate of 5% is discussed below:

Agriculture

1.16 From the point of view of maintaining the growth objectives of the Seventh Plan, as also the objectives relating to employment and poverty alleviation, the crucial area of concern is the levels of agricultural production that have to be attained. A growth rate of 4 per cent in the gross value of agricultural output will require the attainment of the production targets given in the table 1.2.

Table 1.2 : Agricultural Production
(Major Crops)

(million tonnes)

	Base 1984-85		1985-86	Target 1989-90	
	Original	Revised		Original	Revised
Rice	60.0	58.3	63.8	73-75	72-73
Wheat	45.0	44.1	47.1	56-57	55
Other cereals	32.0	31.2	26.2	34-35	33
Pulses	13.0	12.0	13.4	15-16	14-15
Foodgrains	150.0	145.6	150.4	178-183	174-176
Major Oilseeds	13.0	12.9	10.8	18	16-18
Sugarcane	180.0	170.3	170.7	217	206

1.17 The required levels of agricultural production are lower than the original projections , partly because of the downward revision in some base year figures. An analysis of supply possibilities indicates that there would be a potential for an output of foodgrains of about 175 million tonnes by 1989-90. provided irrigation development is stepped up to be in line with the Plan target of 71.4 million hectares. If the trend of irrigation developments realised in the first two years of the Plan is projected, irrigated areas may reach only 70.3 million hectares and the foodgrain potential may be down by a further 2 to 2.5 million tonnes. This analysis of supply possibilites takes into account the slower than expected rise in cropping intensity and fertiliser consumption. Expected yield levels have been marginally revised in the light of recent trends (Details in Chapter 4 on Agriculture).

1.18 The decline in foodgrains production from the peak levels attained in 1983-84 is a cause for concern. Adverse weather, particularly in the current year, is partly responsible for this. But a part of the problem is also the slowdown in the spread of HYV area, in fertiliser consumption and in addition to net irrigated area. The attainability of the growth target for the Seventh Plan depends crucially on determined efforts to reverse these trends. Irrigation development must be accelerated, the seed supply system must be revamped and fertiliser use must be actively promoted. The evidence of accelerating agricultural growth in Eastern India, which is analysed later in chapter 4 on Agriculture, suggests that much can be achieved by

programmes that attack the constraints on growth in regions and in crops that are lagging behind.

Other sectors

1.19 The power-coal-rail complex is the key element in the infrastructural base. Recent trends in this area as also the requirements for attaining 5 per cent growth are given in the table 1.3.

Table 1.3 : Infrastructure Development

	Units	1984-85	1985-86	1986-87	1989-90	
					Orig.	Rev.
Electricity	bill. kwh.	169.10	183.60	201.87	295.4	273
Coal	mill. tes.	147.22	154.24	165.77	226	212
Railway Freight	mill. tes.	264.8	286.4	305.9	340	345-348

1.20 An analysis of power demand indicates a requirement of 278 billion kwh in 1989-90. However the supply possibilities in sight add up to 275 billion Kwh (including import of 2 billion kwh) which implies a marginal energy shortage. The expected shortage, though marginal is not evenly distributed and could be more severely felt in some regions than in others. Sustaining a five per cent growth profile will clearly require measures to improve the generation performance beyond targetted levels, reduce T&D losses, move power to high deficit regions and allocate supplies on a priority basis to key sectors.

1.21 Coal requirements will be lower because of the lower level of thermal generation. Offtake from the steel sector is expected to be lower, partly because of import of coking coal on quality consideration and partly due to improvement in coke rate. Total coal demand is now placed at 220 million tonnes. The potential for supply is around 212 million tonnes leaving a gap of 8 million tonnes to be filled by import and drawdown of pit-head stocks.

1.22 The rail movement requirement for this level of coal production would be 142 million originating tonnes, total traffic inclusive of other commodities being 345-348 million originating tonnes, which is higher than the original Plan target. This increase in rail freight traffic is expected to be met by

replacement of overaged assets and a productivity increase to 1450 NTkm per wagon day.

1.23 The development profile for the power-coal-rail complex outlined above is contingent on the adequacy of budget provisions and investment outlays for these purposes. Even after that sufficient care will be required to match the phasing of linked power - coal-rail projects.

1.24 In the oil sector plan targets for production are likely to be achieved. In fact the rate of growth of consumption will be closer to the upper end of the range given in the Plan and because of this import requirements will be significantly higher than what was anticipated. The high rate of growth of motor spirit, if allowed to continue, would lead to a larger import bill.

1.25 The projection for major industrial commodities are broadly in line with Plan targets except for fertiliser (See Annexure 1.1). The consumption of both nitrogenous and phosphatic fertilisers is now expected to be significantly lower than what was anticipated earlier. This is linked to the slowdown in agriculture referred to earlier. Because of this, import requirements for fertilisers are significantly lower than what was anticipated in the Plan.

1.26 The industrial production targets for five per cent growth are attainable. The investments required to create capacity in key areas like steel and aluminium are already under way and nearing fruition. In others the projections are in line with recent trends. The real task is to ensure that the stimmulus to industrial growth that has come from infrastructural investments and the easing of infrastructural constraints and from recent policy changes is maintained. A reversal of the recent stagnation in agricultural income will add to a further stimulus to industrial growth.

Savings and Investment

1.27 The Seventh Plan had evisaged gross domestic capital formation at 1984-85 prices to be Rs.322 thousand crores for the five year period, 1985-86 to 1989-90. As a percentage of G.D.P., gross domestic capital formation was targetted to rise from 24.5 per cent in 1984-85 to 25.9 per cent at by 1989-90. This step up in the investment rate was to be achieved largely by an increase in the domestic savings rate coupled with a marginal increase in the rate of foreign

savings. Domestic savings as a percentage of GDP was expected to rise from 23.3 per cent in 1984-85 to 24.5 per cent by the end of the Plan period. Foreign savings which were estimated to be 1.2 per cent of GDP in 1984-85 were projected to go up to 1.4 per cent by 1989-90. However, in the latest revised series of National Accounts, the levels of GDP for all the years since 1980-81 have increased without corresponding increases in levels of savings and capital formation resulting in lower rates of savings and capital formation. Thus, the realised saving rate for 1984-85 in the pre-revised series was 22.9 while it turned out to be 19.5 in the revised series.

1.28 The estimates of gross savings and investment taking into account the revised base for 1984-85 and that projected for 1989-90 alongwith the Seventh Plan estimates are presented in table 1.4, where the actual and the anticipated rates are given in terms of revised National Accounts series.

Table 1.4 : Savings and Investment

(Rs. crores at 1984-85 prices)

	1984-85		1989-90	
	Assumed	Actual	Original	Antic.
Gross Domestic Savings	50738	44838	68997	65053
Gross Domestic Capital Formation	53338	48130	72997	69877
Foreign Savings	2600	3292	4000	4824
Rate of Savings (%)	23.3	19.5*	24.5	22.0*
Rate of Investment(%)	24.5	21.0*	25.9	23.7*

* On the basis of the revised National income series for GDP.

1.29 During the first two years of the current Plan, i.e., 1985-86 and 1986-87, gross domestic capital formation amounted to Rs. 117 thousand croes which forms about 36 per cent of the volume of investment targeted for in the five year period. This is a fairly encouraging performance. The revised projection of gross domestic capital formation for the five year period is, however, likely to be about 3 per cent lower and may amount to Rs. 312 thousand crores. To a large

extent, this shortfall is the result of the slow-down in investment in the current year following the unprecedented agricultural drought in the economy.

1.30 The future is less encouraging with regard to the financing of domestic investment. Domestic savings over the five year period could fall short of the original target by about 4.4 per cent. To some extent, the resource crunch caused by this shortfall in domestic savings is likely to be made good by the enlarged inflow of capital from abroad.

1.31 The private corporate and the household sector, have generated savings more or less on the scales originally envisaged in the Plan. For the five year period as a whole the savings of the household sector in financial assets are expected to be around Rs.106 thousand crores at 1984-85 prices as against the Rs. 102 thousand crores assumed originally.

1.32 The proportion of financial saving in the total savings of the household sector is on the increase. It was 37 per cent and 44 per cent during the Fifth and Sixth Plan period. It is targetted at 47 per cent during the Seventh Plan. Estimates for 1986-87 appear to indicate a continuation of the change in the composition of household savings in favour of financial assets, such as bank deposits, units of the Unit Trust of India, corporate shares and debentures, provident funds, etc.

1.33 An increasing volume of household savings are being channelled through the capital market. Household savings in the form of company shares and debentures and units of the UTI are now expected to be nearly twice as large as what was initially assumed.The growing importance of the capital market in the flow of savings and investment is also indexed in the changing pattern of corporate finance. Public sector enterprises have also started drawing resources from the capital market directly. In this situation policy instruments like interest rates, fiscal incentive for saving investor protection measures and regulations regarding capital issues become crucial in the implementation of the plan. Hence the use of these instruments must be guided by plan objectives regarding resource mobilisation and the direction of investment.

1.34 The shortfall in the domestic savings rate is mainly due to the inadequate savings generated by the public sector. The Seventh Plan had targeted for a substantial increase in the public sector savings rate. In the first two years of the Seventh Plan, however, the rate of public sector savings remained more or less at the base year's level. Since then the pressure of

non-Plan expenditure has increased and a major effort at resource mobilisation is required even to maintain this level. The anticipated level of savings given earlier are based on the expectation that this would be done. Despite this savings may fall short of the Plan target. A measure of restraint on private and public consumption expenditure is very necessary if the domestic savings are to be raised to the level required for sustaining a higher growth path.

Resources for the Public Sector Plan

1.35 The Seventh Plan for the public sector amounted to Rs.180 thousand crores at 1984-85 prices. The manner in which this outlay for the five year period was expected to be financed and the actual pattern of financing in the first three years of the Plan is given in Annexure 1.2 and summarised below:

Table 1.5: Financing of Public Sector Plan

(percentages of total)

	Centre		States	
	Seventh Plan Estimate (At 84-85 Prices)	First Three Years (At Cur. Prices)	Seventh Plan Estimate (At 84-85 Prices)	First Three Years (At Cur. Prices
Own Resources of Government and Contribution of Public Sector Enterprises	48.3	33.3	33.5	28.1
Of which, Additional Mobilisation	22.6	8.5	27.5	18.8
Borrowed Resources	81.7	96.8	29.7	29.3
Of which, Deficit Financing	14.1	27.0	-	-
Central Assistance for State Plans	-30.0	-30.1	36.8	42.6*
Absolute level in Rs. crores.	99302	69876	80698	49424

* Including development loans to Punjab etc. and advance plan assistance for relief against natural calamities.

1.36 In the aggregate, the centre would be realising 63 per cent and the States 55 per cent of the five year outlay in the first three years in real terms. Even after allowing for the rise in prices, it is clear that the pace of plan spending in the first three years is satisfactory. However the financing pattern differs from the original Plan projection in that both the Centre and the States have not been able to rely on their own resources to the extent envisaged. In the case of the Centre this has been made good by increased dependence on borrowings and deficit financing. In the case of the States the dependence on Central Assistance has been somewhat higher at 38.5 per cent as against 36.8per cent net of assistance on account of natural calamities and development loans to Punjab etc. It may be noted that the distribution of the aggregate resources with the Centre between the Central Plan and Central Assistance for State Plans is broadly as envisaged.

1.37 The biggest gap between projections and performance lies in the shortfall in the own resources of the Centre by way of the balance from current revenues and the surpluses of public enterprises taken together. Revenue resources in the central budget have been pre-empted to a growing extent by non-plan expenditures as is brought out by the following :

		Distributed Between Increase in	
	Increase in revenue & capital receipts and deficit (Rs.crores)	Non-plan expenditure (Per cent)	Plan expenditure in the budget (Per cent)
1980-81	4269	57.7	42.3
1981-82	2327	46.0	54.0
1982-83	5304	68.6	31.4
1983-84	4368	51.4	48.6
1984-85	7623	66.2	33.8
1985-86	7941	58.5	41.5
1986-87	10709	71.8	28.2
1987-88(BE)*	10059	73.3	26.7

* Relative to 1986-87 BE

1.38 As this table shows, the pressure of non-Plan expenditure has increased greatly over the past two years and nearly three-quarters of the increase in budgetary resources(inclusive of the deficit) is

absorbed for this purpose. Three items of non-plan expenditure, defence, interest on public debt and the food and fertiliser subsidies amounted to 74 per cent of the revenue receipts of the Centre in the 1987-88 budget. All three items are also growing rapidly. Of the three, debt interest is relatively inflexible in the short run and the restraint has to fall on the other two major components of non-plan expenditure. Even with regard to debt interest, future problems can be mitigated by avoiding the use of borrowed resources for non-revenue earning activities.

1.39 The contribution of public enterprises both in the Centre and in the States has also lagged behind Plan projections. The Railways P & T and other central enterprises were expected to generate Rs.51694 crores of internal resources(inclusive of additional resource mobilisation), against which they have generated only Rs.22283 crores in real terms in the first three years. The position with regard to SEBs and SRTCs is even poorer in that they have generated only Rs.306 crores over these three years against the Plan target of Rs.7243 crores over the five year period.This contribution could have been larger but for adjustment of Rs.1977 Crores of additional resources raised towards deterioration in their contribution at base level rates.

1.40 The shortfalls in budgetary resources and the surpluses of public enterprises arise not so much because total revenues have not risen as projected but because costs and the demands on revenues have increased more rapidly. Anticipating this, the Seventh Plan had clearly stated that "in the case of both the Centre and the States, any erosion in their contribution of resources estimated at the base level would have to be offset by raising additional resources over and above the revenue envisaged to be raised by fresh measures for financing the plan."

1.41 A determined effort has to be made to fulfil the targetted level of own resources in the Central and State budgets and in public enterprises. In the absence of such an effort the overall level of savings in the economy will be reduced.

Price Trends

1.42 The problem of maintaining the public sector plan, and the negative effect of the drought also raise concerns about the inflationary potential in the economy. The average yearly rate of inflation in the first two years of the Plan, as measured by the wholesale price index, has been less than 6 per cent. Partly as a result of the drought, the inflation rate

has shown some signs of acceleration in the current year. Inflation rates for food and nonfood articles are presented in the Table 1.7, which also gives the numbers for the first six months of the current year.

Table 1.6 : Rates of Growth in Wholesale Prices

(percentage changes)

	1985-86 / 1984-85	1986-87 / 1985-86	1987-88* / 1986-87
Primary	2.0	5.3	7.6
Food	6.8	6.6	6.9
Non-food	-10.3	6.4	33.0 @
(other than Min.) Non-food (Minerals)	0.5	-7.9	-30.5
Manufactures	7.2	4.9	5.5
Food	6.9	10.3	7.2
Non-food	7.4	2.9	4.8
All	5.7	5.3	6.1

* For first six months of 1987-88 over the corresponding six months of 1986-87
@ Includes oilseeds

1.43 The rate of price change in primary food articles has been an almost steady 6.6 to 6.9 per cent during the first half of the plan. This does not give a complete picture as far as consumers are concerned because oil seeds are included under primary non-food items. This category has shown an acceleration in price changes over the first half of the plan. From the consumer perspective it is more relevant to expand the food category to include manufactured food articles which contain edible oils and vanaspati. A combined index which includes food articles in both the primary and the manufactured goods category shows a rate of price increase of about 8 per cent in the first two years of the plan, with a decline to about 7 per cent in the first six months of this year.

1.44 Over the first half of the plan the consumer price index for industrial workers grew by 6.5 per cent, 8.7 per cent and 6.7 per cent (6 months of 1987-88). Inflation as measured by this index has therefore been higher than that measured by the WPI for all commodities by about 0.8 per cent.

1.45 The index for manufactured products, excluding food and beverage categories, shows much more erratic growth over the plan period. It grew by less than 7 per cent in the first year of the Plan and by only 2 per cent in the second year. It appears to be accelerating to about 5 per cent in the current year. Through-out the plan it has + grown at a slower rate than the food index. Thus the relative price of non-food manufactures has declined over the plan period. This suggests basically supply side effects arising from slower agricultural growth and higher manufacturing growth and productivity increases.

1.46 The anti-inflation strategy suggested by the above analysis consists of the following. In the short run it is important to ensure, through imports if necessary, that the acceleration in primary goods prices is contained. Over the rest of the plan period there are three sets of measures which must be taken. The first is to maintain a balance between aggregate demand and supply and the key to this lies in prudent management of government finances. The second is to reinforce the drive to increase edible oilseed production, and to ensure that agricultural production gets back to levels expected from agricultural trends. The third measure is to expand the productivity enhancing policies for the manufacturing and the infrastructural sectors.

Balance of Payments

1.47 The need for careful management of balance of payments during the second half of the 1980s had been clearly foreseen. For one thing, export earnings during 1980-85 had fallen far short of the target. For another, the scope for the expansion of crude oil production during the 7th Plan was manifestly much more limited, while debt service obligations, including repayments to the IMF, were slated to rise more sharply. In effect, the balance of payments position turned out to be worse than had been initially projected.

1.48 Exports fared poorly until 1986-87, recording an average real growth of only about 2.4 per cent despite a marked pick-up during the year. The performance of Indian exports generally depends on the expansion of world economy and trade, domestic demand and output growth, factors which manifest themselves in varying degrees over time and across products.

1.49 So far as world demand is concerned, the first year of the Plan was a poor one for developing

country exports generally : world trade, which in 1984 had grown in real terms by about 9 per cent expanded by only 2.7 per cent in 1985. The resulting setback to Indian exports fortunately did not persist into 1986-87 as the expansion of the world economy became less of a constraining factor.

1.50 Exports that did well benefitted generally from better demand abroad. Thus polished diamonds moved ahead in a strengthening of the market; iron ore exports found a new outlet for Kudremukh production in Japan; and garments gained a competitive edge in both quota and non-quota countries. The growth of demand for coffee though was shortlived and met partly from stocks.

1.51 Engineering goods and chemicals are major examples of products where domestic demand has been a persistent obstacle to rapid development of the export market. Exports are small relative to output and serve often as a buffer against swings in domestic offtake; and their competitive edge gets blunted as markets abroad become more exacting.

1.52 Beverages, leather goods, marine products, spices and processed foods are among the exports affected by production or input supply problems. Such supply constraints were to some extent overcome through recourse to imported inputs, like raw cashewnut, hides and skins. On the whole thus, exports continued to experience the effect of internal and external impediments.

1.53 Imports appreciably exceeded the expected levels during the first two years of the Plan, their volume rising on average by 9.3 per cent as compared to 5.8 per cent that had been forecast. The demand for bulk imports conformed broadly to projections and the exceptional growth of imports was essentially accounted for by non-bulk commodities, but the surge in imports was shortlived and subsided by 1986-87.

1.54 The increase in bulk imports in real terms averaged a little over 5 per cent due to growing requirements of crude oil and petroleum products, and, to a smaller extent, due to those of edible oils, fertiliser materials, coking coal and steel. Although, the volume of bulk imports continued to increase in 1986-87, their value came down by about 25 per cent during the year largely because of the plumetting of international oil prices and sizeable declines in prices of fertilisers and edible oils.

1.55 The unusually sharp rise in the volume of non-bulk imports was confined to the first year of the

Plan; and, in real terms, non-bulk imports actually declined a little in 1986-87. The behaviour of non-bulk imports in 1985-86 reflected among others, their low level in the preceding year and growth of demand with expansion of the economy. But even adjusting for the low base and rising demand. a good part of the growth of non-bulk imports is likely to have been on account of the growth in component imports for the rapidly growing automotive and electronic industries and stock accumulation or output shortfalls as in the case of sugar.

1.56 Invisible flows generally, and private remittances in particular have broadly conformed to expectations; and net invisible earning neutralised about 40 per cent of the trade gap. Even so, the deficit on current account though coming down, averagd about 2 per cent of the GDP during 1985-86 and 1986-87, above the 1.6 per cent target level. The financing of a current account deficit of this magnitude did not involve a serious decline in reserves despite repayments to the IMF and only a small increase and recourse to commercial borrowings. But, this was made possible partly becasue of a sizeable increase in NRI deposits which, together with somewhat better aid utilization, helped ease the cash flow problems.

1.57 The severe drought would have seriously impaired the balance of payments position in the current year, but for the sustained growth of exports and the containment of the demand for imports because of comfortable food stocks and the slower overall growth of the economy. Judging by current trends, exports may increase by about 7 per cent in real terms over the year even when an allowance is made for the adverse impact of the drought. In the case of bulk imports substantial food stocks should help tide over the kharif shortfalls without significant recourse to imports; but in the absence of a similar buffer, edible oils imports would be sizeably larger and some additional imports of pulses become necessary. Imports of POL could also exceed the expected level by about a million tonnes as a result of the drought, although imports of manufactured fertilisers may turn out to be marginal. Possible savings in the import bill and continued export growth notwithstanding, the trade deficit in 1987-88 could widen, and, despite relative stability of net invisibles, the deficit on current account relative to GDP would continue to exceed the Plan target of 1.6 per cent.

Table 1.7 : Balance of Payments, 1984-85 to 1986-87
(Rs. crores at 1984-85 prices and exchange rates)

	1984-85 (Actual)	1985-86 (Prov.Revised)	1986-87 (Estimated)
Exports	9926	9711	10401
Imports	15316	18176	18285
a) bulk	7510	7941	8298
b) non-bulk	7806	10235	9987
Trade balance	-5390	-8465	-7884
Invisibles, net	3869	3478	3311
Statistical Adjustment	-1331	-798	-464
Gains from terms of trade	...	142	881
Deficit on current account	-2852	-5643	-4156

Notes: 1) Import and export figures are based on the DGCI & S data and are net of crude and product exports. Net invisibles and current account deficit figures are based on RBI data.
2) Exports do not include marginal gold exports valued at Rs. 20 and Rs., 27 crores respectively in 1984-85 and 1985-86.
3) Statistical adjustment is for differences between customs and exchange control trade data.

Memo Items

a] CAD/gdp [per cent]	1.2	2.3	1.6
b] change in reserves	-926	707	731
c] beginning year reserves as months of import equivalent	4.3	4.3	4.4

1.58 In order to review the balance of payment outlook initial projections were reassessed in the light of past developments and current prospects. Thus among exports which are more sensitive to world demand the targets were scaled up in the case of gems and jewellery, garments, cotton textiles and, to a lesser extent iron ore in the light of discernible changes in market conditions. For others, such as unmanufactured tobacco and other handicrafts,targets were adjusted downwards because of poorer demand prospects.

1.59 Supply constraints are unlikely to be overcome within the next two or three years in the case of tea, coffee, cashew, marine products, spices and processed foods. As such, export projections underwent only a minor modification except when (for instance, spices and processed foods) production shortfalls involved lowering of targets or when (such as leather and leather products) where targets were raised because supply constraints can be eased through imports of inputs.

1.60 Engineering goods and chemicals offer a considerable potential, even within the near future, because of small share of exports in output and flexbility of production made possible by input imports. Revised projections for engineering goods and chemicals, thus imply a fairly high growth rate. The appraisal of export prospects reveals that annual volume growth of 7 per cent, which was recorded in 1986-87 and is likely to be attained in 1987-88 as well, would be maintained in subsequent years. All the same, because of the shortfall in 1985-86, when exports declined significantly, volume growth over the Plan period is likely to average a little above 5 per cent, and so remain below the 6.8 per cent annual growth target.

1.61 The reassessment of import projections implies that over the Plan period as a whole bulk imports may not differ much from the level that was initially retained. The composition of bulk imports, however, would undergo a change, as higher volumes of petroleum crude, coking coal and edible oils would be more or less offset by the fall in the volume of fertilisers. Quite apart from the drought related incremental demand in 1987-88, consumption of petroleum products is now estimated to grow at an annual average rate of 6.4 per cent, the higher end of the range of rates indicated in the 7th Plan. Likewise, even allowing for the additional imports necessitated by the drought, the volume of edible oil imports during the Plan period would be larger than had been projected. Imports of coking coal too would be substantially higher because the availability gap in required quality grades is likely to be wider.

1.62 Non-bulk import requirements generally move in step with the growth of the economy, although in the short run they may rise more rapidly because of shifts in policy or production structure. Phased Manufacturing programmes are being implemented in key sectors like automotives and electronics and it has been assumed that for the rest of the Plan non-bulk imports and GDP should thereafter grow at about the same pace.

1.63 Over the entire Plan period net invisible earnings would be somewhat higher than had been anticipated because, among other things, reamittances did not decline much in the wake of low oil prices and, in travel receipts, of late, recorded an increase. Moreover, even though the 7th Plan had conservatively excluded favourable turns in energy and other import prices, the gains from terms of trade could well be of the order of Rs.4000-5000 crores. All the same, the balance of payments position would remain difficult, and require vigorous measures to maintain the external deficit within safe limits. This becomes clear from the initial and revised balance of payments projections for the 7th Plan. It is sometimes thought that the external payments position could be further strained by slowdown in the growth of the world economy in 1988 and 1989 feared as a result of instability in international financial markets. Such a turn of events may, like the recession of 1980-83, leave the external deficit materially unaffected because of (a) small share of trade in GDP, (b) a diversified export basket and (c) importance of energy and other recession sensitive primary products in the import basket.

Table 1.8 : Balance of Payments Projections 1985-86/1989-90
(Rs.'000 crores in 1984-85 prices)

	7th Plan	Preliminary Revised
Exports	60.7	55.9
Imports	-95.4	-99.3
(bulk)	(47.4)	(46.3)
(non-bulk)	(48.0)	(53.0)
Balance of trade	-34.7	-43.4
Invisibles, net	14.7	15.3
Gains from terms of trade	-	4.4
Balance on current account	-20.0	-23.7

1.64 The crux of the problem is that gains from terms of trade, substantial though they might remain, could either bridge the shortfall in exports or meet the cost of excess imports, but not both. Thus, the eventual deficit on current account will need to be brought down to a level closer to the one foreseen in the 7th Plan, so that it can be financed through recourse to available flow of foreign assistance from

international financial institutions, better utilisation of aid in the pipeline and marginal additional reliance on conventional borrowings. This is a feasible objective, and can be attained without slowing down growth or capital development. It will involve, however, effective use of a coordinated set of policy interventions.

1.65 The problem poses itself, to begin with, as one of the effectively restraining the growth of demand for imports, both bulk and non-bulk, without affecting production or the savings rate. This aim could be achieved in a number of ways. The demand for the imports could be held in check through stricter fiscal, monetary and credit policies designed to keep down the growth of gross domestic expenditure and aggregate demand. The use of macro-economic discipline will not only lessen the pressure of demand for imports but also activate idle resources held in the form of excessive inventories,including imported inputs, which can be substituted for fresh imports. And tight credit which also influences informal money and credit markets, should effectively induce some disinvestment in manufacturing inventories. Apart from overall non-discriminatory demand management, import growth can be managed through measures to discourage consumption of non-essential import intensive end products; the use of appropriate fiscal levies for this purpose should also induce manufacturers to actively seek export outlets for such products. There are, besides, three other types of commodity level action to contain import growth which require attention. The first concerns restraint on the demand for petroleum products which is now increasing at the maximal rate envisaged in the 7th Plan; the demand for motor spirit, in particular, is increasing exceptionally fast and could lead to growing imports of light distillates. The second pertains to a major thrust to raise the output of oilseeds and edible oils; for, otherwise, increases in domestic output would suffice only to stabilise the present high level of imports. The third calls for implementation of phased manufacturing programmes as planned in order to moderate the growth of non-bulk imports.

1.66 Besides policy measures to directly influence the demand for imports, the external resources constraint can be eased through intensive resource mobilisation or economies in expenditure, or both. By thus reducing the draft on foreign savings (for instance in the form of borrowings to cover rupee resource constraints) the debt-service burden can be contained.

1.67 The present growth in exports is not a fortuitous occurance but is attributable, among others,

to a number of policy initiatives that have been taken in keeping with the policy frame outlined in the 7th Plan. These include direct tax concessions to exporters, duty free (or low duty) import of capital goods for "thrust" industries and a higher permissible debt-equity ratio for them, extension of the International Price Reimbursement Scheme (IPRS) to a larger number of materials, retention of exchange earnings for market development purposes, lowering of preferential interest on credit to exporters and extension of pre-shipment credit to 180 days, and removal of the 25 per cent ceiling on sales to the domestic tariff area by FTZ units and the EOUs for supply against valid import licenses. In addition, procedural improvements have sharply reduced delays in the payment of CCS and drawbacks.

1.68 The benefits and incentives extended to exporters in divers forms will need to be strengthened further in order to offset the residual pull of domestic demand or adverse developments in the world market; otherwise, the comparatively high growth rate of exports attained since 1986-87 might become difficult to sustain during the last two years of the Plan. By containing the demand for exportables generally, macro- economic discipline and credit restraint would also improve availability for sales in foreign markets. Broad spectrum action, however, will not only need to be sustained, but, what is equally important, supplemented also by effective commodity level measures to discourage domestic consumption. Policy intervention along these lines will generate an environement conducive to investment in export capacity, particularly by large firms. Better incentives for exports, together with overall and commodity specific demand management, should help attain the postulated volume growth of exports over the rest of the Plan period. All the same, longer run problems of export development, icnluding those posed by emerging supply constraints encountered by important agricultural exports, have to be effectively addressed as well. These problems call for more intensive measures within the "thrust industry" framework.

Annexure 1.1

Material Balances of Some Important Commodities - 1989-90

Sl. No.	Commodity	Units		Domestic Demand	Production	Exports	Imports	Change in Stocks
1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	Iron Ore and Concentrates	MT	Plan Doc.	29.2	58.10*	28.90*	-	-
			Anticipated	25.0	58.0**	34.00**	-	-
2.	Coal	MT	Plan Doc.	236.50	226.00	0.50	2.00	-9.00
			Anticipated	219.7	212.0	0.3	4.00	-4.0
3.	Lignite	MT	Plan Doc.	15.2	15.2	-	-	-
			Anticipated	12.5	12.5	-	-	-
4.	Crude Oil	MT	Plan Doc.	48.04-48.89	34.53	-	13.51-14.36	-
			Anticipated	49.1	34.5	-	14.6	-
5.	Petroleum Products	MT	Plan Doc.	50.46-51.17	45.06-45.47	1.5	6.9-7.2	-
			Anticipated	52.7	46.2	1.4	7.9	-
6.	Fertilizers							
	a) Nitrogenous	TT	Plan Doc.	9100-9300	6560	-	2540-2740	-
			Anticipated	7980	6461	-	1519	
	b) Phosphatic	TT	Plan Doc.	3000-3200	2190	-	810-1010	-
			Anticipated	2760	2281	-	479	-
	c) Potassic	TT	Plan Doc.	1400-1500	-	-	1400-1500	-
			Anticipated	1260	-	-	1260	-
7.	Steel	MT	Plan Doc.	13.86	12.65	0.38	1.59	-
			Anticipated	13.86	12.80	0.38	1.44	-
8.	Cement	MT	Plan Doc.3	49.0	49.0	-	-	-
			Anticipated	49.0	49.0	-	-	-

9. Non-Ferrous metals

a) Aluminium	TT2	Plan Doc.	450	499	-	-	49.0
		Anticipated	425	451	26.0	-	-
b) Copper(refined)	TT	Plan Doc.	141.4	42.7	-	98.7@	@@
		Anticipated	135.0	39.0	-	96.0	-
c) Zinc	TT	Plan Doc.	162.8	89.0	-	73.8	@@
		Anticipated	160.0	83.0	-	77.0	-
d) Lead	TT	Plan Doc.	80.0	27.0	-	53.0	@@
		Anticipated	80.0	27.0	-	53.0	-

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* Excludes production and exports from Kudremukh
** Includes production and exports from Kudremukh
@ Includes production for toll smelting of reverts and concentrates
@@ Changes in stocks included in imports

Financing of the Plan : 1985-86 to 1987-88 Annexure 1.2

	1985-86(latest estimate)			1986-87(latest estimate)			1987-88(Annual Plan est.)		
	Centre	States	Total	Centre	States	Total	Centre	States	Total
I. Own Resources									
(i)Balance from current revenues at 84-85 rates	-22	2953	2931	-1221	2118	897	-2608	985	-1623
(ii)Contribution of Public Enterprises at 84-85 rates	5602	-383	5219	7419	-554	6865	8166	-514	7652
(iii)ARM	944	1319	2263	2053	2615	4668	2945	5354	8299
Total (i) to (iii)	6524	3889	10413	8251	4179	12430	8503	5825	14328
II. Capital Receipts									
(i)Market Borrowings	5101	1588	6689	5300	1800	7100	6300	2071	8371
(ii)Other Capital Receipts	6737	1886	8623	5896	3528	9424	9456	3582	13038
Total (i) & (ii)	11838	3474	15312	11196	5328	16524	15756	5653	21409
III. Net inflow from abroad	2720		2720	3580		3580	3674		3674
IV. Deficit Financing	4937		4937	8285		8285	5688		5688
V. Aggregate Resources	26019	7363	33382	31312	9507	40819	33621	11478	45099
VI. Asssistance for State Plans	-6245	6245		-6951	6951		-7880	7880	
VII. Resources for the Plan	19774	13608	33382	24361	16458	40819	25741	19358	45099

Annexure 1.3a

(b) REVISED ESTIMATES OF EXPORTS FOR THE SEVENTH FIVE YEAR PLAN

(Rs. crores at 1984-85 prices)

Sl. No.	Commodity	Original Estimates			Revised Estimates		
		1984-85	1989-90	Seventh Plan Total 1985-90	1984-85	1989-90	Seventh Plan Total 1985-90
1.	2.	3.	4.	5.	6.	7.	8.
1.	Tea	718	770	3724	767	769	3708
2.	Coffee	221	232	1136	210	232	1182
3.	Tobacco-Unmanf	212	258	1193	151	166	743
4.	Cashew Kernels	217	312	1334	180	312	1325
5.	Processed Food	328	424	1918	283	248	1186
6.	Spices	217	270	1243	207	221	993
7.	Marine Products	388	446	2113	381	480	2194
8.	Jute Manufacture	207	222	1078	341	380	1772
9.	Iron Ore	438	608	2676	459	588	2646
10.	Leather & Leather Manufactured	533	577	2796	675	722	3127
11.	Cotton Textiles	380	440	2077	449	543	2424
12.	Garments	875	1336	5683	919	1165	5031
13.	Engineering Goods	870	1862	7011	880	997	4160
14.	Chemicals & allied products	760	1224	5105	736	842	3615
15.	Gems & Jewellery	1367	1663	7700	1237	2112	8738
16.	Other handicrafts	415	494	2307	418	379	1781
17.	Sub-total (1-16):	8146	11138	49094	8293	10156	44625
18.	Others	1816	2693	11559	1633	2598	11302
19.	Total exports - net of crude oil & petroleum products	9962	13831	60653	9926	12754	55927

Annexure 1.3b

(a) REVISED ESTIMATES OF IMPORTS FOR THE SEVENTH FIVE YEAR PLAN

(Rs. crores at 1984-85 prices)

Sl. No.	Product/product group	Original Estimates			Revised Estimates		
		1984-85	1989-90	Seventh Plan Total 1985-90	1984-85	1989-90	Seventh Plan Total 1985-90
1.	2.	3.	4.	5.	6.	7.	8.
1.	Crude oil and Petroleum Products*	3446	5136	22273	3591	5772	25069
2.	Chemical fertilisers and fertiliser raw materials	1819	3015	13144	1640	2067	8002
3.	Finished, alloy and special steels	973	888	4340	687	620	3583
4.	Major non-ferrous metals**	350	380	1908	400	415	2033
5.	Cement	33	-	33	24	-	26
6.	Newsprint	120	86	473	141	115	554
7.	Edible Oils	1200	909	4545	921	1073	5658
8.	Coking coal	50	164	600	46	349	1245
9.	Synthetic & regenerated fibres	67	-	143	60	-	140
	Sub-total (1-9):	8058	10578	47459	7510	10411	46310
10.	Others	7542	10116	47978	7806	11556	52978
	TOTAL IMPORTS (1-10)	15600	20694	95437	15316	21967	99288

* Net of crude and product exports.

** Aluminimum, copper, zinc, lead,tin and nickel.

Chapter 2

EMPLOYMENT AND POVERTY ALLEVIATION

2.1 At the beginning of the Seventh Plan, it was estimated that 222 million persons in rural India and 50.5 million in urban areas lived below the poverty line. In terms of percentages, the poverty ratio was 39.9 per cent in rural areas and 27.7 per cent in urban areas in 1984-85. The Seventh Plan aimed at bringing down the poverty ratio from an average of 36.9 per cent to 25.8 per cent during the Seventh Plan period. It is expected that the process of general economic growth itself will contribute to the alleviation of poverty to a significant extent. However, it was recognised that certain special programmes would be required to make the desired dent on poverty. Since most of the poor are in rural areas the programmes were to be mostly focussed towards the rural poor. The positive impact of growth on poverty was assumed to be greater in the urban areas. Neverthless, a new programme Self-employment Programme for the Urban Poor (SEPUP) was also initiated during the second year of the Seventh Plan.

2.2 The rural poor consist largely of the landless, marginal and small farmers and other marginal workers. In order to reduce the incidence of rural poverty, three broad policy options have been pursued. First, to increase the asset holding of the poor, redistributive land reform measures have been adopted in the past and special programmes of assistance for creation of better productive asset base have been introduced in the more recent years. Second, augmentation of wage incomes has been sought through expansion of employment in agricultural and non-agricultural activities in the rural areas, and special employment generation programmes have been initiated to provide supplementary employment. Third, provision for improved access for the poor to important services like education and health has been sought to be made through other programmes like Minimum Needs Programme (MNP). Further, efforts have been made to minimise the erosion of the real incomes of the poor due to price rise, by ensuring supplies of foodgrains and other essential commodities through the public distribution system. Besides, special programmes to provide opportunites for betterment of life have been developed for the specially disadvantaged groups like, Scheduled Castes

and Scheduled Tribes and Women. In sum, distributive justice has been sought to be administered by raising income levels of the poor through growth and redistribution and special programmes for income and employment generation for the poor and weaker groups, particularly in the rural areas. These programmes most of which have been in operation for some time have recieved renewed emphasis and expansion during the Seventh Plan.

2.3 An analysis of the impact of overall growth and special programmes during the past 3 years of the Seventh Plan would have to await till the availability of the necessary data. But some evidence on the relatively longer term trends in the distribution of assets and employment situation in rural India has become available during the last few years; and, it would be useful to note these trends here as an aid to assess the suitability and efficacy of these programmes in the emerging situation, and need, if any, of their reorientation.

I. Recent Trends

1. Changes in Assets Structure :

2.4 The changes in the pattern of land-ownership since the early Seventies are given in Table 2.1. The distribution of ownership holdings has remained unequal with nearly three-quarters of the land being owned by one-quarter of the land-owning households. However, there are some States where the distribution is less unequal; these are primarily the hill States including Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya and Manipur. Due to the pressure of population on land, the average size of holdings has declined. Over the decade the average area owned per rural household has come down from 1.53 ha to 1.28 ha and the average aize of operational holdings from 2.28 ha to about 1.84 hectares per household operating land. Another noticeable feature is the increase in the proportion of marginal farmers both for land owned and land operated. A third feature worth noting is the fact that the number of marginal ownership holdings is much higher than the number of marginal operational holdings. This suggests that some of the marginal farmers who own land, lease it out to others for cultivating, and themselves work for wages on a full-time basis.

Table 2.1 : Structure of Land Holdings

	Ownership Holdings		Operational Holdings	
	1971-72	1982	1970-71	1980-81
A. No. of holdings (million)	71.01		88.88	
Percentage Distribution of Number of Holdings				
1. Marginal (less than 1 ha.)	62.6	66.6	50.0	56.4
2. Small (1-2 ha.)	15.5	14.7	18.9	18.1
3. Others (above 2 ha.)	21.9	18.7	31.1	25.5
B. Area owned/operated (million hac.)	162.14		163.80	
Percentage Distribution of Area owned/operated				
1. Marginal (less than 1 ha.)	9.8	12.2	9.0	12.1
2. Small (1-2 ha.)	14.7	16.6	11.9	14.1
3. Others (above 2 ha.)	75.5	71.2	79.1	73.8
C. Average size of Holdings(ha)	2.28		1.84	

2.5 The average value of assets (excluding land) per rural household increased from Rs.1738 in 1971 to Rs.6196 in 1981. Deflating by the wholesale price index we get the 'real' value of these assets; at 1971 prices it increased from Rs.1655 in 1971 to Rs.2236 in 1981. Distribution of assets, however, continues to be unequal. While the bottom 30 per cent of the rural households continue to own 4 per cent of assets in 1981-82, as in 1971-72, the share of top 30 per cent has slightly increased from 76 to 78 per cent.

2. Composition of Rural Workforce :

2.6 Changes in the structure of the rural workforce suggest that the proportion of landless has increased from 9.6 per cent in 1971 to 11.3 per cent in 1982. There has been a decline in the self-employed

relative to casual labour, with the proportion of the regular salaried wage worker remaining more or less constant.

Table 2.2 : Percentage Distribution of All Workers by Employment & Sex

	Male			Female		
	72-73	77-78	83	72-73	77-78	83
Self-Employment	65.90	62.77	60.40	64.48	62.10	62.21
Regular Salary/ Wagework	12.06	10.57	10.77	4.08	2.84	3.10
Casual Labour	22.04	26.66	28.83	31.44	35.06	34.69

Source : Sarvekshana, Vol IX No. 4, April, 1986.

2.7 This increase in the incidence of casual wage-labour was obtained in a majority of States (11 out of 16). These trends reflect an inevitable phenomenon accompanying decline in average size of holdings per household, increased commercialisation of the rural economy and a corresponding break-down of the traditional semi-feudal system. While no perceptible change is observed in the distribution of owned landholdings, the technological and organisational factors have led to an augmentation of operated land in the case of small and large holders and leasing out of land by the marginal farmers. Thus, a larger number of marginal holders are becoming available for and primarily dependent on wage labour. In the overall employment structure, therefore, a decline is observed in the proportion of self-employed and increase in the proportion of casual labour. Keeping these trends in mind, greater emphasis is being laid on the creation of productive employment opportunities in rural areas.

2.8 An important trend to be noted in this context is a change in structure of the work-force. Not only has there been a shift from rural to urban areas but, more strikingly, within the rural areas there is a shift from agriculture to non-agricultural activities, as can be seen from the following figures of percentages of workers in agriculture and non-agricultural activities in 1972-73, 1977-78 and 1983.

Table 2.3 : Changes in Occupational Structure

(Percentages)

		Agriculture		Non-Agriculture	
		M	F	M	F
Usual Status	1972-73	83.23	89.67	16.77	10.33
	1977-78	80.6	88.10	19.4	11.9
	1983	76.80	86.73	23.20	13.27
Current Daily Status	1972-73	-	-	-	-
	1977-78	78.15	83.23	21.85	16.77
	1983	73.29	79.07	26.71	29.93

Source: Sarvakshana, Op cit and Vaidyanathan.

2.9 The spread of commercialisation and greater agricultural prosperity have led to the expansion of non-agricultural activities leading to diversification of the rural economy. At the same time, the possibility of a 'push' of agricultural workers into non-agricultural activities, even with low productivity and incomes due to declining trends of labour absorption in agriculture cannot be ruled out. While definite indicators are not yet available, it is likely that both trends are at work in the different regions of the economy. The shift in any case, is notable for the purposes of future strategies and programmes for rural development.

2.10 Some recent studies suggest that technological changes have led to increases in field and cropping intensities but, at the same time, these have also been labour displacing. Such pattern has been mostly observed in States like Punjab, Haryana, Uttar Pradesh, Tamil Nadu, Rajasthan and Madhya Pradesh, where in recent years agricultural employment has been growing but at a relatively slow rate. Therefore the additions to the labour force will have to find employment in non-agricultural activities. The possibility of the non-agricultural sector to absorb the increasing supply of labour will depend on the level of rural demand for non-agricultural goods and services produced locally, the demand for these goods and services from the proximate urban areas, and on the organisation, scale and level of production technologies. The spread of commercialisation would also generate additional demand for various goods and services, which would in turn create greater non-agricultural employment in the rural areas.

2.11 In this context, it should be observed that non-agricultural employment has experienced a significant growth during the recent past leading to a notable diversification of rural employment. Available evidence suggests that the rural manufacturing enterprises are growing larger and turning from the household to the non-household sector, thus creating opportunities for wage labour to a certain extent. The expansion of markets both for inputs and outputs is also seen to lead to a shift in location of certain rural manufacturing activities from villages to the nearby towns. At the same time it is observed that areas with high agricultural growth also have higher levels of productivity and income in the non-agricultural sector.

2.12 In those areas which are characterised by a more backward agriculture, there is considerable scope for increasing on farm employment. In those States where changes in cropping patterns have been in favour of the relatively more labour intensive crops (e.g. traditional paddy, groundnut and cotton) and there has been an increase in gross cropped area and area under irrigation, the total employment effect is positive. Where these changes have not taken place yet, to the extent desired, it should be possible to increase labour absorption within agriculture through increase in cropping intensity and spread of irrigation facilities.

2.13 It is thus clear that a spatially well spread process of faster agricultural growth is one of the leading instruments for meeting the unfolding employment problems of the rural economy. It is of very high importance that the crop and agricultural output targets of the Plan are met in each State. Slippage in allocation of funds to the agriculture and irrigation sectors in the State Plans has to be made up in the balance years of the Seventh Plan. More important, the recommended policies on input supply and extension have to be implemented more effectively.

2.14 Two basic policy thrusts in the Plan, namely improved water mangement strategies in irrigated and assured rainfall areas and watershed development in dry land areas are expected to lead to greater labour intensity both in the development (capital) phase and in the agricultural output (outcome) phase. On both these fronts the Seventh Plan schemes have really been initiated in the second year and now need to be pursued with vigour.

2.15 The emphasis on planning at the level of agro-climatic regions will lead to priority to cropping

systems which generate more labour demand, as also an emphasis on non-crop based activities like animal husbandry, forestry and fisheries, which are labour intensive. Improved agro-processing techniques including marketing and distribution have high direct and indirect labour demand and the scheme of planning for agro-climatic regions attempts to provide for these features.

2.16 High priority has been given in the Plan to Special Employment and area oriented programmes. These priorities will continue. These programmes are being monitored and evaluated on a continuous basis and effort at streamlining them and integrating them with production oriented programmes which relate to the small farmer and landless labour populations will continue. Important examples of such efforts are integration of loans for cattle and cattle feed programmes in the IRDP with Operation Flood programmes or Special Employment Programmes with Fisheries Development programmes.

2.17 Land Reforms Programmes need to be given very high priority. Attention is being paid to this aspect at the highest political levels. A committee has also been set up by the Planning Commission to update land records and is working on the problem on a State by State basis.

2.18 In the implementation of rural development programmes like the IRDP, NREP and RLEGP the emerging trends in the structures of activities and labour force as indicated earlier need to be kept in view. More particulalrly, the trends in the diversification of the rural economy into the non-agricultural sectors need to be utilised with advantage, and the need for wage employment for longer periods for the poor and increasing number of casual wage labours needs to be recognised. Further, poor households in the annual income range of Rs. 0 - 2265 (particularly those treated as destitutes) should be primarily provided with wage employment in specifically targetted programmes for this purpose. It seems that in the implementation of poverty alleviation programmes, these trends have already started getting reflected to a certain extent, as is suggested by the review presented in the following section. The utilisation of the provision, has significantly improved and targets of persondays of employment have been significantly over fulfilled, in NREP and RLEGP and the percentages of IRDP coverage in the non-agriculural sector has gone up to over 55 per cent in the first two years of the Seventh Plan as against around 30 per cent during the Sixth Plan.

II. Programmes

2.19 The two broad categories of special programmes aimed at the upliftment of the rural poor are the Integrated Rural Development Programme (IRDP) with emphasis on resource development of the poor and the works programme for creation of supplementary employment opportunities namely National Rural Employment Programme (NREP) and the Rural Landless Employment Guarantee Programme(RLEGP).

1. Integrated Rural Development Programme (IRDP) :

2.20 Integrated Rural Development Programme was started in 1980 in all the blocks of the country. The objective of the programme is to assist the families below the poverty line in rural areas by taking up self employment ventures in a variety of activities like agriculture, horticulture, sericulture and animal husbandry in the primary sector; weaving, handicrafts etc. in the secondary sector and service and business activities in the tertiary sector. During the Seventh Plan an outlay of Rs.2642.99 crores has been provided for the programme and the target is to cover 20 million beneficiaries (10 million old and 10 million new).

2.21 A number of significant changes have been made in the programme so as to overcome the shortcomings brought out by the evaluation studies. The criteria for allocating resources on a uniform basis to all blocks has been changed to one of selectivity related to incidence of poverty. The cut off point for identification of the poor has been fixed at Rs.4800 with the stipulation that all families below Rs.3500 shall be taken up first. A higher investment per family including a package of assistance to enable a proper return on investment has been envisaged. A supplementary dose is being provided to those families who were unable to cross the poverty line during the Sixth Plan due to inadequate assistance. Other measures included are decentralised planning at the district level so as to bring about greater coordination in different sectoral projects and IRDP, establishment of better linkages and institutions like District Supply and Marketing Societies to take care of input requirements and marketing, improving the role of banks and cooperative institutions, increasing the coverage of women beneficiaries to 30 per cent, greater involvement of voluntary agencies, people's representatives and organisation of beneficiaries.

2.22 The progress of implementation during the Seventh Plan is given in table 2.4.

Table 2.4 IRDP:Physical and Financial Progress

S.No.	Item		1985-86 (Actuals)	1986-87 (Actuals)	1987-88 (Targets)
1.	Total Allocation (Rs. crores)		407.36	543.83	613.38
2.	Total Expenditure (Rs. crores)		441.10	613.38	
3.	Total term credit mobilised (Rs. crores)		730.15	1014.88	
4.	Total investment (Rs. crores)		1171.25	1628.26	
5.	Number of beneficiaries covered				
	(a) Total (lakh Nos)		30.61	37.47	39.12
	(b) SC & ST (-do-)		13.23	16.80	
	(c) Women (-do-)		3.03	5.67	
6.	Per capita subsidy (Rupees)	Old:	1011	1178	
		New:	1260	1478	
7.	Per capita credit (Rupees)	Old:	1952	2412	
		New:	2051	3033	
8.	Per capita Investment (Rupees)	Old:	2963	3590	
		New:	3311	4511	
9.	Subsidy credit ratio	Old:	1:1.93	1:2.05	
		New:	1:1.63	1:2.05	
10.	Sector-wise coverage (%)				
	(a) Primary sector		42.1	46.08	
	(b) Secondary sector		15.8	18.44	
	(c) Tertiary sector		42.1	35.48	

2.23 By and large the targets set out in physical and financial terms have been met. There has been improvement in the diversification of activities. As against 54.5 per cent families assisted under the primary sector during the Sixth Plan, the provisional figures for 1986-87 indicate that the coverage has been reduced to 46.08 per cent. The secondary and tertiary sector coverage has increased. The per capita investment level has been also increased from Rs.2876 in the previous plan to Rs. 4511 in 1986-87. However

the concurrent evaluation for 1985-86, based on data collected by research institutions, covering 16101 beneficiaries has brought out some of the shortcomings of IRDP on the one hand and its relative success on the other. The report reveals that at the national level poorest of the poor, persons with incomes less than Rs.3500, had 78 per cent coverage. Forty five per cent families had no overdues. Incremental income of Rs.1000 and more was generated in 50 per cent cases. However, only 12 per cent beneficiaries crossed the poverty line of Rs.6400, though 54 per cent crossed the income level of Rs.3500. Some of the other areas of concern are ineligible coverage in nine per cent cases, repayment schedules of three years or less than three years in 62 per cent cases, and lack of after care support in 42 per cent cases.

2.24 The experience in the implementation of this programme has shown that provision of assets in itself cannot guarantee income unless the asset matches with the traditional skill and other endowments of the household on one hand and the demand, supply and infrastructural characteristics of the area on the other. In this context it is imperative to identify such traditional skills and ensure the supply of institutional credit for the procurement of the relevant asset by the poor. NSS (1980-81) estimates that households with small asset holdings, say of less than Rs.10,000, were primarily dependent on non-institutional sources for their credit requirements and thus had very little access to institutional credit. These rural households procured less than a third of their debt from institutional source, while for all rural households, this percentage was 61.21 per cent. It is likely that the position has since improved as a result of the programmes like IRDP which aim at providing credit for assets to the poor. Yet special attention is still needed to provide assured credit to meet the requirements of the poor with such of the traditional skills which have a ready market for their products and services. Such a focus is expected to significantly improve the effectiveness of the IRDP in ensuring a higher and continuous income to a large part of the rural poor.

2.25 Greater attention will, therefore, have to be paid on selection of viable schemes, meeting the credit and raw material requirements and marketing needs of the beneficiaries. In addition the programme will have to be implemented in an integrated manner with other special programmes of development such as Operation Flood III, programmes of Khadi and Village Industries

Commission, Special Rice Production Programme in Eastern Region etc. so that adequate infrastructure and technical assistance is provided to the beneficiaries.

2. National Rural Employment Programme :

2.26 The National Rural Employment Programme was launched in October 1980 replacing the earlier Food for Work Programme. The objective of the programme is to generate additional gainful employment for the unemployed and underemployed persons in the rural areas, to create productive community assets for direct and continuing benefits to the poverty groups and for strengthening the rural, economic and social infrastructure and bring about a general improvement in the overall quality of life in the rural areas. It also aims to improve the nutritional standards of rural poor through supply of foodgrains as part of wages. During the Seventh Plan an outlay of Rs.2487.47 crores has been provided and the target is to generate a total employment of 1445 million mandays.

2.27 The programme has been modified in the light of past experience. The revised guidelines provide for earmarking of twenty five per cent outlays for social forestry, ten per cent for works of direct benefit to Scheduled Castes and Schedule Tribes, and Rs.6 crores annually for construction of sanitary latrines. Greater emphasis has been laid on works for drought proofing and construction of buildings except for schools have been disallowed. The criteria for allocation of resources among the States has been changed to provide for equal weightage to the incidence of poverty (earlier 25 per cent weightage) and the population of agricultural labourers, marginal farmers and marginal workers (earlier 75 per cent weightage; marginal workers added in 1986-87). For ensuring the durability of assets created, the ratio of wage and non-wage expenditure is prescribed to be maintained at 50:50. Additive foodgrains at subsidised rates have been made available under the programme so as to keep the foodgrains prices stable and improve the nutritional standards of the workers.

2.28 The financial and physical progress of programme during the Seventh Plan is given in table 2.5.

Table 2.5 : NREP : Physical and Financial Progress

S.No.	Item	1985-86 (Actuals)	1986-87* (Actuals) (Provisional)	1987-88 (Targets)
1.	Total Cash allocation	457.53	457.50	507.92
2.	Value of subsidised foodgrains*(Rs. crores)	75.00	150.57	164.00
3.	Total Utilisation* (Rs. crores) (Centre, State and value of subsidised foodgrains)	531.95	717.77	-
4.	Foodgrains released (lakh Mts.)	7.15	16.12	11.73
5.	Foodgrains utilised (Lakh Mts.)	5.81	13.24	
6.	Per capita utilisation of foodgrains (Kgs.)	2.00	3.35	
7.	Target of employment generation (Million mandays)	228.00	275.08	284.73
8.	Employment Generated (Million Mandays)	316.41	395.23	
9.	Unit cost of employment (Rs.)	17.01	20.32	
10.	Wage non-wage ratio	59:41	58:42	
11.	Physical assets created			
	a) Area covered under social forestry (Lakh hec.)	1.16	2.15	
	b) Works for SC & ST (Lakh Nos.)	0.90	0.21	
	c) Construction of village tanks (000 Nos.)	5.00	6.00	
	d) Area covered by soil Conservation (lakh hec.)	0.16	0.04	
	e) Area covered by minor irrigation (lakh hec.)	0.48	0.55	
	f) Drinking water wells/ponds(000 Nos.)	21.17	16.00	
	g) Rural Roads (lakh kms.)	0.61	0.39	
	h) Construction works, Schools, balwadis, panchayat Ghars and other works (lakh Nos.)	1.51	1.59	

* Excludes foodgrain subsidy and transport costs

2.29 Allocation of funds is gradually increasing over the years under the programme. The achievement by way of employment generation has exceeded the targets set out for 1985-86 and 1986-87. Performance under social forestry has considerably improved due to

earmarking of bigger amounts for this sector, even though the earmarked funds have not been fully utilised in all the States mainly because of lack of personnel for planning, formulation and implementation of the projects and emergence of drought conditions in some States in recent years. However, not much effort has been made to direct and monitor wage employment opportunities occuring through this programme to members of the target group including those identified for assistance under the IRDP.

2.30 Some studies evaluating the programme have been conducted by the Programme Evaluation Organisation, National Institute of Rural Development, Indian Institute of Public Administration and Gandhi Labour Institute. These highlight some positive points such as prompt payment of wages, creation of durable assets and implementation of works through Panchayati Raj Institutions rather than departmentally. However these studies have brought out some areas of concern as well. It is revealed that employment being provided under the programme is for a very short duration and cannot make an impact on the levels of the living of the rural people. The wages paid under NREP are often lower than the market wage rates. The selection of the beneficiaries is not proper, in as much as the poorest of the poor for whom the programme is meant, are sometimes left out altogether.

2.31 Selection of projects is not always made keeping in view the felt needs of the local people. There is no provision for the maintenance of the assets created. Under social forestry programme the survival rate of saplings is very low as the community is not involved in the choice of saplings and has therefore no interest in the maintenance of the trees planted. The number of incomplete road works is increasing. Lack of technical as well as administrative supervision has resulted in the technically inferior quality of the works.

3. Rural Landless Employment Guarantee Programme :

2.32 Rural Landless Employment Guarantee Programme was launched during 1983-84 with the objective of improving and expanding employment opportunities for the rural landless labour with a view to providing guarantee of employment to at least one member of every landless labour household upto 100 days in a year and creating durable assets for strengthening the rural infrastructure so as to meet the growing requirements of rural economy. An outlay of Rs.1743.78 crores has been provided in the Central sector for the Seventh Plan for this programme and the target is to generate 1013

million mandays of employment during the plan period.

2.33 The criteria for financial allocation to the States is similar to NREP. In fact all the other stipulations regarding kinds of projects, preparation of district plans, material-wage cost ratio, mode of wage payment, foodgrains component of the total wages, ban on contractors is the same under NREP and RLEGP.

2.34 The progress of implementation of the programme during the first three years of the Seventh Plan is indicated in table 2.6.

Table 2.6 : RLEGP: Financial and Physical Achievements

S.No.	Items	1985-86 (Actuals)	1986-87 (Actuals) (Provisional)	1987-88 (Targets)
1	2	3	4	5
1.	Allocation (Rs.crores)	606.33	733.26	725.00
2.	Utilisation*(Rs.crores) (including value of subsidised foodgrains)	435.07	635.63	
3.	Foodgrains released (lakh Mts.)	7.69	10.41	10.07
4.	Foodgrains utilised (Lakh Mts.)	3.03	8.80	
5.	Per capita utilisation of foodgrains (Kgs.)	1.27	2.88	
6.	Target for employment generation (Million mandays)	205.73	236.45	268.41
7.	Employment generated (Million mandays)	237.98	305.37	
8.	Assets created			
	a) Area covered under social forestry (lakh hac.)	0.53	2.19	
	b) Trees planted (Lakh Nos.)	276.13	2772.62	
	c) Indira Awaas Yojana/ construction of houses for SC/ST (Nos.)	50491	1,46,200	
	d) Rural Sanitary Latrines (Nos.)	-	59,533	
	e) School buildings (Nos.)	7535	6,279	
	f) Class rooms (Nos.)	26	5,328	

1	2	3	4	5
	g) Minor irrigation works(Hac)	12845	73,586	
	h) Soil and Water conservation (ha)	66910	31,954	
	i) Drainage/tail escape(kms.)	473.40	NA	
	j) Reservoirs (Nos.)	80	NA	
	k) Others/ponds/storage dams etc. (Nos.)	564	NA	
	1) Roads (Kms.)	10496	9,062	
9.	Wage non-wage ratio	60:40	61:39	

* Excludes foodgrain subsidy and transport costs.

2.35 The physical and financial targets set out in the annual plans have been more than achieved. However, for various administrative and financial reasons it has not been possible to implement the guarantee upto now. The Seventh Plan had provided that efforts would be made to implement a limited guarantee for providing 80 to 100 days employment in a year to one person in a landless labour household. Running an employment guarantee programme for the landless even on a pilot basis in a few selected blocks has not been found feasible as it becomes difficult to refuse work to the unemployed who report for work.

2.36 Another important issue which needs consideration is whether RLEGP should continue to have a separate entity from NREP. A proposal to merge the two programmes is under consideration, because the field situation reveals that there is not much justification for maintaining a separate entity for RLEGP, since the programme objectives and implementation in the field are by and large similar.

2.37 The programme has not been in operation for sufficient number of years to give a reasonably agreed picture of its impact on the rural economy. Nevertheless a few sample studies have been carried out on the working of the programme. The studies have noted that in addition to stabilising the wage rates, the programme has been able to create durable community assets and generate employment. However, some negative points too have been observed in the implementation of the programme. The planning and preparation of shelf of projects on the basis of an area approach was not done.

The guarantee of 100 days of employment was not provided, muster rolls had been manipulated by contractors implementing the scheme and the wages paid were different from those documented. There was no systematic selection of landless labourers.

4. Land Reforms :

2.38 The National Land Reforms Policy has had five principal objectives. These are: abolition of intermediary tenures, tenancy reforms aimed at security of tenures, regulation of rent and conferment of ownership rights on tenants, ceiling on land holdings and distribution of ceiling surplus land, consolidation of holdings, compilation and updating of land records.

2.39 It was envisaged in the Sixth Plan document that legislative measures to confer ownership rights on tenants would be introduced in all States by 1981-82. The programme of taking over and distribution of ceiling surplus land was to be completed by 1982-83. The compilation and updating of land records was to be completed by 1985 and the consolidation of holdings was to be taken up in all states with the aim of completing it in 10 years with priority being assigned to command areas of irrigation projects.

2.40 None of the Sixth Plan targets on land reforms measures have been fully achieved. Intermediary tenures have been by and large abolished in the country. However, in certain pockets in Maharashtra, Orissa, Goa, Daman and Diu, Tamil Nadu, intermediary tenures still persist.

2.41 There are quite a few States where legislative provisions do not exist for conferment of ownership rights on tenants and share croppers. In some States deities are treated as permanent minors and ownership rights of their lands are not conferred on the tenants. In some States the rents payable to the landlords is higher than the limits of 1/5th or 1/4th of the gross produce as laid down in the national policy. Oral and informal tenancies with cultivating possession continue to exist in the guise of °personal cultivation'. The State Governments, which have yet to enact laws for conferment of ownership rights on tenants, regulation of rent as per national guidelines, would have to do so during the Seventh Plan. Quick surveys for recording of informal tenants would have to be taken up with maximum involvement of the local community and people's institutions.

2.42 Despite the law for imposition of ceilings on agricultural holdings having been enacted by most of the States, the programme of taking over possession of

land, and distribution of ceiling surplus land is still far from complete. The area declared surplus under the prerevised and revised ceiling laws is 77.76 lakh acres. Out of this 58.36 lakh acres has been taken into possession and 45.38 lakh acres has been distributed. Quite often there are complaints of delay in mutation of allotment orders in revenue records, physical demarcation of the allotted land and handing over its possession and lack of effective and prompt action for restoration in the case of forcible dispossession. Moreover, a large chunk of land is blocked due to litigation. States have been advised to plug the loopholes and ensure expeditious disposal of ceiling cases by constitution of tribunals under Article 323 B of the Constitution. States have also been asked to distribute the available surplus land at the earliest and not to reserve surplus ceiling land for public purposes. They have been further advised to consider redetermining of the ceiling limits so as to expand the availability of surplus ceiling land. The suggested ceiling limits are 5 hac. for irrigated lands with two crops or 7.5 hac. for irrigated land with one crop and 12 hac. for dry land.

2.43 Land records form the base for all land reform measures as well as for free flow of agricultural credit. In order to have Statewise status on record of rights so as to formulate suitable long term measures, a one man Committee on the Status of Records of Rights in land, has been set up. Prof.D.C.Wadhwa of Gokhale Institute of Politics and Economics constitutes this one man Committee. The Committee is expected to submit its final report within three years.

5. Socio-Economic programmes for Scheduled Castes, Scheduled Tribes :

2.44 The two prominent components of the national effort for the development of Scheduled Castes and Scheduled Tribes, who constitute about one-fourth of the total population of the country have been protection and planned development. Programmes for the socio-economic development of these groups are being continued during the Seventh Plan with the basic objective of strengthening their economic base, through the mechanism of Scheduled Caste Component plan and Tribal Sub plan and by ensuring compliance with the constitutional provisions and laws. Over and above the State plan investments, Centre provides an additive in the form of 100 per cent Special Central assistance. The financial achievements under these programmes are given in table 2.7.

Table 2.7 : Programmes for SC And ST : Financial Provisions

	Seventh Plan	1985-86 Actuals	1986-87 Anti.Exp.	Total 1985-87
A. Scheduled Castes				
1. State flow	6205.67	941.64	1179.30	2120.94
2. Special Central Assistance	930.00	166.00	175.00	341.00
Total (A)	7135.67	1107.64	1354.30	2461.94
B.Scheduled Tribes				
1. State Flow	6316.63	952.40	1238.13	2190.53
2. Special Central Assistance	756.00	140.00	155.00	295.00
Total (B)	7072.63	1092.40	1393.13	2485.53

2.45 A mid- term evaluation of the programmes for scheduled castes and scheduled tribes indicates that for fuller achievement of the objectives of the Seventh Plan, the following steps appear necessary:

1) The beneficiary oriented sector accounts for only 31 per cent and 16 per cent respectively under Special Component Plan (SCP) and Tribal sub-plan (TSP). There is a case for improving this percentage.

2) There is a need for refinement in the process of identification of schemes relevant for SC and ST, both by the State Governments and the Central Ministries, to ensure that these sections get adequate attention in financial and physical terms.

3) While priority has been accorded to allotment of ceiling surplus land to SCs and STs, actual implementation and delay in updating of land records has led to considerable discontent and tension amongst the Scheduled Castes and Scheduled Tribes. This needs attention.

4) Unlike the TSP, there is no stipulation at present that SCP should be drawn up below the State level

i.e., at the district level. There is a case for prescribing District level Committees for SCP as a part of the district planning machinery.

5) The demographic scenario and the occupational pattern should be taken special note of, particularly in the case of the Scheduled Caste in formulation of schemes for their poverty alleviation.

6) A bigger role may be assigned to the tribals in the forestry sector and in plantation, harvesting and marketing of forest produce.

7) The first bench-mark survey taken up in certain tribal areas some years back has to be followed up by a second survey at least in some critical tribal areas to ascertain extent of improvement in their economic situation in the intervening period.

8) Some neglected items of infrastructure in tribal areas like the PDS system should receive more attention. PDS retail centres in tribal areas should be run either by the tribals exclusively or by local bodies who may be suitably assisted. Infrastructure created in tribal areas are not properly maintained on account of inadequacy of budget provision. The situation should be remedied.

9) States should take steps to scrutinise their land alienation legislation to plug the loopholes in them for effective prevention of alienation of tribal land to non-tribals. Administrative arrangement with requisite staff for detection, disposal and restoration should also be done. States like Tamil Nadu and Karnataka who do not have comprehensive legislation on the subject may be advised to take up such legislations early.

10) The guidelines issued by Department of Public Enterprises on rehabilitation of displaced persons need change in the interest of scheduled tribes to ensure economic rehabilitation of tribals making a living out of the environment, though not having ostensible property or other wealth justifying payment of compensation. The guidelines should be made applicable to all State Governments, Joint sector and even private sector industries and projects, besides GOI projects.

11) Approval of Projects displacing tribals should be contigent on formulation of a satisfactory/ comprehensive rehabilitation Plan.

12) Proper coordination and integration in implementation of tribal development programmes has to be ensured by the District Planning Machinery. Ensuring linkages and making Block level a more efficient unit of functioning must receive special attention.

13) Tribal craft upgradation as a part of poverty amelioration amongst ST may need greater attention from States.

14) The form of the Block Level Beneficiary Advisory Committees for rural development programmes in the ITDP areas may be fruitfully utilised by the ITDP administration for associating scheduled tribes in the whole gamut of the planning processes for them. Associating beneficiaries with direct benefitting programmes and programmes of asset creation is a necessary condition for success of effort in this sphere.

15) An evaluation of the working of the voluntary agencies in the SC/ST sector may be made by the Ministry of Welfare.

16) The usefulness of steps taken so far for rehabilitation of Safai Karmacharis may be examined.

17) The position of recovery of margin money loans advanced by the Scheduled Caste Development Corporations has to be reviewed by the State Government/Ministry of Welfare on a regular basis to ensure a corpus for a revolving fund at that level, reducing/dispensing with further Central/ State Government assistance for this purpose.

18) Since scope of TSP and utilisation of SCA have been expanded to include STs outside area specific projects like ITDP, MADA pockets etc., administrative machinery of State Governments need streamlining to achieve complete coverage of tribals.

19) A scheme of Tribal Marketing Federation (TRIFED) as an apex organisation to provide support to the States' TDCCs for inter-State marketing of agricultural and minor forest produce has been recommended in the Seventh Five Year Plan. The proposal for TRIFED by Ministry of Welfare when cleared by the Cabinet will require funds during the rest of the Plan period. This may be met as a stop-gap arrangement from SCA, pending inclusion of the scheme under CSS.

20) Several Central Ministries and Departments are yet to identify schemes of relevance to SC/ST and earmark specific amount under the schemes. The importance of this matter has to be reiterated to the Central Ministries/Departments.

6. Programmes for Women :

2.46 The Seventh Plan strategy for improving the socio-economic status of women calls for an integrated multi-disciplinary approach involving various sectors of development. A major step in this direction was identification of the programmes benefitting women under different sectors of development. The programmes are being monitored by the respective Ministries and coordinated by the nodal Department of Women and Child Development.

2.47 Under the Agriculture and Allied sector, the Farmers' Training Programme (FTP) is an important scheme which envisages training of women in agriculture to improve the existing skills and introduces new skills, among them. In the Special livestock production programmes (SLPP) which also includes Poultry Programmes, efforts are to be made to cover 10-15 per cent beneficiaries from women. In Gujarat and Andhra Pradesh milk and dairy cooperatives have been formed with women members only. The percentage for women among the beneficiaries of backyard poultry development has been fixed at 30 per cent. While the scheme of backyard poultry development has not taken off so far, the actual progress under other programmes is not available. There is need to strengthen the monitoring of programmes.

2.48 The important rural development programmes to benefit women are Integrated Rural Development Programme (IRDP) coupled with Development of Women and Children in Rural Areas (DWCRA), Training of Rural Youth in Self-Employment (TRYSEM), National Rural Employment Programme (NREP) and Rural Labour Employment Guarantee Programme (RLEGP). Out of a total of 37.23 lakh families which received benefit under the IRDP during 1986-87, the number of women headed families was 5.67 lakhs which amounts to only 15.23 per cent as against the target of 30 per cent. On assessement of these programmes it is observed that considerable efforts are required to be made to improve the participation of women in these activities. The training provided under TRYSEM and DWCRA is not upto the mark and there is a tendency to stick to only a few traditional crafts like: tailoring, carpentry, etc. Therefore, a fresh look is needed to be given to

identification of trades and activities which may gainfully be taken up by women. Many income generating activities have not succeeded due to full thought not being given to the input availability, marketability of the product, training needs and future scope for the activity.

2.49 The National Cooperative Development Corporation (NCDC) have decided to impart training to women as an integral component of each of their projects/schemes.

2.50 In Labour Welfare sector, a number of vocational training centres are being run to train women in different vocations and to improve their employability, by the DGE&T. The targetted enrolment in these institutes for the Seventh Plan is 522, against which the achievement by the end of 1986-87 is 162. A staff training institute has been set up at Calcutta for preparation of skill manuals and training aids suitable for vocational training for women. The Ministry of Labour have set up a sub-committee on Equal Remuneration Act to explore the possible ways of part time employment for women. Action is being taken on the recommendations of this Committee. The Department of Industrial Development has formulated a scheme for training and extension service support to women entrepreneurs, organised by the Industrial Development Bank. Employment of women in Khadi and Village Industry has already reached a proportion of 46 per cent against the target of 48 per cent by the end of Seventh Plan.

2.51 The additional enrolment of girls in primary classes by the end of 1986-87, against the target for Seventh Plan indicates an achievement of 54.41 per cent and in middle classes 23.29 per cent. Incentives in the form of free dresses has been provided. Education has been made free upto XII class for girls. Early childhood education centres have been set up in educationally backward states, to free elder girls from the responsibility of looking after siblings. Priority is being given to women in teachers training programme, as presence of women teachers helps in improvement of girls enrolment by eliminating the fear of male teachers. About 60 per cent of additional teachers being appointed at present are women. But the impact of these measures has not been assessed as yet. There is a need to expand non-formal schooling facilities in backward and tribal areas. This would require micro-level planning and flexible models of non-formal education.

2.52 The scheme for the training of ANMs, LHVs and Dais has made substantial progress and the targets for the Plan will be achieved. Though, the performance of the expanded Programme of Immunisation needs improvement, the progress under Universal Immunisation is queit satisfactory, and by 1990, all the districts in the country will be covered.

2.53 Under the Social Welfare sector, a number of programmes have been taken up to supplement the efforts being made in general sectors. The major programmes in this sector are (i) condensed courses of education and vocational training, (ii) socio-economic programme, (iii) support to training and employment programme (STEP) and (iv) Women Development Corporation. The first two schemes have been beneficial in providing the much needed employment opportunities to needy women. The other two schemes have been introduced only recently. Besides, in the field of social legislation the Dowry Prohibition Act of 1961 was amended in 1986 to make the provisions more stringent and effective. The SIT Act was amended and retitled as "The Immoral Traffic Prevention Act 1986". There is need to improve the basic services in the institutions required to be provided as statutory requirement.

New Directions for Programmes and Strategy

2.54 It is now desirable to sharpen the effectiveness of anti-poverty and employment programmes by (i) making them more purposive and selective; (ii) linking them up more closely with the developments in the economies of rural areas including rural towns, and (iii) introducing policy initiatives in other areas like industry and services to provide stronger and lasting support to the efforts for creation of the increasing employment and income opportunities for the poor.

2.55 It is somewhat unrealistic to expect alleviation of poverty solely on the basis of a self-employment programme like IRDP. It is, therefore, essential that in the development strategy in the remaining years of the Seventh Plan and, particularly, in the Eighth Plan, special emphasis be given to the creation of regular wage employment opportunities. In the interim, however, casual wage employment on public works and productive activities allied to agriculture would have to get greater emphasis, especially with the objective of providing sustenance to the very poor unable to sustain any productive activity on their own.

2.56 In a large part of the country where agricultural growth has been slow, an acceleration of growth itself will create substantial employment opportunities. The Seventh Plan record on paddy production gives confidence in the strategy of sustaining higher growth on a more regionally diversified basis in the remaining years. The irrigation strategy, the special agricultural and extension programmes, the watershed development schemes, spelt out in the chapter on agriculture, are all targetted to enhance this performance in a focussed manner. Programmes of forestry, animal husbandry particularly dairying and fisheries will also play this role. Questions of land reforms, marketing and credit infrastructure need to be tackled on a priority basis, to sustain such developments.

2.57 The opportunities thrown up by recent trends towards diversification of the rural economy in many parts of the country should be utilised to build up a more dynamic rural sector. In this context, communication infrastructure and industrial support policy will need to aim at more effective decentralisation of small industry, agro-based or otherwise, so as to encourage development in selected small towns in the rural hinterland. As shown in the industry chapter, such developments have taken place in a number of centres in selected regions, but need to be spread elsewhere. Development of services ancillary to agricultural and industrial development that is likely to take place, also needs to be encouraged through suitable policy measures, particularly to reduce the incidence of educated unemployment. In sum, there is an urgent need for a closer and purposive integration between the special anti-poverty programmes and the development strategy, both for a better effectiveness of the programmes and ensuring lasting solutions to the problems of poverty and unemployment.

Chapter 3

MINIMUM NEEDS PROGRAMME

3.1 The standard of a living of a household depends not just on its income but on its access to certain basic public services and facilities. Recognising this, the Minimum Needs Programme, was introduced in the first year of Fifth Five Year Plan, with the objective of establishing a net work of basic services and facilities of social consumption in all areas upto nationally accepted norms, within a specific time frame. The programme is designed to assist in raising living standard and in reducing regional disparities in development.

3.2 The minimum needs of the people identified for this programme during the Sixth Plan, were Elementary Education, Adult Education, Rural Health, Rural Water Supply, Rural Roads, Rural Electrification, Rural Housing,Environmental Improvement of Urban Slums, and Nutrition. A Progrmme for Rural Domestic Cooking Engery was introduced from 1985-86, i.e., the first year of the Seventh Plan. Two more programmes for Rural Sanitation and Public Distribution System, have been introduced from 1987-88 to ensure that all basic needs of the people are met on an assured basis. The Seventh Plan also lays emphasis on the integration of the Minimum Needs Programme with other rural development and anti-poverty programmes, like, IRDP, NREP, RLEGP, so as to create the necessary link in the delivery of services.

Elementary Education

3.3 The objective under this programme is to achieve 100 per cent enrolment of the children in the age group of 6-14 years by 1990. Subsequently, in the National Policy on Education, 1986 the target date has been reassessed and set as 1995. With a view to achieving this objective, the Seventh Plan has prescribed a target of 25.53 million children for formal education and 25 million children for non-formal education. Against the target of 25.53 million children for formal education, 10.8 million children have been covered during the first two years of the Plan and 5.3 million additional children are proposed to be covered during the year 1987-88.

3.4 The Seventh Plan aims at improving the quality, relevance, effectiveness, and usefulness of elementary education through better teaching-learning methods, content and delivery which will lead to reduction of drop-outs and to better enrolment. Special attention is to be paid to the promotion of education of girls, first generation learners, and children from Scheduled Castes/Tribes. In order to ensure that primary education of comparable quality is provided for all children, a large programme, symbolically called 'Operation Blackboard' has been launched by the Central Government as a sequel to the National Education Policy, 1986 to provide essential facilities to all primary schools in the country. This programme, infact, has been launched as a Central Sector Plan Scheme in 1987-88, and is described in greater detail in the Chapter on Human Resource Development.

3.5 The target in the Seventh Plan is to cover 25 million children under Non-formal education. By 1987-88 about 4 million children may be covered under the scheme. The existing scheme of Non-formal Education is confined to the nine educationally backward States of Andhra Pradesh, Assam, Bihar, Jammu & Kashmir, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal. The National Policy of Education envisages a large and systematic programme of non-formal education for school drop-outs, for children from habitations without schools, working children and girls who cannot attend whole-day schools. As a follow-up to this policy, a National Programme is being introduced during 1987-88 under which central assistance will be extended to other States and voluntary organisations also for setting up non-formal education centres in rural, tribal, desert, and hilly areas and urban slums having concentration of working children.

Adult Education

3.6 The objective as stated in the Seventh Plan is to achieve 100 per cent coverage of adults in the age group of 15-35 by 1990, through non-formal education. Subsequently, in the National Policy on Education, this target date has been raised to 1995. 14.55 million adults have been covered during the first two years of the Seventh Plan. It is proposed to cover 8.9 million additional adults during 1987-88.

3.7 A National Literacy Mission for eradication of illiteracy is being launched in 1987-88, to eradicate illiteracy among the population in the age group 15-35. The details about this mission and

related programmes for adult education are dealt with in greater detail in the Chapter on Human Resource Development.

Rural Health

3.8 With a view to achieving health for all by 2000 AD, the Minimum Needs Programme of Rural Health component provides for the following objectives:

1) Establishment of one sub-centre for a population of 5000 in the plains and 3000 in tribal and hilly areas by 1990 (100 per cent coverage).

2) One Primary Health Centre (PHC) for 30,000 population in plains and 20,000 in tribal and hill areas by 1990 (100 per cent coverage).

3) Establishment of one Community Health Centre (CHC) for a population of one lakh or one CD Block by 1990 (50 per cent coverage).

3.9 Seventh Plan targets for the number of additional Centres to be set up and actual achievements in the first two years are given below:

(Number)

Centre	7th Plan target	1985-86		1986-87		1987-88
		Tar.	Ach.	Tar.	Ach.	Target
1. Sub-Centres	54883	6132	7891	8766	8670	9233
2. P.H.C.	12390	1455	1770	1554	1651	2274
3. C.H.C.	1553	298	233	278	272	257

3.10 The progess with regard to primary health care is dealt with in greater detail in the Chapter on Human Resource Development.

Rural Water Supply

3.11 At the beginning of the Sixth Plan, 2.31 lakh villages were identified as problem villages. As a result of intensive and heavy investment, 1.92 lakh villages out of 2.31 lakhs were provided with at least one source of drinking water during the Sixth Plan

period leaving a balance of 39,000 villages which spilled over to the Seventh Plan. However, due to recurring drought in several States, failure of tubewells due to lowering of water table and chemical and bacteriological contamination of water sources, the number of problem villages has further gone up in the country. The main thrust of the Seventh Plan is to tackle the spill over problem villages from the Sixth Plan numbering 39,000 on priority basis and the villages subsequently identified as problem villages thereafter.

3.12 During the year 1985-86, 45,248 villages have been covered against a target of 30,637. Achievement in the year 1986-87 is 48,350 villages against the target of 35,930. During 1987-88, it is proposed to cover 50,570 villages. With a view to tackling the problem of drinking water in rural areas a Technology Mission on Drinking Water in Villages and Related Water Management was launched by the Government of India in August, 1986 with the following specific objectives:

i) to cover all residual problem villages by 1990;

ii) to supply potable water @ 40 litres per capita per day (70 lpcd including cattle demand in desert areas of Rajasthan);

iii) to evolve cost effective technology mix to achieve these objectives within the constraint of Plan allocation; and

iv) to take conservation measures for sustained supply of drinking water.

3.13 To achieve the above objectives 50 Mini Missions and 5 Sub-Missions on:

i) eradication of Guinea Worms;

ii) control of fluorosis;

iii) removal of excess iron - from drinking water;

iv) desalination of water; and

v) conservation of water and recharging of groundwater acquifers have been set-up.

3.14 Voluntary agencies have been involved in the execution and maintenance of rural water supply schemes and undertake intensive campaign for public awareness in a big way through the Council for Advancement and People's Action for Rural Technology (CAPART).

3.15 The concurrent evaluation of rural water supply on monthly basis has also been undertaken since October, 1986 at the Government of India level so as to find out the status of drinking water supply facilities in problem villages. This task has been assigned to various reputed academic/technical institutions in the country.

Rural Roads

3.16 The programme of development of rural roads got accelerated during the Fifth Plan when this was made a part of the Minimum Needs Programme (MNP) under which funds are earmarked. The Sixth Plan envisaged a faster development of rural roads. It indicated a target of covering all the villages with a population of 1500 and above and 50 per cent of the villages with population between 1000-1500 with all-weather roads within a time span of ten years ending 1990. For hilly, coastal, tribal, and desert areas, the Plan recommended the cluster of villages approach with matching population.

3.17 The Rural Roads programme under MNP has been supplemented by various other programmes which can be broadly categorised as (i) Beneficiary oriented programmes, such as; National Rural Employment Programme, and Rural Landless Employment Guarantee Programme(these Programmes include a component for development of rural roads); and (ii) Area Development Programme, such as, Hill Area Development Programme, Western Ghat Development Programme, Programme of North-Eastern Council and Tribal Area Sub-Plans. These Programmes also have a road component.

3.18 The following table summarises the position of villages of different population category connected with all-weather roads from 1978 onwards and villages that would need to be connected at the end of the Seventh Plan:

Population Category (Number)	Total No. of villages	Connectivity of villages as on			No. of villages that would remain to be connected
		1.4.78	1.4.85	1.4.90	
1	2	3	4	5	6
1500 & above	69467	37729 (55)	49495 (71)	59722 (86)	9735 (14)
1000-1500	56252	22985 (42)	28732 (51)	35363 (63)	20890 (37)

Figures in brackets indicate percentage to the total.

3.19 It would be seen that the national targets would be more than achieved in the case of villages with population of 1000-1500 with the single exception of Orissa State which would not be able to connect 50 per cent of the villages in this category. So far as the villages with population of more than 1500 is concerned, there will be a shortfall on the aggregate basis and the states largely accounting for this shortfall would be Orissa, Andhra Pradesh, Bihar, and West Bengal. There would be a marginal shortfall in the case of Himachal Pradesh, Jammu & Kashmir, Karnataka, Rajasthan, and Mizoram.

3.20 On the whole, the Minimum Needs Programme has greatly helped to improve the connectivity of the villages and this tempo needs to be sustained.

Rural Electrification

3.21 The objective of this programme is to electrify 65 per cent of the villages in each State/UT by 1990. The priority areas for Rural Electrification under MNP have been identified as follows:

i) All North-Eastern Hill States and Union Territories, viz., Meghalaya, Tripura, Assam, Manipur, Nagaland, Sikkim, Arunachal Pradesh, and Mizoram.

ii) Districts in other States with less than 65 per cent of electrification, the districts having the least percentage of electrification being covered first; and

iii) All areas included in Tribal Sub-Plan.

3.22 During the first two years of the Plan, 13143 villages have been electrified against the target of 13003. It has been proposed to cover 7150 villages during 1987-88. The performance regarding energising of pump-sets has been comparatively less satisfactory. Against the target of 16731, 12759 pump-sets have been energised during the first two years of the Plan. It has been proposed to energise 16000 pump-sets during 1987-88. The shortfall in meeting the targets in the pumpset energisation component of this MNP Programme is mainly because of the lack of demand for pumpsets in the backward areas which are covered under the MNP Programme . For this reason, it is felt that the focus of the rural electrification in the MNP areas should be on provision of domestic and street lighting and system improvement schemes which would increase reliability and reduce losses. The State Electricity Boards are, therefore, being encouraged to undertake system improvement schemes in the MNP areas to improve the reliability of the power supply and also to reduce technical losses due to electricity supply to the far flung rural areas. Although the investments required in the installation of Transmission and Distribution (T&D) system for far flung rural and in particular, MNP areas may not be justified in the short run by the poor returns available to the State Electricity Boards for these investments, adequate funds are being provided for the MNP Programme at cheaper terms as compared to the normal rural electrification programme.

Nutrition

3.23 The nutrition component of MNP comprises the Special Nutrition Programme (SNP) and the Mid-Day Meal Programme (MDM). The SNP covers pre-school children in the age group below 6 years and pregnant women and nursing mothers. The scheme provides supplementary feeding yielding 300 calories with 8-12 grams of protein per child and 500 calories with 20-25 grams of protein per mother, per day for 300 days in a year.

3.24 The coverage under SNP, which was 11.57 million beneficiaries at the beginning of the Seventh Plan, reached a level of 14.5 million by the end of 1985-86. In 1986-87, additional 1.9 million beneficiaries were covered under the programme within the Integrated Child Development Services Schemes(ICDS). Out of the total coverage of 16.4 million beneficiaries till the end of 1986-87 under SNP, 13.5 million beneficiaries were within 1611 ICDS projects. All efforts are being made to bring the SNP outside ICDS within the ambit of ICDS scheme.

3.25 The MDM Scheme is for school children in the age group of 6-11 years. It offers supplementary food consisting of 300 calories and 8-12 grams of protein per child per day for 200 days in a year. Expansion of the MDM programme in the Seventh Plan has been taken on a very modest basis as it was considered that without the convergence of related inputs, like; health care, and safe drinking water supply, the programme would not have the desired impact on the targetted groups. The programme which had a coverage of 17.1 million beneficiaries at the beginning of the Seventh Plan reached a level of 17.6 million at the end of 1985-86. About 0.3 million beneficiaries were added in 1986-87, bringing the total coverage of school children under MDM to 17.9 millions.

3.26 Several studies of SNP and MDM have pointed out that these programmes have not created the desired impact on the nutrition status of the beneficiaries due to lack of proper supply of food material, discontinuity of feeding, pilferage, lack of community participation and non-integration with other essential services. These programmes are also suffering from lack of adequate resources. Several States find it difficult to provide adequate funds for these programmes. As a result, they are providing food at the rate of 25 paise per child and 32 paise per mother inspite of the accepted norm of 65 paise per child and 90 paise per mother. The Programme needs to be reviewed to evolve alternative strategy of implementation to make the programme fruitful.

Rural Housing

3.27 Under the Rural House-site-cum-House Construction scheme, the Seventh Plan envisages provision of sites to all the landless families numbering about 7.2 lakhs by the end of the Seventh Plan and provision of construction assistance to 27.1 lakhs.

3.28 The performance during the first two years of the Plan and the targets proposed for 1987-88 reveal that the achievement in respect of allotment of house-sites will exceed the targets. During the first two years of the Plan, 17.11 lakh families have been allotted house-sites. For 1987-88 the State Governments have indicated a target of 5.50 lakh house-sites to be distributed. By 1990, 35 lakh families are expected to be allotted house-sites, i.e., 12.39 lakh families are to be allotted house-sites during 1988-89 and 1989-90.

3.29 The physical performance regarding provision of construction assistance in rural areas has not been so satisfactory. Against the Seventh Plan target of 27.1 lakh families, only 8.50 lakh families have been provided assistance during the first two years of the Plan. It is proposed to provide construction assistance to 3.66 lakh families during 1987-88. Even after this target is realised, there will still be 14.94 lakh families to be provided construction assistance if the Seventh Plan targets are to be achieved. The poor performance in regard to construction assistance in some states was due to the fact that they are adopting more liberal norms for assistance ranging from Rs. 3000/- to Rs. 5000/- per family on the ground that the Plan norm of Rs. 2000/- was too low. Much more vigorous efforts would be required for achieving the Seventh Plan targets.

Environmental Improvement of Urban Slums

3.30 Seventh Plan aims at covering 90 lakh slum dwellers during the Plan period. 40.60 lakh slum dwellers have been covered during the first two years of the Seventh Plan. It is proposed to cover additional 15.41 lakh slum dwellers during 1987-88. Although, the physical performamce of the Programme has been encouraging, in financial terms, the expenditure has been only 33.24 per cent of the Seventh Plan outlay. This indicates that per capita expenditure has been less than Rs. 300/- as provided in the Plan.

3.31 According to Town and Country Planning Organisation (TCPO) of the Ministry of Urban Development, it has been noticed that the physical amenities outlined in the guidelines are not provided fully, with the result, the reported figures by the state governments do not give the actual picture of the coverage of slum dwellers as envisaged in the scheme. TCPO could not get the details of physical amenities provided during the last two years in the form of electrical poles, water taps, community baths, and community latrines, sewers and drains, paving of pathways, etc. It is taken that all the facilities are not being provided in the slum areas given that the per capita expenditure is less than Rs. 300 on the average.

3.32 There is an additional problem of acquisition of privately owned slums, which is beset with a number of legal complications. Some state governments have passed legislation to acquire privately owned slums or powers to carry out improvements on the privately owned slums. There is need for other states also to take similar steps to overcome such difficulties.

Rural Domestic Cooking Energy

3.33 The main sources of cooking energy in the rural areas are non-commercial, for example, firewood, crop waste, animal dung, etc. The supply of these sources is rapidly dwindling and the report of the Fuelwood Committee (1982) has stated that the availability of cooking energy may soon become a greater constraint than the availability of food itself. Therefore, the two schemes of rural fuelwood plantation and provision of improved chullahs which were in operation in the Sixth Plan have been integrated and made an additional component of the MNP Programme for Domestic Cooking Energy from 1985-86.

Improved Chullah

3.34 The target set for the Seventh Plan for this programme was installation of 50 lakh improved chullahs. Of this, 20.26 lakh chullahs have already been provided during the first two years of the Seventh Plan. Because of the popularity of the Programme in rural areas and increased demand, the outlay for the current year (1987-88) has been increased and the target set as 12 lakh chullahs.

3.35 The average cost of an improved chullah is around Rs. 55 at present. This includes the cost of Research and Development (R&D), demonstration, training programmes, installation, and supervision . Department of Non-Conventional Energy Sources (DNES) has proposed to reduce the budgetary contribution so as to bring down the average cost of a chullah to Rs. 40 during the Seventh Plan and this would enable achievement of higher targets.

3.36 The expenditure on training programmes in particular is excessive and there is considerable scope for reduction in the cost of such training programmes. Another major problem in expanding the programme is the growing number of non-functional chullahs. According to the DNES the average percentage of functional chullahs at this stage is 73 per cent. The reasons for non-functionality have been ascribed to shifting of houses, cooking habits, and construction defects. Before the programme is expanded on a large scale, an appropriate organisational set up is necessary to ensure inspection at the time of installation and for proper maintenance and upkeep after installation.

Rural Fuelwood Plantation Scheme

3.37 In view of the rapidly dwindling sources of domestic cooking energy in the rural areas, especially fuelwood, agriculture crop waste, and animal dung, it was decided to introduce this programme under the MNP from 1985-86. Under this scheme, the Seventh Plan aims at plantation of 405 thousand hactares of land. 180.65 thousand hactares has already been planted during the first two years of the Plan. A target for the plantation of 90 thousand hactares of land has been fixed for 1987-88. The programme is dealt with in a broader context in Chapter on Environment and Forestry.

3.38 The Rural Fuelwood Plantation Scheme has been merged with the scheme of afforestation of ecologically sensitive areas other than Himalayas since 1986-87 . This merger may, however, dilute the fuelwood component of this MNP Programme. The matter should be examined to determine what modifications could be made in the scheme based on its performance so far, so as to design a new fuelwood programme. It is felt that the programme should be extended to the entire country instead of being limited to 157 Districts. There is also a need for closer integration between fuelwood programme and the improved chullah programme for which institutional arrangements will have to be developed.

Rural Sanitation

3.39 The Rural Sanitation Programme has also been added as one of the components of the Minimum Needs Programme from 1987-88. The Seventh Plan envisages provision of sanitation facilities to at least 25 per cent of the rural population. The Rural Sanitation Programme would supplement the efforts made under different Central and State Sector programmes by providing sanitation facilitites in the rural areas through construction of rural sanitary latrines for individual households so as to improve the quality of life in the rural areas. An outlay of Rs. 30.16 crores has been provided for the programme for 1987-88 with the target of construction of 2.20 lakhs latrines.

Public Distribution System

3.40 The Public Distribution System (PDS) has been added as a new component of the Minimum Needs Programme from 1987-88. The basic objective of the public distribution system is to ensure that essential items of daily use are made available at reasonable

prices to the public, particularly the vulnerable sections of the society, both in urban and rural areas. An outlay of Rs. 15.25 crores has been provided for the programme for 1987-88.

3.41 At present, seven key essential commodities are distributed through PDS. These are wheat, rice, sugar, imported edible oils, kerosene, soft coke, and controlled cloth. All these commodities are procured and supplied by the states for distribution through the network of fair price shops. The state governments are empowered to include in PDS some other commodities which they consider important. Some of the state governments, like; West Bengal, Orissa, Tamil Nadu, Himachal Pradesh, etc., have inlcuded pulses and also some manufactured items, like; matches, battery cells, etc., for supplying to consumers through selected Public Distribution outlets of their respective areas.

3.42 The physical progress of the various components of MNP during the Seventh Plan has been indicated in Annexure 3.1

Annexure 3.1

Financial Progress of MNP during the Seventh Plan

(In crores)

Sl. No.	Name of the MNP Component	7th Plan Outlay 1985-90	Annual Plan Outlay 1985-86	1985-86 Actual Expndr.	% age	Annual Plan Outlay 1986-87	1986-87 Anticipd. Expndr. (R.E.)	% age	Exp. % age w/r to 7th Plan Outlay	Annual Plan 1987-88
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.	Elementary Education	1830.45	280.19	268.57	95.85	379.08	466.04	122.93	40.13	626.33
2.	Adult Education	360.00	65.54	62.15	94.82	96.86	100.73	103.99	45.24	113.66
3.	Rural Health	1093.35	181.59	129.06	72.63	182.10	174.23	95.67	27.66	216.36
4.	Rural Water Supply	3454.47	655.59	700.93	106.91	734.13	762.25	103.83	42.35	762.25
5.	Rural Roads	1729.40	293.27	252.79	86.19	241.89	290.17	119.95	31.39	299.92
6.	Rural Electrification	497.08	77.24	58.42	75.63	95.92	95.92	100.00	31.04	107.81
7.	Rural Housing	576.90	99.95	102.85	102.90	105.18	142.24	135.23	42.47	113.24
8.	Environmental Improvement of Urban Slum	269.55	37.83	44.87	118.60	47.27	44.73	94.62	33.24	46.35
9.	Nutrition	1732.86	312.59	175.28	56.07	310.78	282.84	91.00	26.43	322.02
10.	Rural Energy:									
	i) Improved Chullah	40.00	10.00	9.85	98.5	6.00	5.69	94.83	38.85	9.02
	ii) Rural Fuelwood Plantation Scheme	215.00	50.43	36.65	72.67	42.12	42.12	100.00	36.63	46.00
11.	Rural Sanitation	-	-	-	-	-	-	-	-	30.16
12.	Public Distribution System	-	-	-	-	-	-	-	-	15.25

Physical Progress of MNP During the Seventh Plan

(in crores)

Name of the MNP Component	Unit	7th Plan Target	Annual Plan Target 1985-86	1985-86 Achieve-ment	% age	Annual Plan Target 1986-87	1986-87 Achieve-ment	% age	Exp. % age w/r to 7th Plan Target	Annual 1987-88 Target
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
ELEMENTARY EDUCATION										
1. Formal (Addl.)	Million	25.53	5.3	5.3	109.43	5.7	5.5	96.49	42.30	5.3
2. Non-Formal	Nos.	25.00	-	3.5	-	-	3.9	-	-	4.0
ADULT EDUCATION										
(Coverage in Million Nos.)		Not fixed	7.5	6.03	84	8.4	8.25	98.21	-	8.9
RURAL HEALTH										
1. Sub-Centres	Nos.	54883	6132	7891	128.68	8766	8670	98.90	30.17	9233
2. PHCs	"	12390	1455	1770	121.64	1554	1651	106.24	27.61	2274
3. CHCs	"	1553	298	233	78.18	278	272	97.84	32.51	257
RURAL WATER SUPPLY	No. of Villages	39000*	30663	45248	147.56	35930	48350	134.56		50570
RURAL ROADS										
1. Pop.Grp.100-1500		3858	828	2099	253.5	941	1287	136.76	87.76	980
2. Pop.Grp.1500 & above		19962	2612	2229	85.33	2075	1921	92.57	20.78	2183

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
RURAL ELCTRIFICATION										
1. No. of villages electrified		40248	6366	6506	102.19	6637	6637	100	32.65	7150
2. No. of Pump-sets energised		62910	9114	5602	61.46	7157	7157	100	20.28	16048
RURAL HOUSING										
1. House-sites	lakhs	7.2	5.81	9.11	156.79	6.33	8.00	126.38		5.50
2. Contrn.Asstt.	"	27.1	4.13	4.14	100.24	3.91	4.36	111.50	31.32	3.66
ENVIRONMENTAL IMPROVEMENT OF URBAN SLUM	lakhs	90.00	14.98	20.57	137.51	15.35	20.00	130.29	45.07	15.41
NUTRITION										
1. SNP	000's	-	N.A.	14454	-	NA	16397	-	-	16397)
2. MDM (Total No. covered)	"	-	N.A.	17638	-	NA	17949	-	- (Same level to be maintained))	17949)
RURAL ENERGY										
1. Improved Chullah	lakhs	50.00	10.00	11.22	112.20	6.50	9.04	139.07	40.52	12.00
2. Fuelwood Plantation scheme (crores)										
i) Plantation	000's	405 ha.	125 ha.	97 ha.	77.60%	88.65 ha.	83.65 ha.	94.35	44.60	
ii) Distribution of seedling(Crores)		90	50	29.40	58.80%	-	-	-	-	90.00
SANITATION		-	-	-	-	-	-	- (latrines to be constructed))	-	98,000)
PUBLIC DISTRIBUTION SYSTEM		-	-	-	-	-	-	-	-	Not fixed

* All the 39000 spill over problem villages are to be covered. In addition, all the newly identified problem villages will also be covered.

Chapter 4

Agriculture

4.1 The Seventh Plan aims at a substantial increase in agricultural production, with a targetted growth rate of 4 per cent per annum. Agricultural growth is a crucial element in the strategy to tackle the problems of poverty and unemployment. In keeping with this approach, the Seventh Plan envisaged that a substantial part of the additional production would come from small and marginal farmers and from rainfed/dryland areas. In order to attain the growth pattern envisaged, special efforts were to be made:

- to effect a break-through in rice output in the eastern region;
- to increase the productivity and reduce the instability of production in dryland areas by laying special emphasis on development of watersheds and adoption of improved practices;
- to intensify research and management programmes relating to production of oilseeds and pulses; and
- to raise the productivity of small and marginal farmers.

Crop Production

The Weather and Short Term Trends :

4.2 Production performance in the first three years of the Plan has fallen well short of targets mainly on account of adverse weather conditions, particularly in the current year, 1987-88 (Table 4.1).

4.3 During kharif 1985-86, the on-set of South-west monsoon was delayed over the Central and Southern States and the behaviour of the monsoon during the season was erratic over many States. Despite this, the two major cereal crops, namely rice and wheat, as well as cotton and jute & mesta established new production records. During kharif 1986 the monsoon began well but turned erratic later. At the end of the monsoon season 14 out of 35 meteorological divisions had had deficient rainfall. The production of paddy fell a little and cotton, jute and mesta production came down sharply from the record levels reached in the previous

year.

4.4 In 1987, the failure of the South-west monsoon has resulted in an exceptionally severe drought. Out of the 35 meteorological sub-divisions in the country 21 had deficient/scanty rainfall. The poor precipitation has affected 63 per cent of the area in the country resulting in substantial crop damages and scarcity of drinking water.

4.5 Fifteen states and 6 Union Territories have been affected by drought conditions resulting in crop losses on an area of 44 million ha. spread over 269 districts. The worst affected are Rajasthan, Gujarat and parts of Orissa where the impact of the current year's drought has been aggravated by droughts in the previous years. Even states like Punjab and Haryana have reported crop damages because of long dry spells. The two major crops, which have been severly affected by the drought conditions are rice and groundnut; significant damages have been caused to bajra and maize also.

4.6 Even though the drought conditions have severely affected the Kharif crops, because of contingency planning, which was put into operation from the beginning of monsoon and the optimum use of water resources, the loss in kharif production could be somewhat mitigated.

Achievements in Medium Term :

4.7 The setbacks to agricultural production in the first half of the Seventh Plan have to be seen in the context of medium-term trends in agricultural production. Whereas the long-term growth rate of agricultural output was around 2.6 per cent in the period from 1949-50 to 1984-85, the growth rate between 1978-79 and 1984-85 was 3.5 per cent taking triennial averages to even out the impact of fluctuations. A striking feature is the growth in rice production which has compensated for the slow down in the growth in wheat production.In the eighties(including in the Seventh Plan) output performance of paddy is improving. This is particularly so in the Special Rice Production Programme States.

4.8 An important feature of agricultural growth since 1979-80 is that it is due almost entirely to productivity growth rather than an increase in the area under cultivation. Performance in relation to productivity targets of major crops has been good as shown in the Table 4.1.

Table:4.1

S.No.	Crop	Yield Qtls/Hec.		
		Triennium Average 1979-80	Target 1984-85	Achievement Triennium 1984-85
(1)	(2)	(3)	(4)	(5)
1.	Wheat	15.47	17.50	19.13
2.	Foodgrains	9.75	11.47	11.65
3.	Sugarcane	514.94	575.00	579.19
4.	Cotton	1.19	1.61	1.71
5.	Jute and Mesta	10.54	12.50	13.66

4.9 In 1984-85, 1985-86 and 1986-87, foodgrains production in India was below the 1983-84 peak. But it increased in UP and Bihar even in these adverse climatic years:

Table 4.2

S.No.	Area	Output(million tonnes)			
		1983-84	1984-85	1985-86	1986-87
(1)	(2)	(3)	(4)	(5)	(6)
1.	India	152.40	145.54	150.44	144.07
2.	U.P.	29.18	29.89	31.42	29.99
3.	Bihar	9.88	10.33	10.96	10.87

These trends are also substantiated by recent fertiliser consumption figures. The states of U.P. and Bihar have registered a quantum jump in their per hectare consumption of fertiliser. Foodgrains productivity and performance is therefore improving in areas other than the traditional high wheat growth areas of Punjab, Haryana and Western U.P. This should lead to confidence for planning more widespread growth strategies in the remaining years of the Seventh Plan and beyond.

4.10 The increase in cropping intensity expected from irrigation has not taken place in recent years. More specifically, the gross irrigated area to gross cropped area has increased from triennium ending 1979-80 to triennium ending 1983-84 in the case of West Bengal, Bihar, Andhra Pradesh, Himachal Pradesh & Karnataka. However, the percentage of cropping intensity has decreased in the case of West Bengal, while it is

stationary in the case of the other States mentioned above. Seventh Plan targets for the total cropped area will not be met and the land augmenting role of irrigation is not being realised in many regions. Apart from the factors mentioned above recent agricultural performance has led to some concern and call for expeditious corrective actions. A series of adverse climatic years seem to be eroding the sources of agricultural growth. Recent indications are that performance in 1986-87 will be lower than that anticipated hitherto. Irrigation facilities, expansion of area under new varieties and expansion of working capital inputs all perform lower than expectation as the agrarian economy copes with the successive impact of droughts.There is no scope for any complacency regarding the agricultural sector.

4.11 Looking ahead at the remaining years of the Seventh Plan and beyond it is clear that the main areas needing attention to regain the momentum of agricultural growth and to mitigate vulnerability to climatic factors are:

- rise in the growth rate of productivity raising inputs;
- modernisation of irrigation systems and improved water management; and
- acceleration and resilience of growth in rainfed/dryland agriculture and in crops like paddy,oilseeds and pulses.

Inputs for Crop Production

Irrigation :

4.12 Irrigation development,fertiliser use and the spread of improved seed varieties are critical for raising the potential for crop production. In all three the pace of progress in the first half of the Plan gives cause for concern (Annexure 4.2).

4.13 For the Seventh Plan,the target of additional area for utilisation of irrigation potential has been fixed at 10.90 million hectares which works out to an annual average of 2.18 million hectares. In the first two years of the Seventh Plan, the aggregate achievement is estimated to be of the order of 3.59 million hectares of additional area reflecting an annual increase of 1.80 million hectares. Thus, considerable slippage has taken place in the first two years in relation to the Seventh Plan target. If the Seventh Plan target is to be achieved, irrigation

development (utilization) has to aim at an average annual increase of 2.44 million hectares during the remaining years of the Seventh Plan. Further, the gap between irrigation potential and utilisation has been widening.

4.14 Vigorous efforts have to be made to minimise this gap with a view to taking advantage of the potential built up at a huge cost to the public exchequer. Greater attention needs to be paid for promoting water use efficiency for optimising productivity. The following strategic issues have to be emphasised in the balance period of the Seventh Plan:

i) A special provision must be made in the Central Budget to provide supplemental assistance to States for specific works which will lead to quick realisation of irrigation potential in projects which are well advanced

ii) Allocation of funds from institutional sources (NABARD and REC), area programmes (IRDP, SFDA) and cooperative and banking sources for minor irrigation have to be stepped up and monitoring mechanisms for setting down targets for each sector devised and implemented;

iii) The States have to develop schemes for monitoring and utilization of surface minor irrigation schemes since a number of studies show the high returns to percolation tanks, village ponds etc., a beginning may be made with the liberal assistance given for this purpose from the special allocation announced for irrigation as a part of the Drought Proofing strategy announced by the Prime Minister in the Chief Minister's Conference on the Drought (Annexure 4.4);

iv) States have to earmark funds for completion of major and medium irrigation projects and the special funds are also allocated for this purpose under special drought assistance programme (Annexure 4.4);

v) Seventh Plan priorities on ongoing projects need to be enforced particularly in a number of lagging states;

vi) Emphasis on improved reservoir management as initiated in this year"s drought must continue and strategies developed and implemented for optimal use of water between seasons and for irrigation, power and flood control;

vii) CAD projects for on farm development for use of available potential must be emphasized; and

viii) Modernisation projects for improving irrigation efficiencies and planning studies for more optimal use of water, expedited.

Fertilisers :

4.15 The Seventh Plan target for the consumption of chemical fertilizers has been fixed at 13.5 - 14.0 million tonnes to be reached by 1989-90. Against the target of 9.55 million tonnes, the estimated consumption during 1985-86 is placed at 8.74 million tonnes. As regards 1986-87 also, the anticipated consumption is 9.20 million tonnes against the target of 10.30 million tonnes. Shortfalls in these two years are mainly due to the unfavourable seasonal conditions. Considering the slow pace in recent years the consumption of chemical fertilizers by 1989-90 may be in the range of 12.3 -12.5 million tonnes. This would require a high growth rate of 8.77 per cent annual from 1986-87 to 1989-90. This growth will be triggered off by the expected irrigation performance and dryland agriculture strategies but will also have to be supported by :

(i) promotion measures in the low consumption/ dryland areas;

(ii) involvement of the fertiliser industry in promotion efforts and supply of fertilisers in smaller packs; and

(iii) strengthening the institutional agencies for distribution particularly in backward, interior and inaccessible areas.

Pesticides :

4.16 The position with regard to insecticides has remained satisfactory. Against the Seventh Plan target of 75 thousand tonnes, the consumption of pesticides (Technical Grade Material) during 1985-86 was reported to be 66.6 thousand tonnes and the anticipated consumption during 1986-87 is about 72 thousand tonnes. For 1987-88, the target is fixed at 75 thousand tonnes. There may be no difficulty in achieving the Seventh Plan target. However, pesticide support to Indian agriculture requires more fine tuning for increasing effectiveness. This would need:

i) improved demand forecasting so that quality needs are met on a timely basis. The reliance on administrative allocations need

to be replaced with policy guidelines relying on behavioural studies of farmers' demands for pesticides as shown for example from market research and cost of cultivation studies;

ii) evolution of improved standards and practices in relation to the fast changing and more efficient insecticide and weedicide availabilities, including the use of bio-technology methods;

iii) policies for the development of a cost effective and technologically dynamic pesticide industry and distribution network; and

iv) development of an integrated pesticide management network with adequate environmental standards, built in.

Seeds :

4.17 The Seventh Plan envisaged the distribution of certified/quality seeds going up from an assumed base level of 7.04 million quintals in 1984-85 to 11.74 million quintals by 1989-90 (including about 1 million quintals for export). Distribution during 1984-85 was only 4.85 million quintals which was much less than the assumed base level. It rose to about 5.5 million quintals in 1985-86 and remained around that level in 1986-87.

4.18 Concrete measures need to be taken to resolve the main constraint which is the inadequacy of breeder seeds production. The tardy progress in respect of certified/quality seeds of pulses and oilseeds is also due to lack of adequate breeder seeds production. In order to augment the production of breeder seeds, it is necessary to think in terms of decentralisation of breeder seeds production and also of certification of breeder seeds. The system of reporting on production/distribution of seeds needs considerable improvement with a view to generate reliable data. Problems of coordination between different agencies, optimal methods of pricing and distribution of seeds and future needs of germplasm, need to be closely reviewed. With a view to streamline the process of seed production, distribution and an optimal pricing strategy, a High Power Expert Group has been set up by the Department of Agriculture and Cooperation.

4.19 The problems faced in seed production are reflected in the shortfalls in the targets for coverage under the high-yielding varieties programme. As shown

in Annexure 4.2, while in the case of wheat, the Seventh plan target of covering about 79 per cent of the total area projected, has been achieved, the HYV coverage in relation to the gross area shown under jowar, bajra and maize had made inadequate progress. In the case of paddy while the Seventh Plan envisaged that 73 per cent of the projected area under paddy should be covered with HYV, the actual achievement in 1985-86 and 1986-87 has been about 57 per cent. In the case of coarse grains the HYV coverage, as a proportion to the total area, has been rather low mainly because of cultivation under rainfed conditions and non-availability of improved varieties suitable for different areas. During 1985-86, the percentage area covered by HYV in the states of Maharashtra and Madhya Pradesh has increased to 59.8 and 37.9 from the levels of 51.4 and 33.6 respectively during 1984-85. In the case of other states, these percentages are stationary or have even declined in some cases. Looking to the slow progress during the last three years, there may be a 5 per cent shortfall in achieving the Seventh Plan target of 70 million hectares under HYV by 1989-90.

Soil and Water Conservation :

4.20 In the context of the current drought, soil and water conservation assumes particular importance. The Seventh Plan indicated a target of 6.92 million hectares of additional area under various soil and water conservation measures. As against this, it appears that an area of 1.10 million hectares was treated during 1985-86. The anticipated achievement during 1986-87 is only 0.74 million hectares. The additional area target for 1987-88 is 0.85 million hectares. The pace of physical progress seems to be slowing down. The main reasons for this appear to be inadequate provision of funds and cost escalation. Besides, the reporting of data on physical progress by the States is rather weak and needs considerable improvement. For instance, some states do not seem to be taking into account the progress of soil conservation works executed through funds flowing from drought relief assistance and rural development programmes like RLEGP, NREP, and DPAP. Soil conservation work under these important programmes will need higher priority in the Seventh Plan balance period. These programmes are being carried on by a number of agencies. Progress needs to be monitored and reviewed and an effort made to involve voluntary agencies on a larger scale in soil conservation and watershed development efforts. These issues are discussed subsequently.

Cooperative Credit :

4.21 The progress in the disbursement of short-term, medium-term and long-term cooperative credit has so far been much below the Plan expectations. The Seventh Five Year Plan has envisaged an increase in total disbursement of cooperative short-term, medium-term and long-term credit from an assumed base level of Rs. 3250 crores in 1984-85 to Rs. 7070 crores by the terminal year of the Seventh Plan, i.e. 1989-90. As against the Annual Plan targets of Rs. 3700 crores for 1985-86, Rs. 3950 crores for 1986-87 and Rs. 4275 crores for 1987-88, the anticipated achievements are reported to be only Rs.3200 crores, Rs. 3500 crores and Rs.3700 crores respectively. However, the shortfalls had been particularly pronounced in the case of Andhra Pradesh, Assam, Orissa, Rajasthan,Tripura,Uttar Pradesh and West Bengal.

4.22 One of the main reasons for heavy shortfall in the achievement of targets of cooperative credit has been the occurrence of severe drought and floods in many parts of the country which impaired the recovery of crop loans and resulted in mounting overdues. This in turn, reduced the eligibility of credit societies in the affected areas for refinance from NABARD and led to serious set back in their operations.

4.23 The major bottleneck in the expansion of credit has been the continued existence of high level of overdues which ranged between 40 to 45% . With the exception of a few States like Haryana, Kerala and Punjab, the recovery performance in all the other States has been unsatisfactory. The overdues have been particularly heavy in the Eastern and North-Eastern States. The expansion of credit, as envisaged in the Seventh Five Year Plan, would not be possible unless substantial improvement is brought about in the overdues position of the cooperative credit structure at various levels.

4.24 With a view to combating the unprecedented drought/flood conditions which have occurred in several parts of the country consecutively for the last three years, NABARD has announced several relaxations in the terms and conditions for refinance particularly in respect of Rabi season 1987-88. In the States affected by drought/flood, rephasement and rescheduling of loans has been allowed without penal interest. NABARD has instructed that the non-defaulter members should not be denied credit. In case of small and marginal farmers, credit is to be made available for the Rabi 1987-88 season, even in case their default in repayment is upto 25% of their crop loan eligibility.

Agricultural Extension :

4.25 Recognising the need for an extension approach to achieve a broad based increase in agricultural output and in response to changing rural and administrative conditions, the Government of India introduced "Training and Visit" (T&V) system of Extension in the country. It was first tried in India through pilot projects in the Rajasthan Command Area Development project in 1974 and in the Chambal Command Area Development Project in Madhya Pradesh in 1975. It was subsequently adopted in various States commencing in 1977. By now, this system has been introduced in 17 States, namely, Andhra Pradesh, Tamil Nadu, Karnataka, Kerala, Maharashtra, Gujarat, Rajasthan, Madhya Pradesh, Orissa, Uttar Pradesh, Bihar, West Bengal, Assam, Haryana, Punjab, Himachal Pradesh and Jammu & Kashmir. The T&V system aims at increasing farm productivity and farmers' income by simultaneously addressing constraints impeding the transfer of new agricultural technology from research to the farmer and the feed-back from farmers that must orient research and other government organisations to actual farm problems.

4.26 A study undertaken in two contiguous areas - one in Karnal district of Haryana where the T&V system was introduced in late 1979 and the other in Kairana Tehsil in Uttar Pradesh where the T&V system had not been introduced at that time - showed that in Karnal under the re-organised system, despite some organisational problems, the extent of farmers inter-action with extension agents was greater than in Kairana and that farmers in Karnal viewed the change in the extension system favourably. The study revealed that extension reform led to a noticeable increase in the rate of knowledge diffusion of several high yielding variety wheat and a few rice practices. The estimates suggested that in 1982-83 after 3 years of reformed extension, high yielding variety wheat yields in Karnal were 9 percent higher than in Kairana. Also, it was found that after 3 years of reformed extension, there was a gain in productivity of about 6-7 percent attributable to reformed extension.

4.27 The pace of implementation of extension projects has not been uniform in all the States. In some States there have been serious implementation problems mainly due to inadequate funding and delay in the recruitment and placement of personnel and execution of civil works. In any case, the overall conclusion as revealed from the various evaluation studies is that reformed extension has induced positive changes both institutional and economic.

Revised Agricultural Targets

4.28 From the point of view of maintaining the growth objectives of the Seventh Plan, as also the objectives relating to employment and poverty alleviation, the crucial area of concern is in the levels of production that have to be attained for the agricultural sector. The highest priority will be given to the agricultural sector in the balance years of the Plan. In order to give higher priority to the sector, its requirements of yield raising inputs are now being worked out more realistically, in the light of experience as compared to the Seventh Plan projections as the following estimates show:

Table 4.3 : Parameters of Agricultural Planning in India

Sl. No.	Variable	Fifth Plan	Sixth Plan	Seventh Plan	
				Original	Revised
(1)	(2)	(3)	(4)	(5)	(6)
1.	Additional Irrigation utilization (mill.hec)	9.11	13.80	10.9	9.5
2.	Additional Cropped area (mill. hec.)	6.04	11.74	10.0	7.6
3.	Elasticity of GCA to GIA	0.20	0.26	0.31	0.24
4.	Agricultural Output Growth Target(% annual)	3.94	4.00	4.00	4.00
5.	Yield Growth Target(% annual)	3.24	2.65	2.90	3.19

4.29 It is now targetted that expansion of area will account for a much lower proportion of the targetted agricultural growth as compared to the original Seventh Plan. Investments and policies will therefore be required for raising yields faster. The irrigation target has been kept as in the Seventh Plan, but growth

of area under crops is lower on account of a lower assumption on cropping intensity based on recent trends. Yield will now have to rise by 3.19% annual as compared to 2.90% in the original Seventh Plan for which inputs have been provided.

4.30 A growth rate of 4 per cent in the gross value of agricultural output will require the attainment of the production targets given in the table below:

Table 4.4 : Agricultural Production
(Major Crops)

(Million tonnes)

Crops	Base 1984-85		1985-86	Target 1989-90		
	Original	Revised		Original	Revised	
					I	II
1	2	3	4	5	6	7
Rice	60.0	58.3	63.83	73-75	72.7	71.7
Wheat	45.0	44.1	47.05	56.57	55.1	54.1
Other Cereals	32.0	31.2	26.20	34-35	32.8	32.9
Pulses	13.0	12.0	13.36	15-16	14.6	14.5
Food-grains	150.0	145.5	150.44	178-183	175.2	173.2
Major Oil-seeds	13.0	12.9	10.83	18.0	18.0	16.0
Sugar-cane	180.0	170.3	170.65	217	206.0	206.0

4.31 The targetted levels of agricultural production are a little lower than the original projections, partly because of the downward revision in some base year figures now that figures on actual level realised are available. An analysis of supply possibilities indicates that the potential for an output of foodgrains of about 175 million tonnes by 1989-90 would be there provided irrigation development is stepped up

to be in line with the Plan targets of 71.4 million hectares. The revised profile of foodgrains production in the Plan is as follows:

Table 4.5 : Selected Variables/Parameters of Foodgrain Production at All India Level (Agricultural Sub-model)

	1984-85		1989-90		
	Plan	Revised Base	Plan	Revised	
				I	II
1	2	3	4	5	6
N.S.A. (M.H.)	143	143	143	143	143
G.I.A. (M.H.)	60.5	60.6	71.4	71.4	70.3
G.C.A. (M.H.)					
(a) All crops	180.0	180.0	190.0	187.6	186.9
(b) Foodgrains	130.3	126.7	137.8	132.8	132.4
C.I.	1.26	1.26	1.33	1.31	1.31
GIA under food-grains (M.H.)	46.0	45.2	53.5	52.1	51.4
Percentage Area Irrigated					
(a) All crops	33.6	33.7	37.6	38.1	37.6
(b) Foodgrains	35.3	35.7	38.8	39.2	38.8
Fertilizer Consumption (MT)	8.4	8.21	13.75	12.3	12.0
RICE					
Area (MH)	41.2	41.2	44.0	43.2	43.0
Production(MT)	60.0	58.3	74.0	72.7	71.7
Yield (Kg./ha.)	1456	1417	1682	1682	1667
WHEAT					
(a) Area (MH)	24.6	23.6	28.0	27.3	27.0
(b) Production (MT)	45.0	44.1	56.5	55.1	54.1
(c) Yield (Kgs./ha.)	1829	1870	2018	2018	2004
OTHER CEREALS					
(a) Area (MH)	41.0	39.2	40.1	38.1	38.3
(b) Production * (MT)	32.0	31.2	34.5	32.8	32.9
(c) Yield (kg/ha)	780	795	860	860	860

1	2	3	4	5	6
PULSES					
(a) Area (MH)	23.5	22.7	25.7	24.2	24.1
(b) Production+ (MT)	13.0	12.0	15.5	14.6	14.5
(c) Yield (kg/ha)	553	526	603	603	603
FOODGRAINS					
(a) Area (MH)	130.3	126.7	137.8	132.8	132.4
(b) Production	150.0	145.5	180.5	175.2	173.2
(c) Yield (kg/ha)	1151	1149	1310	1314	1308

* : Productivity assumed is 876 kg/ha for alternative I and 862 kg/ha for alternative II
\+ : Productivity assumed is 603 kg/ha

The production targets contained above can be achieved if:

i) the input supply and management strategies discussed above are achieved in the remaining years of the Seventh Plan.

ii) the achievement of the Special Rice Production Programme are continued and in particular attention is also paid to aspects neglected uptil now e.g. drainage improvements and seed supplies in difficult areas;

iii) in the wheat economy, attention is now paid to significantly improved yields through genetic breakthroughs and extension effectiveness;

iv) the Technology Mission in oilseeds is given priority;

v) optimal cropping patterns are derived and extension support is provided in rainfed and dryland areas and in the different agro-climatic regions and a major effort made in watershed development schemes;

vi) marketing infrastructure and price support operations are extended to dryland crops particularly pulses and oilseeds; and

vii) in the input supply programmes, particular attention is paid to improved water management.

4.32 However given the resources crunch an alternative projection has also been made of an agricultural scenario, based on only a marginally improved performance. (Scenario II). The economic growth assumed for the economy cannot be sustained with this projection.

Programmes for Widening Growth

4.33 The Seventh Plan recognised the need to widen the spread of agricultural growth. Towards this end a special emphasis was placed on the following programmes which were started towards the end of the Sixth Plan or the beginning of the Seventh Plan:

i) Special Rice Production Programme in the Eastern Region (SRPP);

ii) National Oilseeds Development Project (NODP);

iii) National Watershed Development Programme for Rainfed Agriculture (NWDP); and

iv) Scheme of Assistance to Small and Marginal Farmers for increasing Agricultural Production (ASMF).

Rice Production In The Eastern Region :

4.34 In the eastern region, comprising the States of Assam, Bihar, Orissa and West Bengal and Eastern Uttar Pradesh and Eastern Madhya Pradesh, there is a large gap between the potential and actual yields of rice. For exploiting this potential and maximising yields, a Special Rice Production Programme (SRPP) has been launched from the first year of the Seventh Plan covering 430 blocks in the concerned states.

4.35 The intensive efforts made under SRPP yielded good result in 1985-86. In five out of the six Eastern States an all time record production and productivity of rice was achieved. During 1985-86, while production and productivity increased in all the traditionally growing states, a special mention must be made of the States of Madhya Pradesh and Orissa and U.P where the productivity reached the levels of 1078 kg, 1189 kg and 1487 kg per hectare from the levels of 759 kg, 969 kg

and 1300 kg. per hectare respectively in 1984-85. In other words, Madhya Pradesh has crossed the rice productivity barrier of one tonne per hectare for the first time. Out of the 5.5 million tonnes of additional rice production achieved in the country during 1985-86, 4.8 million tonnes have been contributed by the states covered by the SRPP. The share of the Eastern States in rice production in the country also increased from 53 per cent to 56 per cent, and 88 per cent of the incremental production is in the Eastern region as shown in Table 4.6.

Table 4.6 : Production of Rice in the Eastern States

(Lakh Tonnes)

	1983-84	1984-85	1985-86	1986-87
1.	2.	3.	4.	5.
Total Production				
All India	601.0	583.4	638.3	604.2
Eastern States	321.2	310.0	358.2	332.2
(% to All-India)	53.4	53.1	56.1	55.0
Incremental Production				
Eastern States		-11.2	48.2	-26.0
All-India		-17.6	54.9	-34.1
(% to All-India)		63.6	87.8	76.2

Oil Seeds Development :

4.36 The NODP was initiated in 1984-85 by reorienting and integrating the then existing Centrally Sponsored Schemes and the two special projects - one on groundnut and the other on soyabean. In 1985-86, the Project covered an area of 170 lakh hectares as against the target of 122 lakh hectares. On the basis of the experience gained in implementing the project, the NODP was re-oriented from 1986-87 giving the main thrust on intensifying efforts at the district level. The project comprised crop-wise sub-projects to cover a targetted area of 146 lakh hectares in 180 selected districts of 17 states.

4.37 In order to provide adequate support to the NODP, a Technology Mission on Oilseeds (TMO) has been set up. The main objective of the Mission is to make the country self reliant as early as possible in edible and non-edible oils and to reduce imports, through an integrated approach involving different developmental, Scientific, input, banking and marketing agencies. The crops that would receive priority are: groundnut, rape-seed mustard, soyabean, sunflower, safflower, linseed, sesamum and niger in the given order.

4.38 The NODP target has been examined in relation to past growth pattern, the macro relationship of incremental production to efforts in plan schemes in the past and examination of the performance of each oilseed at the state level. A target of 16.0 to 16.2 million tonnes is derived for 1989-90 using these methods.

4.39 Under the Technology Mission on Oilseeds, in order to give further emphasis to oilseeds production a Sub-Mission, namely Oilseeds Production Thrust Project (OPTP) has been launched during the kharif 1987. The scheme is to cover 371 districts selected on the basis of coverage of area, yield and availability of infrastructure. This Thrust Project has 6 components, namely, seeds, demonstrations, plant protection, agricultural implements (seed-cum-fertilizers drills), gypsum and market support. The enforcement of remunerative price at the time of the peak harvesting period is extremely important, since low farm harvest prices can fritter away the impact of technical change and input subsidies. Minimum support prices have to be implemented and this requires special efforts as oilseeds are grown in many cases and dryland regions with poor marketing and communication infrastructure. In fact there is a case for support of cooperative activities related to purchase and processing of oilseeds at prices marginally higher than support prices. Imports of oilseeds and support from financial institutions will need to be regulated to sustain these strategies. The main purpose of launching this Project is to bridge the likely gap between the actual achievement and the target (18 million tonnes) fixed for the Seventh Plan. Additional outlay, therefore, of Rs.125.16 crores has been approved for this Project in addition to Rs.170 crores already cleared for the National Oilseeds Development Project (NODP). According to the estimates prepared by the Technology Mission on Oilseeds, the average yield of oilseeds in 1989-90 can be raised to 820 kg/hec as compared to 750 kg/hec projected by the Working Group. The additional production expected using yardsticks for additional inputs is estimated by the Mission as 2.6 million tonnes.

Rainfed Agriculture :

4.40 About 70 per cent of the total cultivated area in the country is in dry land/rainfed regions and a large proportion of the output of important crops, such as coarse cereals, pulses, oilseeds and cotton comes from these areas. These areas however, contribute only about 42 per cent of the total foodgrains production in the country. Further, production in these areas is low and fluctuates widely depending on the behaviour of the monsoon. There is also widespread unemployment and under-employment in the dry land areas mainly because of mono-cropping and frequent weather aberrations. Because of the risky nature of cultivation and low income, farmers in these areas are unable to save and invest in and take advantage of the modern technologies. Hence, in order to achieve stability and growth of agricultural production and also the national objectives of reduction of poverty, unemployment and regional disparities, the Seventh Plan recognised the specific need for undertaking a special programme for Development of Rainfed/Dryland agriculture. Accordingly, the National Watershed Development Programme for Rainfed Agriculture has been initiated from 1986-87.

4.41 The Centrally Sponsored Scheme which is being implemented in 99 selected districts of 16 states has the following main components: land and moisture management works for introduction of optimal cropping systems, dryland horticulture, fodder production, farm forestry, contingency seed stocking and supply of seedlings and grass seeds/slips training, conduct of adaptive trials, supply of improved tools and equipments and preparation of scientific field manuals. By the end of the Plan it is intended that over 9 lakh hectares be brought within the purview of this scheme.

4.42 Relative to the extent of rainfed/dryland areas this programme is small. But similar objectives are promoted by other programmes e.g. for drought prone areas, the desert development and for soil and water conservation. The impact of the new national programme will be more in terms of testing and proving new approaches and demonstrating benefits than in terms of area covered.

4.43 A number of experiments are presently under way. There are Centrally Sponsored Schemes; in a few, states externally aided watershed projects are in operation including World Bank, EEC financed and bilaterally financed projects. ICAR is also emphasising agricultural development in selected watersheds. Finally some very good work is being done

by NGOs like the Society for the Promotion of Wasteland Development and other groups. An interesting feature of the work of some of the voluntary groups is that the cost estimates of features like contour bunding, checkdams, land levelling and digging of percolation tanks and soil conservation work is low. Such voluntary agencies have interesting proposals of integrating rural development schemes like NREP, RLEGP and IRDP with watershed development schemes and also attempt to mobilise local resources more effectively.

4.44 Past experience has shown that the Land Management and Crop Production systems have not always gone together with the result that the impact was less than optimum. An attempt has now been made to combine these two activities into one so as to bring a holistic development in conserving the resources (land and rain water) and improving the productivity. A Rainfed Farming Cell has been created in the Department of Agriculture & Cooperation, drawing upon the expertise from both the Crops and Soil Conservation Divisions. The Cell would be able to catalyse the activities on area development programmes under rainfed conditions on watershed basis. It takes into consideration both arable and non-arable lands and strives to evolve a combined strategy for conserving the resource base and improving the crop productivity.

4.45 The immediate attention is on the area that has been already treated with different land management systems. As a State Sector Programme under the TPP-86, about 10,000 micro-watersheds of varying sizes are reported to have been chosen as a strategy for improving rainfed agriculture. The integration of the land management and crop production systems on these watersheds would have to be carefully monitored. Under the Centrally Sponsored Scheme of National Watershed Development Programme for Rainfed Agriculture (NWDP), 99 districts in 16 States are proposed to be covered over a period of 4 years from July, 1986, benefiting 9.28 lakh ha. at a cost of Rs.239 crores.

4.46 The problem of improving the productivity in rainfed farming is quite complex. The programmes taken up so far cover the fringe of the problem and there is a long way to go. The need for putting the land to socially optimal use has to be realised by the community at large. The enthusiasm and participation by the people in the implementation of these programmes needs to be enlisted on a large scale. Only then the programmes meant for the over-all development of the rainfed lands which are essentially marginal in nature and cultivated mostly by small and marginal farmers can be sustained.

Assistance To Small & Marginal Farmers :

4.47 A widening of the processes of agriculture growth requires not just an emphasis on programmes for low productivity regions and crops but also on measures to help the small and marginal farmers to increase their agricultural production and thereby improve their economic condition. A Centrally Sponsored Scheme for this purpose was initiated during 1983-84 and is being continued in Seventh Plan. It is being implemented in all the development blocks of the country.

4.48 As regard physical achievements, under the minor irrigation component of this scheme about 4.74 lakh wells/tubewells have been constructed and 4.76 lakh pumpsets/diesel engines/electric motors have been installed by these small and marginal farmers upto March 1987. It is estimated that an additional irrigation potential of about 9 lakh hectares has been created in the lands of small and marginal farmers. Under the component of distribution of seeds around 2 million minikits of oilseeds, pulses and coarse grains are being distributed per year. As regards the land development component of the scheme, an area of about 1.65 lakh hectares has been covered since the inception of the scheme till March 1987.

Agricultural Planning Based on Agro-Climatic Factors

4.49 Planning Commission has undertaken an exercise for organising agricultural planning based on agro-climatic zones taking into consideration soil type, climate and water resources in these zones. On the basis of this exercise 15 broad agro-climatic zones have been delineated. The proposed agro-climatic zones are :

1) Western Himalayan Region
2) Eastern Himalayan Region
3) Lower Gangetic Plain Region
4) Middle Gangetic Plain Region
5) Upper Gangetic Plain Region
6) Trans-Gangetic Plain Region
7) Eastern Plateau and Hills Region
8) Central Plateau and Hills Region
9) Western Plateau and Hills Region
10) Southern Plateau and Hills Region
11) East Coast Plains & Hills Region
12) West Coast Plain & Ghats Region
13) Gujarat Plain and Hills Region
14) Western Dry Region
15) Island Region

Cropping patterns suitable for each region will be worked out, as also non-crop based agricultural

activities like forests, animal husbandry and fisheries. Agro-processing activities will be emphasized. In the Seventh Plan an attempt will be made to develop a package of more appropriate projects for each region, as also involve the financial institutions more directly in the agricultural planning process. The studies/surveys proposed to be undertaken in these zones would be the basis for the formulation of the Eigth Plan.

Dairying

4.50 The Operation Flood Project was implemented in three phases starting from 1970. Operation Flood project phase II was designed to be built up on the foundations laid by O.F. Project phase I and phase III of the project commencing from April 1985 envisaged coverage of more States & Union Territories making a total of 26 States/Union Territories. The project provides rural milk producers' cooperatives a direct access to the urban market throughout the year so that the largest possible share of the consumers rupee spent on milk and milk products could be transferred back to the rural milk producers.

4.51 Although the Operation Flood Project-III has made an impact on milk production and its marketing, it is noted that the progress under this project has not been uniform in all the states. In the order of performance, the States who have done well in respect of organisation of dairy Cooperative Societies, enrolement of farmers as members, average daily milk procurement and its marketing are Gujarat, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Punjab, Rajsthan and UP, but in many other states, particularly in the Eastern Region, which have great dairying potential, progress is slow (Annexure 4.6).

4.52 The key factors for successful implementation of the Operation Flood Project are proper marketing support and remunerative price to the milk producers. It has been decided to develop operational policies for introduction of efficiency pricing in milk processing. Subsidies if any must be costed and directed at target groups. The capital structure of State level cooperative federations needs to be examined and rationalized.

4.53 Schemes such as NREP and RLEGP, which not only help in improving the rural economy but also create employment opportunities, should be coordinated with the Operation Flood project to achieve its overall objectives. It has been decided to give IRDP loans for cattle mainly in Operation Flood routes. Veterinary service support will also be interspread in these

areas. Fodder growth schemes will be encouraged in the NREP and RLEGP as also training of women workers under DWCRA.

Fisheries

4.54 India has a coast line of 7517 kilometres. Although the E.E.Z. spreads over about 2.01 million square kilometres of marine resources area with substantial portion around the Islands, the area of exploitation is presently limited to 1/10th of this. The continental shelf is estimated to have an area of 0.44 million square kilometres with an estimated potential of 4.5 million tonnes. The present harvesting mostly from depths upto 40 fathoms stands at 17.50 lakh tonnes.

4.55 In the 5th & 6th Plan periods, the annual growth rate of fish production both from marine and inland sources was 0.7 - 1 per cent and 3.3 per cent respectively. However, in the beginning of the 7th Plan period, it is at the level of 3-4 per cent.

4.56 West Bengal has registered a phenominal increase in the production of fish seed. The Seventh Plan target of producing 7000 million fish seed is likely to be achieved as it would help a large number of neighbouring states who are depending on West Bengal for supply of fish seed. In respect of Inland and Marine fish production also the State has shown considerable increase. The next in order is Orissa followed by Gujarat, Tamil Nadu and Maharashtra. So far as inland States are concerned Bihar, Assam, Madhya Pradesh and Uttar Pradesh have done well in terms of total inland fish production.

4.57 Increase of fish seed production in the inland states, inland brackish water aquaculture and introduction of deep sea fishing vessels in the marine States has not been up to the desired level. Shortfalls in this respect need to be remedied keeping particularly in view the rising world demand for fish products. The target for production of fish seed by the end of the Seventh Plan is 12,000 million out of which the production achieved by 1986-87 is about 7800 million. In respect of the deep sea fishing vessels, the number of vessels introduced so far is 120, and 87 are under construction, against the Seventh Plan target of 500 Nos.

4.58 So far as export of marine products is concerned the Seventh Plan target envisages exporting 1.47 lakh tonnes of marine products valued at Rs.700 crores. Against this, it has been possible to reach Rs.460.67

crores in 1986-87 exporting 85,843 tonnes. Quantum export of fish products is increasing although at a lower rate than world markets which are rising by about 7 per cent in recent years.

Irrigation Development

4.59 The Seventh Plan envisaged the creation of additional irrigation potential and utilisation of 12.90 and 10.9 m.ha. respectively. The table below shows the achievements in the first two years of the Seventh Plan and the targets envisaged for 1987-88.

Table 4.7

(million hectares)

	Addl. Targets for VII Plan		Additional Benefits 1985-86 (Actual)		Additional Benefits 1986-87 (anticipated)		1987-88 Targets	
	Pot.	Utl.	Pot.	Utl.	Pot.	Utl.	Pot.	Utl.
1. 2.	3.	4.	5.	6.	7.	8.	9.	10.
a) Major & Medium Irrigation	4.30	3.90	0.52	0.45	0.65	0.65	0.70	0.64
b) Minor Irrigation	8.60	7.00	1.57	1.10	1.67	1.39	1.68	1.41
TOTAL	12.90	10.90	2.09	1.55	2.32	2.04	2.38	2.05

4.60 The performance in major and medium irrigation, has been poor during the first two years of the Seventh Plan. As compared to the highest annual achievement of about 0.67 million hectares of increase in irrigation potential created from major and medium irrigation scheme in the last decades, the first two years of the Seventh Plan are only 0.52 and 0.65 million hectares. The position regarding minor irrigation is better at 1.10 and 1.39 million hectares in the first two years of the Seventh Plan, as compared to the highest achievement of 1.4 million hectares in the previous decade.

4.61 The emphasis in irrigation has to be both on major and medium projects and on minor irrigation. In the major irrigation projects which are now already off the drawing board, conveyance efficiencies, optimal water management strategies, ground water acquifier modelling and drainage planning for avoiding

waterlogging, are standard features. Also in projects like the Sardar Sarovar Project, the main dam, the main canal and first phase distribution systems are being tendered together and such phases development for optimal utilisation of capital expenditures should become a standard feature of new projects (e.g., IGNP Second Stage). At the same time much greater emphasis has to be placed on modernisation of old projects and completion of distribution systems and on farm development, realising fully well that these programmes are also resource intensive. In the early years of the Seventh Plan efforts in this direcion is short of targets.

4.62 The total extent of major and medium irrigation at the start of the Seventh Plan was 30 million hectares. Relative to this, and to earlier achievements the Plan target for major and medium irrigation is modest and every effort must be made to achieve or exceed it by sufficient funding, strict enforcement of earmarking and close monitoring. A special effort is required for coordinating the implementation of inter-State Projects. A Centrally Sponsored Scheme will be implemented for assistance to formulation of modernization projects.

4.63 The lag in the utilisation of major and medium irrigation potential needs to be narrowed. The principal instrument for this purpose is the Command Area Development Programme. The progress of physical achievement as compared to the Seventh Plan target for Command Area Development is indicated in the Table 4.8.

Table 4.8

Command Area Development programme	Target for 7th Plan	Benefits during		Total 85-87	Benefits during 85-87 as % of 7th Plan Target
		85-86	86-87		
1.	2.	3.	4.	5.	6.
i) Field Channels	6.81	0.71	1.25	1.96	29%
ii) Land Levelling	1.82	0.12	0.17	0.29	16%
iii) Warabandi	8.04	0.74	1.30	2.04	25%

4.64 The CAD Programme which now covers 17.3 million hectares envisages on-farm development works comprising construction of field channel, land levelling, landshaping and introduction of warabandi for equitable distribution of water. This has helped in improving the utilisation but the progress needs to be expedited. Increasing utilisation of the potential created by improved water management techniques, including warabandi etc., has to be the main thrust in the coming years of the Plan. A conjuctive programme which provides for taking up minor irrigation works in the commands of major and medium irrigation projects would contribute a great deal in this direction. The minor irrigation projects would be conveniently developed within a period of two to three years and by the time the canal water from the major projects reaches these commands, it will have practically full utilisation because of the previously developed commands under the distribution system.

4.65 A considerable amount of minor irrigation development is now done through institutional financing. According to NABARD sources, if the investments by banks, Special project Agriculture disbursement by REC, IRDP, disbursements for minor irrigation and LDB's are taken into account, Rs.647 crores in 1985-86 and Rs.730 crores in 1986/87 may have been disbursed. There is need to monitor investments and achievements in this sector since funds are disbursed through multiple agencies; land development banks, IRDP, NABARD and State Governments. However, REC monitors the impact of its disbursements under the SPA. As against the target of 2.40 million pumpsets to be energised in the Seventh Plan, only 1.11 million pumpsets have been energised by the end of September, 1987. REC sources indicate that the demand for energisation of pumpsets is very heavy and funds are a constraint. The latest assessments of the ground water potential by the Central Ground Water Board show that safe limits have been crossed only in very few regions. Thus, in view of the experience and the need to increase utilisation of ground water in vast areas where utilisable potential exists, there is need to increase the target for minor irrigation and strive for their implementation.

Agricultural Research

4.66 The triple function of agricultural research, education and extension is implemented by the Indian Council of Agricultural Research (ICAR) through 41 Central Research Institutes, a National Academy on Agricultural Research Management, 4 National Bureaus and 19 Research Centres, 9 Project Directorates and 69

all-India Coordinated Research Projects under the Council and 26 Agricultural Universities located in the State sector. A national grid of cooperative research has thus been established in which the role of Central institutes and State Agricultural Universities, as equal partners, has been well-defined. The system aims at achieving maximum complementarity of resource use. With a view to strengthening mission-oriented research, National Research Centres with eminent scientists have been established, and a National Agricultural Research Project has been started to enhance capabilities of agricultural universities to do location-specific research in each of the agro climatic zones.

4.67 Agricultural research has made a big stride during the last 20 years and has assisted in achieving "green revolution" in the North Western part of the country. In other words, technology for irrigated areas (for wheat/rice in particular) has been perfected and is being utilised in most of the States where these crops are grown. This technology has been accepted by the farmers in the region and the production in these States in respect of these two crops shows an increasing trend. In other words, the country can depend on these regions/States for increased production in years to come.

4.68 However, the same cannot be said in respect of dryland agriculture. So far no proven technology is available to insulate Indian agriculture against the vagaries of weather. It is this area of research which needs to be augmented so that acceptable technology for dryland farmers becomes available and wide fluctuations in the production of foodgrains from year to year are minimised. Besides, to ensure that the new technology is accepted by the concerned farmers in the different regions, ICAR may perfect the technology with respect to watershed development and ensure its transfer to vast areas of dryland agriculture.

4.69 Another area which needs immediate attention is the research effort in oilseed crops. With an objective of achieving self-sufficiency in oilseeds production in the near future, the Government of India has launched National Oilseeds Development Project (NODP) and also Technology Mission on Oilseeds (TMO) and Oilseeds Production Thrust Project (OPTP). In order to achieve expected results in these programmes, relevant research input is of vital importance. The ICAR has one research centre each for all the major oilseed crops and efforts of all these institutes and agricultural universities should be pooled to achieve varietal breakthrough in some of the major oilseeds. Similarly, a breakthrough in production technology is very much needed in the area of pulse crop.

4.70 A committee has been set up under the chairmanship of Shri G.V.K. Rao, former Member, Planning Commission, to look into the various aspects of agricultural research and education carried out under the overall direction and supervision of the ICAR.

Prospects and Priorities

4.71 The production targets for 1989-90 may look formidable in the context of the levels that may be attained in the current year of drought. However, if they are compared with the peak levels of production already achieved in the past they appear within the realm of realisability. The fulfilments of these production targets would, however, require the following important mid-course corrections:

i) Irrigation development must be expedited by providing additional funds and by improvements in project planning and implementation. The aim must be to ensure additional utilisation of atleast 2 million hectares a year of major, medium and minor irrigation potential.

ii) Fertiliser use has to be promoted more vigorously, particularly in rainfed and dryland areas where, contrary to popular misconception, the returns to fetilizer use are attractive.

iii) There must be a greater sense of urgency in research on new varieties and the distribution of high yield seeds to farmers.

iv) The special programmes for rice production in the eastern region, oilseeds development and dryland agriculture on a scale and with vigour that characterised the green revolution in wheat.

4.72 In the longer term, the basic approach to agricultural planning needs to be reoriented in two basic directions:

i) Agricultural strategies must be designed to work with local agro-climatic features, particularly soil type, climate including temperature and rainfall and its variation and water resources.

ii) Agricultural planning must go beyond crop production to include related activities like animal husbandry, fishery, forestry,and agro-industry. The objectives of such planning must

be defined not merely in terms of production growth but also in terms of the level and pattern of income generation and employment. The first step towards such an approach has been taken this year with the decision to undertake such planning exercise for major agro-climatic regions in the country. The real task is to ensure that the insights obtained from this planning exercise are reflected in programmes for irrigation, infrastructure development, agricultural research and extension, input supply, etc.

Annexure 4.1

Progress of Crop Production - All India

(Million tonnes/million bales - Cotton 170 Kgs Jute & Mesta 180 Kgs.)

Crop	Sixth Plan			Seventh Plan		1985-86		1986-87	
	1984-85 Target	1984-85 Achievement	Highest ach. during sixth plan	Assumed base level 1984-85	1989-90 Target	Target	Achieve-ment	Target	Achievement
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Foodgrains									
i) Rice	63.00	58.34	60.10	60.00	73-75	63.50	63.83	65.00	60.42
ii) Wheat	44.00	44.07	45.48	45.00	56-57	49.20	47.05	49.00	45.58
iii) Coarse grains	32.10	31.17	33.90	32.00	34-35	33.00	26.20	32.00	26.33
iv) Pulses	14.50	11.96	12.89	13.00	15-16	13.50	13.36	14.00	11.74
TOTAL : FOODGRAINS	153.60	145.54	152.37	150.00	178-183	159.20	150.44	160.00	144.07
2. Oil Seeds	13.00	12.95	12.95	13.00	18.00	13.60	10.83	14.80	11.45
3. Sugarcane	215.00	170.32	189.51	180.00	217.00	191.00	170.65	185-190	182.48
4. Cotton	9.20	8.51	8.51	7.50	9.50	8.50 -8.60	8.73	8.60	7.01
5. Jute & Mesta	9.08	7.79	8.37	7.50	9.50	8.65	12.65	8.50	8.63

Annexure 4.2

Progress of Selected Agricultural Development Programmes

Programme	Unit	Sixth Plan		Seventh Plan		1985-86		1986-87		1987-88
		1984-85 Target	1984-85 Achievement	Assumed Base Level (1984-85)	1989-90 Target	Target	Achievement	Target	Anticipated Achievement	Target
1. Distribution of Certified/Quality Seeds	Mill.qtls.	5.40	4.85	7.04	11.74*	8.00	5.50	6.57	5.58	7.30
2. Fertilizer Consumption										
i) Nitrogenous(N)	M. tonnes	6.00	5.49	5.64	9.10-9.30	6.35	5.82	6.80	5.93	6.80
ii) Phosphatic(P)	"	2.34	1.88	1.87	3.00-3.20	2.20	2.07	2.40	2.14	2.40
iii) Potassic(K)	"	1.31	0.84	0.86	1.40-1.50	1.00	0.85	1.10	0.93	1.10
TOTAL - (N+P+K)	"	9.65	8.21	8.37	13.50-14.00	9.55	8.74	10.30	9.00	10.30
3. Pesticies Consumption (Tech. Grade Material)	'000 tonnes	80.00	56.00	50.00	75.00	55.70	66.6	70.00	72.00	75.00
4. High Yielding Varieties										
i) Paddy	M. hectares	25.00	22.78	25.00	32.00	26.50	23.37	25.80	23.48	26.53
ii) Wheat	"	19.00	19.09	19.00	22.00	19.50	19.18	20.67	19.02	21.13
iii) Jowar	"	5.00	5.07	5.00	6.50	5.30	6.08	5.85	4.95	6.45
iv) Bajra	"	5.00	5.17	5.00	6.50	5.30	4.99	5.94	4.67	5.91
v) Maize	"	2.00	2.03	2.00	3.00	2.20	1.80	2.34	1.92	2.40
TOTAL - HIGH YIELDING VARIETIES AREA	"	56.00	54.14	56.00	70.00	58.80	55.42	60.61	54.04	62.42
5. Gross Cropped Area	"	181.00	180.36**	180.00	190.00					
6. Area covered under soil conservation (cummulative level)	"	30.50	29.38	29.38	36.30	30.86	30.48	31.20	31.22	32.05
7. Irrigation(Additional Area)										
i) Potential	"	13.74	11.06	67.00@	12.88	2.33	2.09	2.42	2.32	2.38
ii) Utilisation	"	13.60	8.37	60.40@	10.91	1.92	1.55	1.84	2.02	2.05

* Includes one million quintals for export and bufferstock.

** Relates to 1983-84.

@ Cumulative level.

Annexure 4.3

Performance Indicators of Foodgrains, Irrigation and Cropping Intensity (%)

Sl. No.	States	Growth Rates of Total Foodgrains during T.E. 1979-80 to T.E. 1985-86			Percentage of Gross Irrigated Area to Gross Cropped Area		Cropping Intensity (Percentage)	
		Area	Production	Yield	T.E. 1979-80	T.E. 1983-84	T.E. 1979-80	T.E. 1983-84
		(In percent p.a.)						
1.	Andhra Pradesh	-1.67	1.53	3.25	35.1	36.4	1.16	1.16
2.	Assam	1.53	3.64	2.08	17.4	16.2	1.24	1.31
3.	Bihar	-1.07	2.72	3.83	32.6	34.4	1.33	1.33
4.	Gujarat	0.76	1.81	1.04	19.6	24.0	1.10	1.12
5.	Haryana	-0.04	4.58	4.62	56.2	63.1	1.46	1.55
6.	Himachal Pradesh	0.29	0.28	-0.01	16.6	16.9	1.66	1.66
7.	Jammu & Kashmir	0.57	0.99	0.41	40.8	40.6	1.36	1.38
8.	Karnataka	-0.31	-1.90	-1.59	15.3	16.4	1.08	1.08
9.	Kerala	-2.10	-0.94	1.18	13.1	13.5	1.31	1.32
10.	Madhya Pradesh	0.44	5.86	5.40	10.7	12.2	1.14	1.17
11.	Maharashtra	0.07	-0.75	-0.82	11.9	13.1	1.09	1.12
12.	Orissa	0.38	4.13	3.74	19.2	22.6	1.35	1.47
13.	Punjab	2.18	5.95	3.69	83.9	88.3	1.56	1.65
14.	Rajasthan	0.67	4.35	3.66	21.1	21.2	1.13	1.18
15.	Tamil Nadu	-1.75	-1.80	-0.05	49.8	47.3	1.23	1.18
16.	Uttar Pradesh	0.88	6.85	5.92	44.4	48.1	1.37	1.44
17.	West Bengal	-0.48	2.07	2.56	20.4	24.7	1.36	1.35
TOTAL : ALL INDIA		0.14	3.35	3.21	27.8	29.7	1.22	1.25

Annexure 4.4

Outlay to be made available for irrigation work to be taken up under drought relief programme

(Rs. crores)

S.No	States	Outlay
1.	Andhra Pradesh	22.00
2.	Gujarat	30.00
3.	Haryana	2.00
4.	Himachal Pradesh	1.10
5.	Jammu & Kashmir	6.40
6.	Karnataka	25.00
7.	Kerala	5.50
8.	Madhya Pradesh	27.00
9.	Maharashtra	26.00
10.	Nagaland	0.50
11.	Orissa	22.00
12.	Rajasthan	37.50
13.	Tamil Nadu	3.00
14.	Uttar Pradesh	28.00
	TOTAL :	236.00

Annexure 4.5

Working Groups Estimate of Oilseeds Production 1989-90

Crop	Area (Lakh hectares)		Yield (Kgs./hectare)		Anticipated Production (Lakh tonnes)
	1984-85 (Actual)	1989-90 (Projected)	1984-85 (Actual)	1989-90 (Projected)	1989-90
1	2	3	4	5	6
Groundnut	71.68	82.48	898	1050	86.6
Rapeseed and Mustard	39.87	48.00	711	700	33.6
Soyabean	12.43	10.00	768	900	9.0
Sesamum	21.17	27.67	246	300	8.3
Castor Seed	6.71	7.54	700	650	4.9
Sunflower	8.35	7.00	527	660	4.6
Safflower	9.18	9.60	561	625	6.0
Linseed	13.95	18.38	279	370	6.8
Nigerseed	5.90	6.00	251	350	2.1
TOTAL :	189.24	216.67	684	750	161.9

Annexure 4.6

Operation Flood

State-wise Physical Progress Under Key Component (March, 1987)

State/UT	Anand pattern cooperatives organised	Annual compound growth rate Milk Production 1980-81 to 1986-87	% of dairy cooperative societies undertaking artificial insemination	% of dairy cooperative societies undertaking Animal Health
1	2	3	4	5
Gujarat	8745	5.75	22.4	72.5
Tamil Nadu	5549	7.85	31.2	60.8
Uttar Pradesh	5147	3.80	15.2	70.9
Punjab	4551	3.85	16.2	69.5
Rajasthan	4212	2.45	13.5	71.8
Karnataka	3954	4.55	34.0	65.0
Andhra Pradesh	3635	5.10	5.6	19.3
Maharashtra	3346	5.65	13.8	50.8
Haryana	3028	3.40	11.26	7.9
Madhya Pradesh	2550	4.25	20.0	55.5
Bihar	1218	3.75	14.9	-
West Bengal	1144	8.95	35.1	53.8
Kerala	689	5.70	1.6	63.3
Orissa	391	2.65	18.2	2.6
Himachal Pradesh	136	4.85	-	-
Assam	125	3.50	6.4	-
Sikkim	114	9.55	27.2	63.2
Jammu & Kashmir	105	7.25	-	-
TOTAL : (including other States/UTs)	48898	4.63	19.2	57.3

Chapter 5

INDUSTRY AND MINERALS

5.1 The Seventh Plan for the manufacturing sector laid considerable emphasis on accelerating the pace of growth by easing infrastructural constraints, liberalisation of industrial licensing policy and other regulations, provision of incentives for rapid development of key areas like electronics and a new fiscal policy. The policy changes and public investments required for realising the industrial targets in the plan were initiated in the first two years of the plan. Their full impact will only be seen over the medium term. However a mid-term assesment of the progress in critical areas is given below

Industrial Performance

Growth :

5.2 The Seventh Plan had projected an annual growth rate of 8 per cent for the gross value of output in the manufacturing sector. The current indications are that this rate was exceeded during the first two years of the Plan. According to the Index of Industrial Production, manufacturing output grow at 9.7 and 9.0 per cent in 1985-86, and 1986-87 respectively. Since 1980, manufacturing production has increased by nearly 50 per cent and in the past three years by 30 per cent.

5.3 The expansion of industry has been quite broad based. (See Annexure 5.1). At the 2 digit level, 5 of the industry groups, comprising about two-fifths of all industry, had rates of growth exceeding 8 per cent in both the years. These high growth sectors are paper and paper products, chemicals, basic metals, metal products, and electrical machinery and appliances. These industry groups include some consumer goods and capital goods and a large proportion of intermediate goods. The low growth sectors (food products, beverages and tobacco, jute goods, rubber and plastics, transport equipment) with growth less than 6 per cent in both years are largely consumer good sectors (accounting for about 25 per cent of industry). Of the remaining sectors, cotton textiles, textile products leather goods and non-metallic, minerals performed very well in 1985-86 but declined comparatively in 1986-87. It may be noted that the major export sectors of garments and gems and jewellery are not covered the industrial production index.

5.4 Thus the expansion of the industrial base in the country over the last few years has been of a wide ranging nature. The one sector that does stand out with an atypically high growth rate is that of electrical machinery and appliances. A growth of about 30 per cent was recorded in both the years : a large component of this growth is accounted for by the electronics sector which grew very rapidly.

5.5 A variety of factors have contributed to the acceleration in industrial growth. The easing of some infrastructural constraints and the stimulus provided by a large investment programme reinforced the impact of policy measures which loosened some constraints on more effective utilisation of capacity and improved the attractiveness of investments in critical areas.

5.6 In general it may be noted that all the high growth sectors were also targetted to grow fast in the Seventh Plan. Hence, although, the actual experience may differ in the case of individual sectors, industrial growth in the first two years of the Plan has been broadly consistent with Seventh Plan priorities.

The Pace of Investment

5.7 The Public Sector outlay for large and medium industries in the Central Sector was envisaged to be Rs.17,268 crores at 1984-85 prices. The outlays/expenditures in the first three years have amounted to Rs.13693 crores at current prices, which, after allowing for price changes, comes to about two-thirds of the outlay for the five year period.

5.8 No reliable estimates of private corporate investment exist.To fill the gap,the Planning Commission in collaboration with the IDBI has launched a study to evolve a suitable methodology to assess, with minimum time lag, private industrial investment. In the meanwhile,some preliminary estimates have been made available by the IDBI as part of this study. According to this,private corporate investment in the non-financial sector in 1985-86 and 1986-87 totalled Rs 12,500 crores at 1984-85 prices. The evidence regarding the growth in private corporate investments is quite clear. If the trienniums centred on 1981-82 and 1985-86 are compared, on the basis of the preliminary estimates referred to above, corporate investment in fixed assets is higher by 26 per cent at 1984-85 prices.

5.9 The buoyancy of industrial investment is

corroborated by some other evidence. Industrial approvals (comprising grants of letters of intent and registrations for setting up of fresh capacity) by the Secretariat of Industrial Approvals (SIA) increased from 2,624 in 1985 to 3570 in 1986. Conversion of letters of intent to industrial licences increased from 432 in 1985 to 566 in 1986. Consents given by the Controller of Capital Issues increased from 910 numbers (Rs. 2579 crores) in 1985 tO 1171 numbers (Rs.6168 crores) in 1986. Assistance sanctioned by All India Financial Institutions increased from Rs. 6241 crores in 1985-86 to Rs.7604 crores in 1986-87 while disbursals increased from Rs.4621 crores to Rs. 8209 crores in the same period. Thus, the overall investment climate in the country gives sufficient ground for anticipating better investment and output in the industrial sector in the coming years.

Capacity and Production

5.10 The Seventh Five Year Plan has emphasized the consolidation of existing manufacturing capacity rather than a widespread creation of entirely new capacity. Thus, the Plan has laid stress on modernisation and technological upgradation of existing facilities in order to obtain higher production through increased productivity, improved product quality and higher capacity utilisation. Additional capacity is sought to be created by expansion of existing plants wherever possible rather than investment in entirely new green field projects.

5.11 Four gigantic new projects will be commissioned during the Seventh Plan. These are the Vizag Steel Plant,the Maharashtra Gas Cracker,the NALCO aluminium complex and the HBJ Gas Pipeline along with the linked fertiliser plants. Two other significant commissionings would be the Bongaigaon petrochemicals complex and the Cochin Aromatics complex. All these projects are at contemporary levels of technology.

5.12 With the commissioning of the Orissa Aluminium Complex, from a shortage situation,the country will emerge as an exporter of both alumina and metal. The commissioning of the gas cracker will more than double the availability of thermoplastic material in the country. The Vizag steel plant will consume 20 per cent less energy than existing units. The gas pipeline will spawn a large number of downstream facilities like LPG extraction plants,fertilizer factories and power stations.

5.13 In the private sector, the main

disappointments have been the lack of progress in the three fertiliser plants allotted to the private sector along the HBJ pipeline; the slow progress in modernisation of the textile industry despite the existence of of the Rs.750 crore Textile Modernisation Fund; and industrial and professional electronics in the electronics sector. Another industry whose growth may slow down in the future could be the cement industry : further expansion could run into demand constraints. Each of these industries are subjected to specific problems leading to lower than expected private investment and production. Policies and measures will have to be designed to induce further growth. The low growth agro-based sectors may suffer further setbacks owing to the drought in the agriculture sector.

5.14 Annexure 5.2 gives the data on production levels for some critical commodities. It is expected that Plan targets will be achieved in most of the important commodities. Among the important commodities whose capacity and production targets will have to be scaled down significantly are refined copper, some thermoplastics and synthetic rubber, caprolactam and methanol, industrial and professional electronics and tractors.

Modernisation

5.15 The Seventh Plan has laid considerable stress on modernisation and technological upgradation of existing production facilities in industry. Some progress has been made in the cement and petrochemical industries where modernisation programmes have been implemented successfully. In cement, modern dry process plants of a large size now account for 68 per cent of capacity as against 24 per cent in 1977. In petrochemicals the new plants being installed now are of a larger, more economical size. Many existing plants have undertaken investments to reach an optimum size. In engineering industry, there is growth in the capability to manufacture sophisticated products like CNC machine tools, 500MW thermal generating sets, equipment and structures for the nuclear power and space programme. In the electronics industry a high rate of quantitative growth has been accompanied by many technological advances and a substantial enhancement of capabilities in microelectronics, software development, professional electronics for space, defence and other sophisticated applications. Much has been achieved, but there are areas where much very more needs to be done.

5.16 The Seventh Plan for the steel industry

envisaged the substantial completion of modernisation schemes of Durgapur and Rourkela and the debottlenecking programmes of Bhilai and Bokharo.These programmes are still being finalised. In addition,a plan for the modernisation of the IISCO works is being formulated.In the fertiliser industry,final action plans for improving the performance of Ramagundam,Talcher and Barauni have yet to be implemented. Separate modernisation funds have been created for the textile,jute and sugar industries.However,the pace of disbursements continues to be unsatisfactory.

5.17 The pace of modernisation in industry has to be accelerated in the balance years of the Seventh Plan and beyond. For future planning of modernisation programmes,certain lessons can be drawn from the experience in the first two years of the Plan. First, the creation of special funds is not sufficient and modernisation will take place only if the economic environment is conducive to it and when enterprises are able to generate and plough back sufficient resources on their own. Second, modernisation is not an end-state to be encapsulated in "modernisation" projects;it has to be an on-going and continuous activity. Third, modernisation will not be without its impact on labour and special mechanisms to deal with this impact and to protect the interests of workers affected by modernisation programmes need to be devised and put in place.

5.18 At the present stage modernisation involves the induction of known technologies. However, Indian industry has moved to the stage where the link between modernisation and industrial R and D can no longer be left loose. In house R and D unit recognised by the Department of Science and Technology have increased from about 100 in 1973 to 950 as on 1.1.87. These inhouse R and D units today spend about Rs.550 crores per year. The application of R and D in production is sought to be promoted through the new Technology Development Fund. More broadly, venture capital funding is emerging as an important area of activity for public and private financial institutions.

5.19 Modernisation is closely linked to quality improvements in product quality. Though much of this is embodied in the technological changes that are sought to be promoted through modernisation projects there is a large diffuse area of industry where the real need is for standards and for testing facilities. In order to do this, Indian Standards Institution has been redesignated through an Act of Parliament as Bureau of Indian Standards with enhanced role. This is an important initiative in improvement of quality of

products and in facilitating commercial transcations within the country and internationally. Testing facilities in electronics have been established in a number of specialised electronics industrial estates. These are necessary for decentralised production of electronic components assemblies which have high reliability. Consumer Protection Act has been enacted poroviding support for consumer guidance and for ensuring product quality.

The Policy Framework

Industrial Policy Initiatives :

5.20 A number of initiatives have been taken to simplify the industrial policy framework in order to stimulate industrial growth, modernisation and technological upgradation. This process of liberalisation and rationalisation is one of structured change. Delicensing and broad-banding are restricted primarily to areas of high technology (e.g. capital goods and electronics), industries linked with energy production and utilisation, (e.g. electrical equipment and instrumentation) and mass consumer goods industries and industries with large demand and supply gaps. These changes are expected to enhance domestic competition by reducing barriers to entry and barriers to more effective utilisation of capacity. An adjunct of this policy has been a greater reliance on tariff and tax mechanisms to regulate prices and effective protection rather than on direct controls. Where price controls do apply, their orientation has been shifted in directions that stimulate productivity and production growth.

5.21 The essential point about this process is that it is linked to plan priorities. Certain public investments like MGCC and NALCO will serve a similar purpose by increasing availability and reducing costs, which will increase the pressure to modernise existing plants. Moreover, a decline in real prices of basic inputs like plastics and metals will stimulate demand and provide a further impetus for growth.

5.22 Thus changes in licensing policy, fiscal policy, administered prices and trade policy are linked to investment planning at a sectoral level. Such structured changes in the policy framework have been made in sectors like sugar, cement, petrochemicals, fibres, automobiles, commercial vehicles, two-wheelers, computers, machine tools and other industrial equipment,etc. In many the results can be seen in terms of higher growth rates, greater productivity, improved quality and ready availability.

5.23 In the area of licensing policy, 27 broad categories of industries have been delicensed, but subject to other existing industrial regulations like reservation for the small scale sector. In order to maximise production, a scheme of reendorsement of capacity has also been introduced and this facility has been extended to MRTP companies as well. The expansion of the existing units has been liberalised. Investment in modernisation/renovation/replacement, resulting in increase of capacity upto 49 per cent over the licensed capacity, has been exempted from industrial licensing. Similarly any production for exports in excess of licensed capacity has been exempted from the provisions of licensing. In this case, other regulations like reservation for the small scale sector and locational constraints have also been withdrawn. The licensing of new capacity has been liberalised and the concept of minimum economic scale introduced in the interest of promotion of production efficiency, which takes advantage of economies of scale.

5.24 The scheme of broad banding was introduced in 1985-86 to enable industries to make rapid changes in the product mix which are necessary to adjust to changing conditions of demand, technology etc. This facility also enables the realisation of benefits from economies of scale and higher levels of production. Thus, some manufacturers of medium and heavy commercial vehicles have been able to take up the production of light commercial vehicles with their existing facilities and without import of technology

5.25 The focus of all these measures has been to make it easier for enterprises to obtain licences and approvals from the Central Government to invest and to expand. It is also expected that these measures will make it easier to bring in new technologies and new products much more quickly into the industrial economy of the country. Alongwith a continuous upgradation of capital stock.

5.26 A number of measures have also been taken in the area of fiscal policy affecting industrial growth. These include streamlining of the system of the direct taxation, liberalisation of depreciation rules and rationalisation of customs and excise duties in respect of specific industries. Howecer, the most important measure, during the Seventh Plan period, has been the introduction of the Modified Value Added Tax (MODVAT) system to replace the existing excise duty structure. This has been introduced to reduce the cascading effect of multi point excise duty. Specific measures have been taken in regard to rationalisation of duty structures in the computer industry and other

areas of electronics industry the automobile industry, in the sphere of thermoplastics and partially in the case of the textile industry. The introduction of long term fiscal policy was itself a departure from past practices as an attempt to introduce stability in the fiscal framework that is faced by the industrial economy. Inspite of all these significant changes, much still remains to be done in the rationalisation of the structure of indirect taxes and import duties, which is necessary for further sustained industrial growth. Existing anomalies in the import duty structure that make some priority industries suffer from negative protection should be corrected.

5.27 In the sphere of imports,a three year import export policy was introduced for the period 1985-88 and a new policy for 1988-91 will shortly be announced. The aim is, again, to impart stability to the export-import regime in order to provide appropriate signals to the Indian industry. As part of these policies, there has been a reduction of physical controls on imports of raw materials, intermediates, capital goods and spares and their replacement by fiscal levies. Similarly, there has been a liberalisation of technology imports to permit modernisation and elimination of obsolescence aimed at technological upgradation in the existing industry.

5.28 While much has been done, the sustained growth of industry requires a continuing effort of governmental policy initiatives to impart a broader and bolder thrust for industrial growth to move up to a higher growth profile. The broad aims of these measures would continue to be reduction in cost, improved productivity, technological upgradation, improved capacity utilisation and faster investment. As the industrial economy matures, these objectives will be achieved if more industries become internationally competitive, so that India's presence will be felt, to a greater extent, in the international market for manufactured goods. This is particularly important in those sectors, where economies of scale are essential for efficiency and low cost production.

5.29 Some revision has already been made in the eligibility criteria for MRTP companies and much more needs to be done to emphasise the restrictive trade practice role of the MRTP Act. It should also be recognised that large firms have a comparative advantage in sectors where it is essential to establish relatively large scale plants. In fact uneconomically sized, fragmented capacity may penalise the consumer more than any possible exercise of market power by large firms. However, means must be devised to ensure

that market control by such companies is not abused and that restrictive practices are not resorted to. Apart from MRTP legislation, competition can be also ensured through appropriate import policies.

Village and Small Industries

5.30 The Seventh Plan had placed considerable emphasis on the role of Village and Small Industries in expanding industrial production and employment in the country. The physical targets set for the Seventh Plan are likely to be achieved except in the case of Khadi and Village Industries. The Seventh Plan targets for powerlooms and handicrafts have already been achieved. One of the notable features of small industries in India is that it produces a large proportion of manufactured exports - garments, gems and jewellery, leather goods, handloom cloth, and handicrafts. As noted elsewhere, the major gains in exports during the Seventh Plan have come from these industries.

5.31 A number of policy initiatives have been taken during the Seventh Plan period to expand the potential of growth in small industries. For example, the upper limit of investment in plant and machinery has been raised to Rs.35 lakhs for small scale units and Rs.45 lakhs for ancillary units. Excise duty has been so structured as to promote the growth of small units to medium and large units. Specific actions are also being taken to promote ancillarisation. Sixteen sub-contracting exchanges have been located in major Small Industries Service Institutes (SISIs) in the country. A special fund, known as the Small Industries Development Fund (SIDF) has been established in the IDBI to provide refinance assistance for development, expansion and modernisation of small scale industries. A National Equity Fund has also been established for providing equity support to deserving small entrepreneurs to establish new projects in tiny and small scale sectors.

5.32 A Standing Committee already exists for the regular review of items exclusively reserved for production in the small scale sector. The future policies towards small scale sector should be directed at linking small scale industrialisation with organised industry. In this context, the issue of ancillarisation and sub-contracting assumes importance as a means of fostering the growth of the small scale sector. The existence of reservations and incentives specific to the small scale sector also inhibits the growth of the more successful and efficient small firms in graduating to medium and large sector. These constraints should therefore be removed.

5.33 In order to promote Rural Industrialisation, the Khadi & Village Industries Commission (KVIC) is being reorganised and professionalised. The definition of Rural Industry is also being modified to enlarge its coverage under the purview of the KVIC. The areas where problems are being encountered in village industries are essentially those where there is an urgent need for modernisation. For example, the main reason for stagnation in the coir industry has been the lack of mechanisation programme. Its export performance has been declining in the face of stiff competition from other countries as well as from cheaper substitutes like synthetic fibre. Hence, a significant new thrust in R&D activities is required if the Indian coir industry is to be regenerated to cope with new competition. Similarly, in the silk industry, major measures are needed to improve productivity and upgrade the quality of silk. At present around 2,000 tonnes of silk are imported annually to fill the demand-supply gap and maintain exports. Efforts to introduce bivoltine silk have not met with success and the reasons for this are being examined. Another area of stagnation is in the traditional handicraft industry. For example, the export of woollen carpets, art metal ware, wood ware, hand printed textiles, etc, have been stagnant or declining in recent years. In each of these areas there is a great need for modernisation of production and design, upgradation of artisan skills and better marketing.

Industrialisation of Backward Areas

5.34 Removal of regional imbalances and industrialisation of backward areas has been one of the cardinal aims of the Government policy. The Planning Commission, in consultation with State Governments, had originally identified 246 districts as industrially backward and made them eligible for concessional finance from the financial institutions. Later, out of the 246 districts identified as backward, 101 districts/equivalent areas were selected for Central Investment Subsidy. In 1980, the National Committee for Development of Backward Areas (NCDBA) recommended that the essential elements of a policy for industrial dispersal should be (i) to direct industries to places sufficiently away from existing industrially developed areas; (ii) development of suitable infrastructure; and (iii) coordinated efforts to achieve these objectives. The concept of developing growth centres was suggested as one of the measures. In 1981, on the directive of the former Prime Minister districts having no large or medium industries were identified as the priority areas for industrial development. From 1.4.1983 backward districts have been classified into three

categories, viz, A, B and C, according to degrees of industrial backwardness each receiving varying levels of subsidies. A special scheme for developing infrastructure in no-industry districts was also introduced. After a somewhat slow start in the seventies, the evidence indicates that considerable dispersal of industrial activity is now taking place. In 1971, only 35 cities had more than 25,000 workers engaged in non-household manufacturing activities. In 1981, this number was nearer to 60. Upto 1985-86 (inclusive) about Rs.400 crores have been disbursed as Central Subsidy to units located in backward areas. Tamilnadu, Rajasthan, Andhra Pradesh, Madhya Pradesh and Gujarat have been the most active in availing of this subsidy since its inception, accounting for about 46% of the total subsidy. However, in recent years, the demand for the subsidy has greatly increased with Madhya Pradesh and Uttar Pradesh receiving large amounts. An area of concern is that the Eastern States of Orissa, West Bengal and Bihar are yet to attract industries to their backward areas. Overall, between 1985 and June 1987 about 43.5% of all industrial licences went to backward areas; this proportion was nearer to 30% in the early eighties, while it increased to over 40% by 1985. The pace of industrial dispersal is therefore likely to have quickened. It is important that the programmes for development of backward areas be strengthened and consolidated and early agreement reached on the future dimensions of the scheme. However, it is noted that only areas nearer to industrialised centres alone have received such assistance and a new strategy needs to be evolved for dispersal of industries to remote backward areas.

Management of the Public Sector

5.35 The losses of central public enterprises continue to pose a major problem. The continued poor performance of some public enterprises is cause for concern. Some enterprises like BHPV and MAMC have been turned around by timely support from Government and by efficient management. Government has initiated action to improve the performance of a number of public enterprises. The constitution of two holding companies will lead to a product rationalisation in engineering industry in the eastern region. In some cases like BALCO,financial restructuring is underway in order to reduce the burden of capital servicing. However, a number of enterprises continue to be chronic cash loss makers as, for example,in the pharmaceutical and paper industry. The reasons for the persistence of losses vary. Some of the enterprises face problems on account of outdated technology and product-mix,while some face problems on

account of the very nature of the market in which they operate. The balance years of the Seventh Plan would be devoted to technological restructuring of public enterprises,after a detailed enterprise-specific study of restructuring options has been carried out.

5.36 A major challenge placed by the Seventh Plan on the public enterprises in the Central sector has been for a substantial contribution, namely, Rs.37454 crores by way of internal and extra-budgetary resources. This is 38 per cent of the total central plan outlay. The implication of this is the message given to the public enterprises that they should generate a substantial proportion of the funds required for their planned growth and minimise their dependence on budgetary support. In practice the share of internal and extra budgetary resources in the Central Plan outlay was 29 per cent in 1985-86 and 21 per cent in 1986-87.

5.37 A major change in the financing of the public sector is the growing use of capital market. Bond floatation by public sector enterprises amounted to Rs. 1680 crores in the first two years of the Plan. In the power sector, a Power Finance Corporation has been set up to finance power projects in the Centre and the States.

5.38 The growing emphasis on the self-financing requires that the administered prices should be consistent with this objective in the sense that economic costs of production must be covered. For this purpose, it is necessary to fix prices on normative basis allowing for compensation for increased costs of inputs beyond the control of the enterprises and to the extent these cannot be absorbed by improvements in operation- technological and managerial.

5.39 With regard to management, some of the key areas for action identified for Seventh Plan are being addressed. On the question of the interface between the government and the public enterprises management, there have been many suggestions for reform and the Government are now actively considering to bring out a White Paper clarifying the issues. The recent innovation to have a Memorandum of Understanding between the public enterprise and its administrative Ministry is a step in the right direction. It is hoped that the contents will be given more importance than the form.

5.40 The Seventh Plan document also drew attention to the lack of long-term corporate strategy and plan for development in the core sector, the underlying cause being the frequent changes in top management and

the economic ministry personnel. The decision of the Government to have a normal 5 year tenure for Chief Executives is a welcome decision in this respect. All the core sector enterprises have been asked to prepare their long-term corporate plans so that these can be dovetailed with the long-run national plans for these sectors. The Seventh Plan stressed the need for a new institutional framework, where genuine workers' participation can be fostered. It is satisfying to note that most of the larger undertakings are moving in this direction.

Industrial Sickness

5.41 One of the key problems facing the industrial economy is the existence of barriers to exit faced by declining industries and firms. The nature of structural change, growth and modernisation of industry is such that certain industries are bound to lose over time and others to gain. While the existing incentives favour the establishment of new industries and new capacities in existing industries, it is extremely difficult for the declining industries to withdraw. Even within a particular industry older plants drag down the efficiency of new plants at the firm level. As mentioned earlier, the industries that are most affected by this problem are the textile, jute and cement industries. The operation of the various modernisation funds that have been established will be difficult unless firms can shed their obsolescent machinery while they modernise and invest in new technology. However, exit procedures must be humane aimed particularly at protecting the interests of labour.

5.42 A number of measures have been taken to tackle the problems of industrial sickness. The Reserve Bank of India has stressed the need for detection of sickness at the incipient stage and has introduced a health code system to categorise various borrowal accounts according to the quality of the accounts, for better monitoring and for facilitating preventive action. The Industrial Reconstruction Bank of India has also initiated various steps for checking the growth of Industrial sickness and helping industrial revival. The setting up of the Board for Industrial and Financial Reconstruction (BIFR) would go a long way towards detecting sickness at an early stage and taking appropriate remedial action. The provisions of the MRTP Act would not apply in the case of modernisation/ expansion, amalgamation or merger of sick companies, provided the scheme has been approved by BIFR. The setting up of Small Industries Development Fund (SIDF) in the IDBI to provide refinancing assistance not only for development, expansion and modernisation, but also

for rehabilitation of sick industrial units in the small scale sector, is another major measure taken in this regard. The modernisation funds for textile and jute industries would cater to the modernisatiion of these industries which account for a major share of industrial sickness. The most important factor affecting the health/recovery of industrial units is that of surplus labour. Any package, if it is to be successful, must include labour rationalisation, retraining of labour and provision of new jobs in place of old ones.

Environmental Protection

5.43 Environmental impact studies for siting of large manufacturing units and mining activities are invariably made before any approvals are granted. The Environmental Protection Act, 1986 has stregthened the basis for pollution control and other measures for hazard prevention and environmental conservation. This aspect is dealt with at greater length in Chapter on Environment and Forestry.

5.44 Government have paid special attention to safety in process chemical industry. Safety surveys have been carried out in industrial units and measures adopted for improved safety. Safety audits and safety divisions are now generally established in all public sector units. These deal with the safety of employees and the public and cover storage production and transport.

5.45 Special measure for treatment of effluents from growing industries such as sugar, molasses, leather, paper and cemicals have been instituted. As in the case of power plants, particular attention is being given to the reduction in air pollution from industry.

Sectoral Issues

Agro-processing :

5.46 Sugar is one of the most important agro-based industry in the country. The 1985-86, the sugar policy marked an important departure from the past in the system of price controls on cane and levy sugar. The industry has been able to crush a much larger proportion of cane , even in drought years, by operating through the price mechanism. At the same time, units in the industry have been encouraged to raise capacity to economic sizes and incorporate technical changes for increasing production. Sugar production has increased from 6.10 million tonnes in

1984-85 to about 8.5 million tonnes in 1986-87. probably more important is the fact that the range of fluctuation in production over the "sugar cycle" has been reduced.

5.47 An important development in the agro-processing industry is the growing trend of adding value to raw products and even to wastes. As a result of Government policy the production of edible grade rice bran oil has increased from 30 thousand to 60 thousand tonnes in the last two years and it is expected to increase to 150 thousand tonnes by 1989-90. Another example of a waste product being put to valuable use is the new Tamil Nadu plant to manufacture newsprint from bagasse. Processed leather production has increased becuse of the large increase in exports.

Textiles

5.48 Production of cloth in the organised textile industry has continued to decline despite the enunciation of the New Textile Policy in June 1985 despite sweeping reforms in the regulations relating to capacity creation and utilisation. The capacity target of 24 million spindles has already been exceeded and that of 2.13 lakh looms is also expected to be achieved. However, the powerloom sector has continued to gain on the mill sector: the production target of 4500 million metres cloth from the mill sector will have to be scaled down to 3500 million metres and that of the powerloom sector, correspondingly increased from 5400 to 6400 million metres. The organised sector is therefore likely to suffer from very significant excess capacity. It is in this context that modernisation is not perceived as profitable. As stated earlier, the fund set up to stimulate modernisation has not yet had much impact. The 125 NTC mills continue to run up large losses.

Chemicals

5.49 Nitrogenous and phosphatic fertiliser production in the country has increased steadily in the last two years. However, the delay in the implementation of three gas based fertilizer plant enroute HBJ pipe line will lead to a shortfall in targetted capacity for 1989-90. Production targets are however likely to be exceeded in phosphatic fertilizers mainly because the plants are expected to operate at higher levels of capacity. A major problem that needs to be tackled is the rising burden of the fertiliser subsidy and the rationalisation of the retention pricing system.

5.50 The production facilities set up recently for

newer pesticides and the wider use of these pesticides has had a visible impact as observed on cotton and rice production. Some of the new pesticides being manufactured in the country are based on technology developed indigenously. These have resulted in the availiablity of specific high active safer pesticides.

5.51 In the case of petrochemicals, the Seventh Plan stressed the need to set up plants of economically viable sizes using internationally competetive technolgy. Based on the recommendations of an Expert Group, the Government has notified minimum economic sizes (MES) for various petrochemicals. Plants which are below the notified MES are being allowed to expand. In the case of synthetic fibres broadbanding has been allowed. By the end of the Plan, there will be a quantum jump in the domestic availability of a variety of petrochemical intermediates, plastic raw materials and synthetic fibres. More important, much of the additional capacity, like the Maharashtra Gas Cracker, is at a scale and level of efficiency, which should help to bring down the real cost of these materials.

5.52 The increased availability of plastic raw materials and processing machinery has stimulated the growth of the small scale plastic processing sector. Plastic packaging and labelling has improved the adherence to quality and weight and measures, thus providing consumer protection. Through the work of the National Committee on the Use of Plastics in agriculture there has been increasing use of such plastics in water conservation, water management and other areas. With the commissioning of the Maharashtra Gas Cracker, the availability of plastic raw materials will increase substantially and these trends will be strenghthened.

5.53 In the pharamaceutical industry the most noteworthy development is the the new drug policy which aims at stimulating the production of essential drugs. Some of the drugs which were hitherto reserved for public sector have now been opened up for all the sectors with a view to increase production. The mark up of essential formulations has also been increased to encourage production.

Cement

5.54 Capacity and production in the cement industry have increased rapidly because of the stimulus provided by certain policy decisions taken in the latter part of the Sixth Plan. What is as important is the incentive provided for the shift towards dry process plants which save as much as 35 per cent on energy. A substantial modernisation programme is being implemented and is

expected to be completed by 1990.

Metals

5.55 Production in the five steel plants under SAIL rose in 1985-86 but slipped back in 1986-87. SAIL is engaged in a exercise to improve its working and to implement an ambitious modernisation plan which was referred to earlier. The production build-up in the existing steel plants is now expected to be slower than what was assumed in the Plan. However the implementation schedule of the Vizag plant has been expedited. This, along with better capacity utilisation in TISCO will mean that hot metal and saleable steel production at the end of the Plan will be marginally higher than targetted. The sponge iron industry has been delicensed but, so far, adequate capacity is not in sight and substantial imports of sponge iron and scrap continue.

5.56 Aluminium production declined in the first two years of the Plan, mainly because of power shortages, and substantial imports were required. However with the commissioning of the NALCO complex the picture is likely to be changed a small surplus achieved.

Engineering

5.57 The engineering industry consists basically of two components-one producing a range of consumer durables from bicycles to motorcars and the other producing machinery and equipment. Both segments are serviced by component manufacturers and both are major users of steel and other metals. Substantial progress has been achieved in the first two years of the Plan both with regard to growth and upgradation of technology. The data and projections given in Annexure 5.2 show that production targets are expected to be achieved or exceeded in industrial machinery, electrical power equipment and most items of transport equipment. The major problem areas relate to the demand for domestically produced machinery and to the slow pace of indigenisation in certain industries.

5.58 The capital goods sector has not been able to derive the full advantage of a large industrial and infrastructural development programme. Among the major reasons for this are: the constraint on domestic resources to finance capital goods purchases and the consequent resort to bilateral finance, the non-coordinated technology acquisition policy in some of the sectors, and the lack of interaction between the domestic manufacturers. The pattern of investment is changing towards modernisation, revamping and technological upgradation. This change in demand

pattern poses a new challenge. The systems engineering and process engineering skills of the capital good manufacturers, in conjuction with the consultancy organisations have to be strengthened and linkages established with user sectors. Financial institutions such as IDBI, or the Government agencies such as CEA in case of power sector, should work towards formulation of such linkages.

5.59 A package for the modernisation of the capital goods industry has recently been announced.It is expected that in the balance years of the Seventh Plan,firms would come forward and take advantage of this package. However, modernisation of the capital goods industry cannot be left to market forces and incentives alone.Government will need to adopt an actively interventionist policy. For instance, a long-term procurement policy will need to be adopted in those industries where there is a large home market to begin with.Producers of equipment and users have to be brought together at an early stage of the project cycle.

5.60 The first two years of the Plan has witnessed a phenomenal growth in personalised modes of transport. Along with growth has come easy and almost off-the-shelf availability to the consumers, long accustomed to shortages, long waiting periods and heavy premia. All the vehicles use contemporary technology and improved fuel efficiency. Strong internal competition now exiata in virtually every segment of the original equipment and component industry and clear market leaders are emerging. However, a matter of some concern is the slow pace of indigenisation. The development of a viable component industry depends critically on the effective implementation of the Phased Manufacturing Programmes (PMP).

5.61 In almost all the important engineering industries we have a domestic market which is very much smaller than the market available to the international competitors. Even for this limited market we have a relatively large number of corporate groups competing with each other. This is one of the reasons why inspite of a very early start in productionisation of these products, we have not been able to carve out an international image in any of the engineering industries. Technology-wise, our sources have been the international competitors themselves. At this stage of development of engineering industry, we should work for an international role in at least certain selected industries. Some of the examples could be agricultural tractors, standard machine tools, two-wheelers and sugar machinery. Such a strategy would call for a

restructuring within the domestic manufacturers.

Electronics

5.62 The Seventh Plan accorded priority to the growth of the electronics industry. Accordingly,the first two years of the Plan have witnessed a spate of policy initiatives designed to boost investment and growth in this industry. These initiatives have had an impact both on output and on entrepreneurial intentions to invest. The growth of the electronics industry in the first two years of the Plan has been impressive at over 35 per cent but short of the target growth rate of about 40 per cent. The availability of products has increased manifold and in some cases like computers,prices are falling due to competitive pressures. However,there are two important issues relating to the recent nature and pattern of growth in the electronics industry over the past three years that warrant serious attention.

5.63 First,growth in the electronics industry has been confined to the consumer and computer segments which account for roughly one-third of the industry's output.The Plan targets for these two segments will be exceeded. A particularly welcome feature is the growth in software exports. However, there will be a shortfall in output in the communications, component, and industrial electronics segments-which should form the backbone of our electronics industry.Not all of this can be accounted for by shortfalls in Plan investments in the end-use sectors alone.

5.64 Second and more important,recent growth of the electronics industry has been of the CKD variety .The import bill so far in the first two years of the Plan exceeds Rs 2000 crores which is over 60 per cent of output. Policy measures to discourage the kit culture and to promote genuine indigenisation within a reasonable time frame are urgently required.

5.65 In the area of components, there are a number of investment intentions but so far few commitments have been made in the capital intensive segment of the electronic component. A comprehensive National Micro Electronics Programme has not yet been formulated. Even a good linkage of Semi Conductor Complex Limited (SCL) with consumers in the country has not been achieved. The user sectors continue to rely on foreign sources for technology and components (LSI & VLSI chips). This may prove to be a major drag in realisation of the overall electronics targets.

5.66 The technological capabilities available in

the country for electronics are substantial. There are major achievments in sophisticated areas in Space, Defence and Atomic Energy which are now reflected in the capabilities of companies like BEL and ECIL. In the Seventh Plan period the successes achieved by the CDOT project are substantial. India is also emerging as a major exporter os software. The growth pattern of the electronics industry must utilise to the full these broad based capabilities. In fact, the developments done at CDOT and elsewhere have to be utilised for export of technology.

5.67 Outside the consumer sector, the key to the development of electronics lies in the extent of "electronification" in critical user sectors. A number of programmes are under implementation to promote the use of electronics in the key sectors of the economy. Though a great deal has been achieved a greater effort is required to advance the use of electronics in the engineering and the process industries and in other areas where information storage and retrieval is important.

Conclusion

5.68 To sum up, the performanace of the industrial sector in the first two years of the Plan gives reasons for satisfaction. The rate of growth, the pace of modernisation, the induction of new products and technologies had been more rapid than at any time in the recent past. The policy changes made in the past few years have clearly accelerated the pace of industrial growth and reinforced the modernising role of industrialisation in the development process.

5.69 Modernisation of the traditional industries and the rehabilitation of sick units however remains unsatisfactory. Clearly, the problems of these industries and several others cannot be solved without tackling the issue of surplus labour; and a new approach that recognises the rights of labourers and provides suitable incentives to them needs to be evolved urgently. Government and enterprises must be able to plan and implement retraining and redeployment. (Some studies have been initiated with an eye on these problems) However, taking into account the employment characteristics of modern industry, the pace of industrial growth will need to be substantially accelerated if a significant impact is to be made on the occupational pattern.

5.70 In certain sectors like electronics, automobiles and others more systematic attention needs to be paid to indigenisation. They are high growth sectors and their input demands can be a major driving

force for growth in the related component industries.

5.71 Important changes have been made to increase both autonomy and accountability in public enterprises. But more needs to be done in this direction and to reduce the burden of losses. The administrative interventions on operational matters must be stopped, the financial nexus with the budget must be broadened and the enterprenural inpluse on the enterprises strengthened.

5.72 Some problems no doubt arise from the growth of competition; but this should not deflect policy from its goal of competitive updating of technologies to rduce prices and improving quality for domestic consumers. This orientation of policy will help to build up the potential for manufactured goods exports, which is very necessary in our balance of payments context. While deficient demand may be remedied, and agricultural growth more closely geared to the demand for manufactures, inefficient firms should not be artificially propped up.

5.73 The capital market, can and should play a more important role in mobilising and channelling resources into the industrial sector. An open capital market is susceptible to crises of confidence which could disrupt the flow of investment; hence the need for measures tomaintain investor confidence, new instruments and financial intermediaries.

5.74 Looking ahead at thefuture the task is two-fold: (a) restructuring and consolidation of enterprises to maximise the productivity of resource use (fixed assets, labour, energy and materials) for the attainment of Plan targets, and (b) accelerating modernisation based on futuristic technologies technologies so as to position the industry for more rapid development in the nineties. This latter task is of key importance and we must pursue it through three strategic initiatives :

- highly focussed technological education programmes

- expeditious acquisition and development of technology appropriate to our country.

- pursuing mission oriented technology programmes for building up capabilities and self-reliance in critical areas

5.75 In order to maximise the production potential of, and output from, the existing industrial structure, selective and well-designed interventions should be

concentrated. For maximum impact this effort should, instead of being spread thinly and ineffictively be aimed at, say 500 industrial enterprises in the country selected in accordance with specific criteria such as value of assets, backward and forward linkages, technological vintage and size of the work force. To accomodate people"s rising expectations the development of wage goods should be vigorously promoted. In order to do this and to serve the needs of an expanding agricultural economy as also the objective of occupational diversification we should foster the growth of agro-industrial complexes and the expansion of the tertiary sector on a widespread basis.

5.76 So far as the longer term future is concerned, the shift to a qualitatively new pattern of industrial growth calls for the initiation of a different strategy. In keeping with the country's resource base, the strategy should rely on its potentially most valuable input namely, scientific and technical knowledge. Knowledge based industries like software production, communication equipment, computers, integrated cicuits etc. present certain critical advantages in the Induan context. Their intensity of primary resource use, such as energy and minerals, is low but that of human capital is high. They also have minimal adverse environmental impact. Last, but not least, the return on investments can be fairly high with a substantial potential for job creation.

5.77 Industrialisation based on science and state-of art technology requires different types of support facilities. It needs, above all, a strengthening of the entire educational system, not justthat of scientific or technical training; for, a modern technological society draws heavily on education at all stages. Second, there should not only be a smooth mechanism for the acquisition and adaptation of sophisticated technology but also the infrastructure for autonomous development of new ormore competitive processes and products;without the latter, the support system for manufacturing may not be able to adequately modity imported technololgy, or to address technological problems specific to the country. Finally, this technological infrastruture, in turn, requires the forging of working links between scientists, technologists and engineers to form a continuous chain from scientific workto the development of commercially viable goods and production systems. Finally, it calls for a reform of the institutional framework which will be less regulatory and more oriented to promotion and which will steer industries towards more advantageous activities.

Annexure 5.1

Industrial Growth 1985-87

Code	Industry Group	Weight in IIP	Growth Rate (Percent)		
			Seventh Plan Target	1985-86 over 1984-85	1986-87 over 1985-86
20-21	Food Products	5.33	6.4	4.7	6.0
22	Beverages, Tobacco and products	1.57		0.4	-12.1
23	Cotton Textiles	12.31	5.0	8.0	1.9
25	Jute, Hemp and Mesta Products	2.00		-2.2	+4.0
26	Textile Products (including wearing apparel other than footwear)	0.82		18.0	-22.8
27	Wood and Wood products	0.45	8.5	3.1	10.3
28	Paper and Paper products	3.24		12.6	9.9
29	Leather and Fur products	0.49	4.3*	21.1	5.6
30	Rubber, Plastic, Petroleum and Coal Products	4.00	6.2**	3.9	-2.4
31	Chemicals and Chemical products	12.51	9.5	8.1	13.7
32	Non Metallic Mineral Products	3.00	5.6	13.7	1.9
33	Basic Metals	9.80	8.1	9.0	8.4
34	Metal Products and Parts	2.29	*	9.2	8.5
35	Machinery, Machine Tools	6.24	-11.8	2.0	8.9
36	Electrical Machinery & appliances	5.78	12.5	34.8	27.0
37	Transport Equipment	6.39	10.8	3.2	6.6
38	Other Manufacturing Industry	0.91	9.8***	24.4	54.2
	Manufacturing	77.11	8.0	9.7	9.0

* Includes rubber
** Excludes rubber
*** Includes metal products

Annexure - 5.2

GROWTH IN MANUFACTURING OUTPUT

0-DIGIT DUSTRY GROUP	SECTOR/PRODUCT	UNIT	ANNUAL PRODUCTION LEVEL 84-85	85-86	86-87	TARGET 89-90	ANT. 89-90
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
20-21	Food Products						
	Sugar	Mill.T.	6.1	7.03	8.5	10.2	10.23
	Vanaspati	Lakh T.	9.38	8.69	9.18	12.1	12
23	Textiles						
	All Yarn(Cotton and Mixed)	Mill.kg.	1382	1451	1471	1540	1600
	Cloth (Mill Sect)	Mill.Mts.	3432	3376	3303	4500	3500
	Cloth (Dec.-Sect.)	Mill.Mts.	8530	9578	10033	10000	11000
25	Jute						
	Jute Mamufactures	Lakh T.	13.7	13.52	14	16.25	15.5
28	Pulp & Paper						
	Paper & Paper Board	Lakh T.	13.86	15.17	16	18	18
	Newsprint	-do-	2	2.7	2.85	3.4	3
30	Rubber,petroleum,etc.						
	Petroleum Products	Mill.T	33.24	39.88	42.68	45.47	47.32
	Rubber Footwear	Mill.Pair	36	39	41	44	45
	Bicycle Tyre(Org.Sect)	Mill Nos	31.2	36.1	30	34	40
	Automobile Tyres	-do-	11.46	12.33	13	23.3	22
31	Chemicals						
	Caustic Soda	Th. T.	683.7	726.3	944.3	950	950
	Soda Ash	-do-	817.2	918.2	983.3	1140	1180
	Calcium Carbide	-do-	89.4	68.9	72.5	182	182
	Nitrogenous Fertilizers	-do-	3917	4328	5410	6560	6461
	Phosphatic Fertilizers	-do-	1264	1428	1660	2190	2281
	BHC/DDT	-do-	35.9	30.9	33.5	54.3	47.9
	Malathion	-do-	3.4	5.83	2.6	6.55	7.4
	LD Polyethylene	-do-	107.15	101.69	87.81	186	164
	HD Polyethylene	-do-	38.9	33.97	41.07	125	46
	Polyvinyl Chloride	-do-	87.6	108.24	124.24	233	132
	Polypropylene	-do-	27.3	24.07	23.54	79	60
	D.M.T.	-do-	27.37	55.86	96.77	173	182
	Caprolactam	-do-	16.27	19.14	18.19	118	50
	Detergent Alkylate	-do-	29.52	33.49	30.45	92	136
	Methanol	-do-	45.7	56.3	58.1	150	119
	Phenol	-do-	19.6	18.1	18.6	56	40
	Viscose Filament Yarn	-do-	33	42	44	50	50
	Viscose Staple Fibre	-do-	100	90	92	174	169

(2)	(3)	(4)	(5)	(6)	(7)	(8)
Vis Tyre Cord	-do-	8	10	11	15	15
Nylon Filament Yarn	-do-	37.2	35.51	33.73	56	51
Nylon Tyre Cord & Ind.Yarn	-do-	20.2	25.25	24	45	35
Polyster St. Fibre	-do-	39.1	42.86	63.69	100	146
Polyster Fil. Yarn	-do-	55.6	67.9	78.18	77.8	110
Acrylic Fibre	-do-	20.8	23	23.16	30	38
Drugs & Formulations	Rs.crores	2204	2361	2597.6	4583	3407
Soaps (Org.Sect)	Lakh T.	3.71	3.8	4.2	6.25	6.25
Synthetic Detergents	-do-	1.74	1.93	2.05	5.57	5
32 Non-metallic Minerals						
Cement	M.T.	30.17	33.1	36.49	49	49
33 Basic Metals						
Pig Iron for Sale	Mill.T	1.12	1.12	1.26	1.06	1.5
Steel Ingot	-do-	8.3	9.06	9.09	12.68	12.56
Saleable Steel	-do-	8.79	9.98	10.42	12.64	12.8
Alloy & Spl. Steels	Th. T.	800	886	943	980	1100
Aluminium	-do-	276	264	257	499	451
Copper Refined	-do-	33.45	29.7	34.39	42.75	39
Steel Castings	-do	88	93	104	120	110
Steel Forgings	-do-	159	163	165	240	210
35 Non.Elec.Machinery						
Machine Tools	Rs.Crores	303	291	357	500	500
Mining Machinery	-do-	45	44	65	75	60
Metallurgical Machinery	-do-	63	90	112	75	180
Cement Machinery	-do-	54	96	90	80	150
Chem. & Phar. Machinery	-do-	155	168	189	220	220
Sugar Machinery	-do-	44	43	39	60	60
Paper & Pulp Machinery	-do-	20	19	19	25	20
Textile Machinery	-do-	393	351	400	500	530
Boilers	-do-	538	616	736	800	900
Earthmoving Equipment	Nos.	1627	1844	2164	2400	2400
Tractors	Th.Nos.	85	76	80	135	100
Ball & Roller Bearings	Mill Nos.	48	58	52	80	80
Typewriters	Th.Nos.	116	122	123	160	150
Sewing Machines (Org.Sect)	-do-	310	291	347	400	370
Domestic Refrigrators	-do-	576	642	600	900	800

(2)	(3)	(4)	(5)	(6)	(7)	(8)
36 Elec.Machinery						
Electric Generators	MKW	3.14	3.3	3.6	5.1	4.2
Transformers	MKVA	25	27	25	32	30
Electric Motors	MHP	4.94	5.3	5.4	6.5	7
ACSR & Allied Conductors	th.tes.	53	61	45	50	60
PVC & VIR Cables	m.met.	534	481	470	700	625
Dry Cell	m.nos	1148	1188	1166	1400	1400
Storage Batteries	-do-	2	2.2	2.6	2.8	3.4
Electric Fans	Mill Nos.	4.8	5.2	5	6.5	7
Radio Receivers	Rs.crores	110	125	126	270	270
TV Receivers	-do-	415	818	954	850	1500
Tape Recorders	-do-	70	90	140	300	300
Tele-communications	-do-	300	365	508	3100	1100
Computers	-do-	140	210	355	870	1265
Electronic Components	-do-	320	440	550	2100	1025
37 Transport Equipment						
Locomotives	Nos.	188	200	236	225	250
Railway Coaches	-do-	1354	1076	1061	1900	1900
Railway Wagons	Th.Nos.	12.5	13.1	15	20	20
Ship Building	Th. Dwt	121.29	123.51	84.52	240	240
Commercial Vehicles	Th.Nos.	96.8	111	106	160	120
Passenger Cars.	-do-	74.2	87.5	102.4	130	150
Jeeps	-do-	25.2	28	29	45	40
Two-wheelers	-do-	918	1222	1434	1600	2000
Bicycle(Org.Sect)	Mill Nos.	6	5.6	6.1	8	7.5
38 Misc.Manufacturing						
Mechanical Watches	Mill.Nos	5.54	5.3	7.5	9	10

Chapter 6

ENERGY

Introduction

6.1 Recognising the critical importance of energy as a principal element of growth, 30% of the total outlay was earmarked for this sector in the Seventh Plan. In allocating investments, a total and systemic view of the energy sector was taken, namely, the exploration and exploitation of the primary sources such as coal and oil, their transportation to the points of conversion, i.e. power stations and refineries and finally the transmission and distribution of the energy products for consumption in the different sectors of the economy to meet the projected demands for all modes and uses of energy - commercial and non-commercial. The Seventh Plan document emphasised the following strategy for this sector:

- accelerated exploitation of coal, hydel and nuclear resources;
- management of oil demand, including formulation of a national transport fuel policy;
- intensified exploration for hydrocarbons;
- imporvements in productivity;
- promotion of renewable energy resources;
- area-based rural energy planning.

Overall trends

6.2 In the first two years of the Seventh Plan primary energy consumption has grown at an average rate of 6.4% against the 7.9% projection while the growth rate in GDP was 4.4%. The energy elasticity coefficient is thus 1.45. The share of oil in primary energy consumption has remained steady at around 31%. The Indian economy continues to be energy intensive. The growth in consumption of high speed diesel in 1986-87 was 7.3%. However, the consumption of furnace oil has been brought down. Generation of electricity had a high growth rate of 9.5% in the first two years of the Seventh Plan which, though encouraging, remains short of the requirements at busbar which had grown at the

rate of 10.8% during this period.

6.3 Oil production was more or less according to the target and refineries throughput was marginally higher. Coal production may be lower than targetted, but it may not prove a constraint because of the stocks, import of coking coal for steel making, lower hot metal production and the steady improvement in railway movement.

Energy Pricing

6.4 The Seventh Plan had laid emphasis on a rationalised energy pricing policy which would not only reflect the real costs to the economy but also help to ensure the financial viability of the energy industries, particularly coal and power. It was, therefore, envisaged that an integrated energy pricing structure on the above lines would be developed after taking into account inter-fuel substitution possibilities. Such a pricing policy is yet to be evolved. The integrated energy model being developed in the Planning Commission is expected to give the data on longrun marginal costs of various energy forms to the economy.

Energy Conservation

6.5 In planning for energy supply to meet demand it is necessary that measures for management of demand are also simultaneously in progress. The potential for energy conservation by way of better house-keeping, retro-fitting of existing boilers and other devices, replacement of inefficient equipment and technological changes, is considerable. A nation-wide movement by way of awareness campaigns, energy audit and suitable incentives is necessary. Efforts in this direction have been marginal in the first half of the Plan period. The Petroleum Conservation Research Association has identified some areas for conservation of petroleum products, leading to a fuel saving of Rs.125 crores in the industrial sector alone. At the instance of the Advisory Board on Energy, the Bureau of Industrial Costs & Prices has taken up detailed energy audits of six major industries, namely Aluminium, Cement, Steel, Paper & Pulp, Fertilizers and Petrochecmicals. On the basis of the BICP studies so far it appears possible to have an annual saving of Rs.27 crores and Rs.48 crores in the energy bills of the Aluminium and Cement industries respectively. Energy conservation has thus great potential and it needs to be persued vigorously to identify short-term,

medium-term and long-term measures in order to derive the maximum possible benefits in different energy consuming sectors.

Power

6.6 The objective in the power sector was to meet the total energy requirement projected for the terminal year though not the peak requirements. The strategies adopted were:

- to complete all projects yielding benefits in the Seventh Plan;
- to start on projects needed to meet requirements of the Eighth Plan;
- to provide fully for the transmission and distribution lines needed to match all the new power stations to be commissioned in the Seventh Plan;
- to renovate and modernise selected stations;
- to improve productivity; and
- to reduce transmission and distribution losses.

A review is made in relation to these objectives.

Generation

6.7 The total requirement for electricity generation in the terminal year of the Seventh Plan was projected as 295 billion kwh of which 280 billion kwh were to be generated in the utilities. The revised estimate of demand is now placed at 278 billion Kwh of gross generation. The sectoral break-up of demand is given in Annexure 6.1.Thermal generation though steadily improving is as yet below the norms adopted for the Seventh Plan while the hydel generation has fallen short, particularly in 1987-88 because of severe and extensive drought. As a result of this , the anticipated generation in the terminal year may be around 252 billion kwh by utilities and 21 billion Kwh by captive power plants. With the addition of about 2 billion Kwh from Chukha, the total availability is likely to be 275 billion Kwh, leaving a small deficit of 3 billion Kwh (1.1%) in energy requirement at the all India level. This gap is likely to be further reduced as the large captive power units in Steel, Fertilizer and Aluminium plants (nearly 1600 MW) will start contributing higher energy outputs by the

terminal year of the Plan. However, the deficits in some regions/states may be higher than the all India figure.

New Capacity

6.8 Capacity addition in the Seventh Plan was targetted at 22245 MW with 150 on-going projects. The actual achievement in the first two years has been 6848 M.W. A capacity addition of 4486 MW is anticipated for 1987-88. Accordingly, the first three years' achievement is estimated around 51% of the target as against 36% in the first three years of the Sixth Plan. The Plan is, however, likely to end with an addition of 22402 MW representing an achievement of 100.7% (against 72% achieved in the Sixth Plan) as follows:-

	7th Plan Target	Now anticipated
Hydel	5541	4627
Thermal	15439	15144
Nuclear	705	705
Gas turbines	560	1926
	22245	22402

6.9 There have been slippages in some projects. On the other hand, projects like the gas-based power plants have been taken up additionally. The latter is a new feature introduced in the Seventh Plan.

Nuclear Power

6.10 The nuclear power capacity at the beginning of 7th Plan was 995 MW (against 1095 MW mentioned in the Plan document, the difference being due to derating of Tarapur Power Station by 100 MW). Of the Seventh Plan target for addition of 705 MW, 235 MW has already been commissioned at Kalpakkam. The remaining 470 MW at Narora is expected to be commissioned during 1988-

90. Kakrapar project (2x235) is under implementation. Two projects namely, Rajasthan Units 3 and 4 (2x235) and Kaiga (2x235) have been sanctioned for advance action, to be commissioned in the Eighth and Ninth Plans. Additional provision has also been made for advance action in the Seventh Plan on the new projects to be commissioned in Ninth Plan.

Starts for the Eighth Plan

6.11 Additional outlays are necessary to provide adequately for new starts which will yield benefits in the 8th Plan, considering the gestation period involved and given the likely growth in demand for power. Projects totalling 23400 MW have already been sanctioned for this purpose(as on 31.12.1987). Because of budgetary constraints, resources for these projects have to depend largely on market borrowings, supplemented by external assistance. Delays in functioning of the Power Finance Corporation, environmental clearance and in concluding negotiations for external assistance are areas of concern in this regard.

Transmission

6.12 During Seventh Plan about 26,500 Ckms of 400 and 220 KV transmission lines are expected to be laid. The progresss during the first three years of the Plan is expected to be 15763 Ckm . Some delays are, however, reported in obtaining clearances over forest lands and temporary arrangements will have to be made for evacuation of power from some stations.

Renovation & Modernisation

6.13 An outlay of Rs. 460 crores for renovation and modernisation of 32 power stations was provided in the Seventh Plan with a view to restore an additional generating capacity of 1400 MW and a generation of 7 billion kwh. It was expected that these would be completed in the first three years of the Plan itself, but the start has been slow and in the first two years only Rs.140 crores have been utilised. There is need to accelerate the pace of work and also monitor it systematically during the remaining two years so that the expected additions accrue on schedule.

Plant Load Factors

6.14 The Plant Load Factors(PLFs) are definitely showing an improvement as indicated in the tables below:-

PLFs OF THERMAL POWER STATIONS (%)

Sector	1984/85	1985/86	1986/87
1.Central	55.1	61.9	65.0
2.State	45.1	49.2	49.8
3.Private	63.0	57.5	61.2
TOTAL	50.1	52.4	53.2

REGION-WISE PLFs (%)

Region	1984/85	1985/86	1986/87
1.Northern	47.5	48.9	52.8
2.Western	53.0	55.8	55.4
3.Southern	57.0	64.6	69.5
4.Eastern	40.8	42.0	40.1
5.NE	29.6	27.5	18.5
ALL INDIA	50.1	52.4	53.2

(PLF calculations do not include units below 20 MW and non-operative units)

A special effort to raise PLF in the Eastern and North-Eastern regions is necessary during the remaining years of the Plan.

6.15 However, apart from the planned PLF there were other norms essential to be met for fulfilling the terminal year's target,namely, maintenance to schedule, reduction in forced outages, reduction of auxiliary consumption and reduction in time between commissioning and full generation. The forced outages were 18.71% in 1985-86 and 17.99% in 1986-87. Though efforts are

being made by the State Electricity Boards and other agencies they are still 14% to 15% below the expected norms and this is one of the main reasons for projecting an achievement lower than the target in the terminal year.

T&D Losses

6.16 The expected reduction in transmission and distribution losses has not taken place so far. The T&D losses in 1985-86 were 21.7% against 21.5% at the beginning of the Seventh Plan. The State Electricity Boards have been asked to carry out a systematic analysis of these losses - bulk transmission losses, losses in urban distribution systems and losses due to spread of rural network and secondary low-tension distribution system. They have also been asked to prepare specific programmes for system improvement. Many of these problems have accrued due to inadequate attention and funding for transmission and distribution systems in the past in the anxiety to add new capacities, resulting in lack of renewal and upgradation of the old distribution systems - cables, sub-stations and the lines - as well as unscientific expansion of the rural network and insufficient provision for reactive compensation. As much as is possible, this task is to be tackled during the remaining years of the Plan and beyond. There is considerable loss due to pilferage and a legislation has been passed to make theft of power a cognizable offence. Funds may have to be earmarked in future for systems improvement schemes both for rural and urban distribution systems.

Power Supply Position

6.17 The overall gap between power requirement and availability was estimated at 7.9% in 1985-86 and 9.7% in 1986-87. However, the regional variations were great with the least in the Western region and the most in the Eastern and North-eastern regions. The measurement of these shortages poses a problem in the absence of reliable monitoring and metering systems. The power supply position was particularly difficult in the States of Orissa, Karnataka, Bihar, Uttar Pradesh and Haryana - States that account for a third of the national manufacturing output. The Southern States specially Kerala and Karnataka which are wholly dependent on hydel power were the worst sufferers. In future planning, such structural weaknesses have to be removed by providing some thermal power support to these regions and hydel power to the Eastern and Western regions.

6.18 Better management and maintenance practices in the power stations of the State Electricity Boards', stable operation of regional grids and inter-State flow of power can reduce these gaps considerably. There are problems by way of inter-State disagreement in regard to the rates of transfer of power, maintenance of technical regimes and priority for backing down which impede the free flow of power within a regional grid adding to avoidable shortage. These have to be sorted out without delay. Surplus power during night load is already a problem in load management.

Losses of State Electricity Boards

6.19 A review of the power plan will not be complete without a mention of the funding problems of the State Electricity Boards. Apart from raising the performance efficiency of these Boards, their funding structure and cash flow requirements need urgent attention. Against the commercial losses of Rs.11,757 crores (excluding subsidies) of all State Electricity Boards anticipated in the Seventh Plan, the losses (at current rates excluding subsidies) have been of the order of Rs.1552 crores and Rs.1536 crores in 1985-86 and 1986-87 respectively and estimated at Rs.2286 crores for 1987-88. The losses of the SEBs will be less than predicted earlier because of the tariff revisions in some states. On an overall basis the commercial losses of the State Electricity Boards are almost matched by the losses saved due to subsidised supply of electricity to priority sectors like agriculture. The Boards are not adequately compensated in cash for these subsidies with the result that they are in constant shortage of funds. Their debt burden remains unsurmountable. This is also one of the major reasons for non completion of many of the programmes, particularly on transmission and systems improvement and for slippages.

Coal & Lignite

Demand

6.20 The Seventh Plan targetted for a raw coal demand of 237 million tonnes (excluding 9 mt. of middlings). However, the Mid-term assessment is that consumption in 1989-90 will be lower at about 220 mt. Sector-wise breakup is indicated in Annexure 6.2. The shortfall is mainly because of slower growth in coal based thermal power generation and reduction for steel sector mainly because of higher import of prime coking coal on grounds of quality by the steel industry

leading to reduction in coal consumption norms and delay in commissioning in new prime coking coal washery projects as well as a reduction in anticipated production of hot metal. There is also some reduction in demand for railways and soft coke/LTC sectors while there is increase in the use in other industries including captive power stations.

Production

6.21 The Seventh Plan target for coal production in the terminal year of the Plan is 226 mt., implying a growth rate of 8.9% annual against the achievement of 147 mt. in 1984-85. Production at the end of the third year of the Seventh Plan i.e. 1987-88 is expected at 182 mt. implying an annual growth rate of 7.5% . The production level in 1989-90 is now estimated at 212 mt., mainly because of slippage of some projects. The gap will be met through import of coking coal and draw-down of pit-head stocks.

Projects

6.22 A number of projects in the coal sector have slipped. A serious problem in this regard is the delay associated with land acquisition, resettlement of the oustees and environmental clearances. Steps have been taken with the concerned authorities to expedite these clearances but the time lost cannnot be regained. For future projects it will be necessary to acquire land well in advance in developmental projects and start environmental management works from an early stage itself.

Quality

6.23 By the end of the Seventh Plan all of the coal produced was expected to go through coal handling plants for segregation of extraneous matter from coal and for the crushing of coal to the required size before dispatch. A level of 67% has already been achieved in the first 2 years. Continued attention is now paid by the coal companies to improve coal quality, and major coal consumers like power houses, steel, railways, cement and fertilizer are now covered under joint sampling. The average calorific value of non-coking coal is declining and the long-standing issue of beneficiation of non-coking coal has to be settled before the end of Seventh Plan.

Movement and Pithead Stocks

6.24 The pithead stocks which were 29.7 mt. at the begining of the 7th Plan have remained at about the same level(29.4 mt.) as on 31.3.1987. Apart from a draw-down for meeting the demand, adequate quantities of Coal from pithead stocks will need to be moved to different consumers particularly power plants in order to maintain the requisite levels of stocks with them. The problem of movement is no longer as severe as has been in the past but there is still a mismatch of movement capacity between production and consumption centres and fluctuating instead of a uniform rate of loading of coal throughout the year.

Exploration

6.25 The demand for power grade coal would constitute the bulk of demand for coal. There may be several fields for producing power-grade coal where investment and production costs are comparatively lower and hence need to be developed on a priority basis. Exploratory efforts oriented towards the preparation of a shelf of projects are necessary. Some of these fields are North Karanpura, Ib Valley and Talcher. Modernisation of exploration techniques has commenced in the Seventh Plan. But there is need to accelerate the pace of adoption of new coal exploration technologies to reduce the time and cost of exploration and improve the geological confidence in the proved reserves category. This has been emphasised and coal companies are gearing themselves to this task.

Research & Development

6.26 Apart from exploration technology mining technology itself as well as improvements in the quality of coal need much more sustained efforts in R&D than has been done so far. As in other sectors, a Science & Technology Advisory Committee has been set up for Coal as well.

Lignite

6.27 Lignite production in Neyveli in 1989-90 is now expected to be 11 million tonnes as compared to the target of 13.7 million tonnes. This is because of the delay in the commissioning of the downstream power units. Efforts are required to start work on the first mine expansion and the third mine along with assoicated power units in the Seventh Plan itself so that new projects for benefits in the 8th Plan are identified and formulated soon.

6.28 Preliminary exploration has revealed that there are substantial reserves of lignite in Rajasthan. Reserves of over 330 million tonens have been identified. Neyveli Lignite Corporation has been entrusted with the task of formulating power projects on the basis of Rajasthan lignite reserves. Exploration activity has to continue in the areas which have promising finds of lignite.

Hydrocarbons

Oil

(a) Production :

6.29 The Seventh Plan envisaged cumulative domestic crude production of 159.14 million tonnes. There is a likelihood of this falling short by 1.7 million tonnes because of the shortfall in the Eastern region both by ONGC and OIL due to pipeline and refining capacity constraints as well as some production problems. In order to maintain the production level from Bombay High field two new projects of in-fill drilling in Bombay High North and South have been taken up. In addition, development of some marginal fields for oil production is also planned.

6.30 The target for the domestic oil production by the terminal year of the Seventh Plan is 34.53 million tonnes. This is likely to be achieved.

(b) Reserves :

6.31 A more important objective is to add to the recoverable oil reserves. The Seventh Plan envisages additional geological reserves of 956 million tonnes of oil and 497 billion cubic metres of gas and recoverable reserves of 235 milion tonnes of oil and 331 billion cubic metres of gas. About 61% of the target in respect of recoverable reserves of oil and 24% of the target in respect of gas has been achieved in the first two years of the Plan itself.

(c) Exploration and Development :

6.32 The total drilling achievement during the Seventh Plan is anticipated to be 5,307,800 metres against the target of 5,830,000 metres. The mobilization of rigs is also behind schedule but is partly expected to be made up by improvement in drilling efficiency. Greater emphasis is needed on exploration in Category II and III Basins for reserve build up during the Eigth and Ninth Plans, on seismic surveys, better interpretation facilities and expeiditious clearance of the backlog of unprocessed data. Negotiations are at an advanced stage with a few foreign oil companies and contracts for exploration activity are liekly to be finalised soon. This will help in stepping up the exploration activity.

Natural Gas

(a) Production :

6.33 A major feature of the hydrocarbon sector in the Seventh Plan is the increasing use of natural gas for both energy and non-energy purposes. It is evident that natural gas is emerging as one of our major energy resource. Gross production of gas in 1985-86 and 1986-87 was 8.1 billion cubic metres (about 7.5 million tonnes of oil equivalent) and 9.8 billion cubic metres (about 9.0 million tonnes of oil equivalent) respectively. A matter of concern is the flaring of associated gas, particularly in the Assam region. A scheme is being undertaken by OIL for gas compression and storage facilities and with the completion of this scheme, the gas flaring will be reduced to the minimum. Sufficient progress has not been made for underground storage of surplus natural gas and for its reinjection for pressure maintenance in the Eastern region. In the Western region some associated gas is still being flared due to lesser off-take, transportation constraints and the gas production being higher due to delay in commissioning of water injection platforms.

(b) Utilization :

6.34 Most gas development programmes are behind schedule and there have been considerable slippages in a number of platforms in Bombay High due to delays in fabrication and supply by indigenous suppliers. Cambay basin development project is also likely to be affected. Although, there is slippage in the South Bassein project due to delay in commissioning of downstream units, the HBJ pipeline is likely to be commissioned in time to meet the requirement of downstream fertilizer and power units.

(c) Long-term Gas Profile :

6.35 A long-term gas profile indicating the availability, uses, transportation of natural gas is to be developed immediately. Work in this regard has already been initiated by the Planning Commission.

LPG

6.36 The availability of LPG during the terminal year of the Plan is estimated at 1.87 million tonnes against 2.54 million tonnes envisaged in the Seventh Plan. The shortfall is on account of non-implementation of fractionation plants in Madhya Pradesh, Rajasthan and U.P. along the HBJ pipeline during the Plan.

Petroleum Products & Refining

(a) Products :

6.37 The Seventh Plan postulated a growth rate of 6.4% in the consumption of oil products. In 1985-86, this growth rate was 5.4% and in 1986-87 it was 6.2%, thus averaging 5.8% in the first two years of the Plan. However, in 1987-88 the growth rate is likely to increase to about 7%, particularly because of the need to activate full use of agricultural pumpsets following drought conditions. The demand in 1989-90 is expected to be 52.7 mt, the same as estimated at the time of Seventh Plan. Product-wise demand is indicated in Annexure 6.3.

6.38 Whilst the consumption of middle and heavy distillates continues to be similar to the past, light distillates consumption is spurting. In 1986-87, LPG consumption grew by almost 21% and that of petrol by more than 10%. Whilst the former as a substitute for kerosene is desirable, the latter is not so. The projected growth rates for LPG and petrol during 1988-89 are 14% and 13% respectively. A greater and renewed emphasis on upgrading and expanding public transport systems in urban areas is urgently called for to contain the use of personalised transport. Growth in high speed diesel in 1986-87 was as high as 7.3% and in 1987-88 it is expected to be around 9.3%. It is mainly used in transport, captive generating sets and

agricultural pumpsets. In the medium and long-term, such uses have to be regulated through substitution by grid supply of power, replacement of individual small-

sized generating units by more efficient and larger sized stations. The consumption of furnace oil is declining. Efficiency of furnace oil burning devices has been substantially increased and active technical support provided to oil consumers by the Petroleum Conservation Research Association. A similar campaign is needed to manage the growing demand for kerosene and diesel as well as to reduce the consumption of oil in power stations.

6.39 Net imports of petroleum products in the first two years of the Seventh Plan have been 1.9 million tonnes and 0.54 million tonnes respectively. Most of the imports are that of kerosene and diesel which are essentially non-luxury items, although the quantum can be reduced through conservation or inter-fuel substitution.

(b) Refining :

(i) Production

6.40 Refinery throughput is expected to be marginally higher than the Plan target of 48.9 million tonnes mainly on account of increased capacity utilisation. Since domestic crude oil production is short of the throughput requirements, import of crude oil is necessary to meet the gap. The import requirement(including crude and crude equivalent of products) was about 31% of the total domestic consumption in 1984-85; by 1989-90 this is expected to increase to about 40% which emphasises the need for accelerated build up of oil reserves.

(ii) Capacity

6.41 With an addition of 8.50 million tonnes in the Seventh Plan the total refining capacity was expected to reach a level of 54.05 million tonnes by 1989-90. However, mainly due to non-implementation of expansion of Bongaigaon Refinery, it is anticipated that the total refining capacity will be 51.85 million tonnes. The Karnal and Mangalore refineries have been approved in principle to be taken up in the joint sector. This capacity will be available only in the Eighth Plan period. Several other schemes which will increase yield and reduce auxiliary consumption in the refineries are in hand.

Rural Energy

6.42 As mentioned earlier, the 7th Plan has taken within its purview the total energy requirements of the country. In terms of numbers and quantities this

is the largest challenge. Nearly 42% of our total energy requirement is met by non-commercial energy sources such as fuel-wood, agricultural and animal wastes, and this predominantly covers the rural India comprising of nearly 6 lakh villages and 120 million households. Commercial energy in the form of power is used basically for agricultural pumping followed by diesel for the same purpose and kerosene for lighting, heating and cooking.

6.43 From the point of view of environment and ecology as well as more efficient use of energy sources, conservation of fuel wood is of the utmost importance. If these are to be substituted by commercial energy sources there are two serious constraints. Firstly, the considerable investment needed in creating capacity for generation of power and the necessity for import in case of petroleum products. The second and more important constraint is the poor purchasing power of the rural households necessitating heavy subsidies and budgetary support. In the case of power supply for the agriculture sector, the subsidies are already proving a burden on the State Electricity Boards.

6.44 In this background, the two practicable programmes which were taken up as national programmes in the Seventh Plan were for biogas and improved chulahs. These programmes are making good progress and the annual Plan targets have been exceeded. These programmes will result both in considerable savings of fuelwood as well as chemical nitrogen as fertilizer. However, the potential for these programmes is very much more than the Plan targets, and the coverage to be attained. New mechanisms to realise this potential will need to be devised and put in place. Among other things, this may involve changes in the present pattern of subsidies and greater emphasis on maintenance and training. These programmes are also in need of technological inputs to raise efficiency, improve reliability and cut costs.

6.45 There are a number of other projects for developing new and renewable sources of energy such as solar thermal, photo-voltaic, wind energy, wood gasifiers and so on, but these are in various stages of development. Cost per unit of power generated is very high and heavy subsidies are involved. Until these technologies attain a level where they are cheaper, and can be indigenously replicated and commercially viable, they cannot make an appreciable dent on the very large requirements of energy needed to replace the present non-commercial energy uses.

6.46 Therefore, for some decades to come there will still be requirement of large quantities of fuel-wood and other waste products. In this context, the afforestation programmes under various heads including those in the Minimum Needs Programme assume great importance. But the progress of afforestation in quantitative terms is not encouraging compared to the dimensions of the task and this remains an area of concern from the point of view of energy supply. The present programmes for rural fuelwood show a utilisation of around 72% only in the first two years.

6.47 Rural electrification programme including pumpset energisation is progressing though somewhat unevenly (Annexure 6.4). Four States have achieved 100% electrification but many States are unable to fulfil their targets due to a number of reasons including shortage of funds. However, rural electrification programme, as it stands, merely provides for grid access to villages. The scope of the scheme has to be increased now to promote load develoment and take up systems improvement in order that real benefits of electrification reach the countryside.

Long range Planning

6.48 Given the long gestation time required for completion of projects in the commercial energy sector and the large capital investments involved it is clear that the horizon for planning should extend to 15-20 years rather than a short span of 5 years. This is all the more necessary in order to match the reserves of primary energy sources, their exploration and exploitation through newer technological processes against the time horizon of expanding demands in the main sectors of the economy. For the North-east, which is rich in hydrocarbon, hydel and coal resources, there is need to draw up an integrated energy plan. Work has been initiated during the Seventh Plan period by the Planning Commission for a detailed perspective Plan in the energy sector including use of mathematical modelling to determine the long-run marginal costs and the most optimal fuel-mix at minimal domestic resource costs for the nation as a whole. It is hoped that the Eighth Plan and the subsequent plans investments in the energy sector will be better fitted into this total perspective.

6.49 As far as planning for rural energy is concerned there has to be decentralised area planning because of wide variations in regard to accessibility to energy sources, income levels and food and social

habits. An optimal mix of forms of energy to meet the area demands has to be planned in detail. There is paucity of data on this account and a number of surveys are being conducted. A modest programme for Integrated Rural Energy Planning has been initiated in the Seventh Plan in order to develop manpower and skills for making such plans in all States and UTs. A target of covering 200 blocks has been set in the Seventh Plan and it is expected to be achieved. A major issue which will have to be tackled relates to the modalities for the implementation of the block level plans which will require inputs from several energy supply and promotional organisations and programmes.

Conclusion

6.50 Development programmes are broadly on target. Looking ahead at the remaining part of the Seventh Plan and beyond, the areas which need greater attention and renewed emphasis are:

* new starts in power and coal to maintain the tempo of growth in the Eighth Plan;
* improvements in the efficiency of utilisation of energy and its conservation;
* optimal utilisation of gas;
* accelerated build-up of hydrocarbon reserves and indigenous production;
* sustainable methods for meeting rural energy needs with the major objective of reducing fuelwood consumption;
* rationalisation of energy prices to cover costs including costs of subsidies, facilitate free exchange of surplus power within a region and to encourage inter-fuel substitution wherever it is in the interest of the national economy;
* prepare a detailed long-range plan for the Energy sector as a whole.

Annexure 6.1

Demand for Electricity

(Billion Kwh)

S.No.	Consuming Sector	1984-85 (Actual)	1989-90	
			7th Plan Target	Now anticipated
A-	DEMAND			
1.	Industrial	73.52	136.30	114.87
2.	Domestic	15.50	26.88	28.60
3.	Agriculture	20.96	32.42	38.56
4.	Others	14.63	27.63	27.20
5.	TOTAL CONSUMPTION REQUIREMENT	124.61	223.23	209.23
6.	Auxiliary consumption	13.28	19.73	20.45
7.	Transmission & Distribution Losses	31.21	52.44	48.32
8.	TOTAL DOMESTIC GENERATION REQUIREMEMT	169.10	295.40	278.00

Annexure 6.2

Demand for Coal

(Million tonnes)

S.No.	Consuming Sector	1984-85 Actual	1989-90	
			Target	Now anticipated
1	2	3	4	5
A.	Coking Coal			
1.	Steel & Cokeovens	25.06	41.10	36.0
B.	Non Coking Coal			
2.	Power(Utilities)	62.11 (2.25)	120.00 (9.00)	109.60 (7.40)
3.	Railways	9.03	8.00	6.50
4.	Cement	7.13	12.60	12.60
5.	Fertilizer	3.92	6.50	5.50
6.	Soft coke/LTC	2.16	5.00	3.50
7.	Other industries including captive power	26.65 (1.33)	39.00	42.00
8.	Export	0.12	0.50	0.30
9.	Collery Consumption	4.06	4.00	4.00
10.	TOTAL	140.24 (3.58)	236.70 (9.00)	220.00 (7.40)

Figures in bracket relate to washery middlings.

Annexure 6.3

Demand for Petroleum Products

(Million Tonnes)

Item	1984-85 (Actual)	1989-90	
		Seventh Plan Target	Now Anticipated
Light Distillates	6.318	9.10	9.40
Middle Distillates	22.429	31.27	32.00
Heavy Ends	10.048	12.30	11.30
Total	38.795	52.67	52.70

Annexure 6.4

Physical Progress on Village Electrification and Pumpset Energisation during the Seventh Plan

S.No.	State	Seventh Plan Target		Achievement during the first two years of the Plan					
		Villages	Pumpsets	Villages			Pumpsets		
				1985-86	1986-87	Total	1985-86	1986-87	Total
1.	Andhra Pradesh	4370	350000	826	905	1731	88928	89174	178102
2.	Arunachal Pradesh	*	*	*	39	39	*	*	*
3.	Assam	9663	2500	1824	2208	2208	92	168	260
4.	Bihar	16000	2500000	2127	3205	3205	9743	16187	25930
5.	Goa	*	*	*	*	*	*	*	*
6.	Gujarat	2145	100000	918	644	1562	25016	20643	45659
7.	Haryana	-	67830	-	-	-	10014	16902	26916
8.	Himachal Pradesh	2322	500	702	825	1527	104	195	299
9.	Jammu & kashmir	770	200	89	11	200	42	57	99
10.	Karnataka	4524	225000	2000	1060	3060	47728	47857	95585
11.	Kerala	-	70000	-	-	-	13714	15459	29173
12.	Madhya Pradesh	17010	200000	3371	3756	7127	42231	44259	86490
13.	Maharahstra	2365	293000	561	590	1151	78801	104766	183567
14.	Maniopur	713	-	53	110	163	6	-	6
15.	Meghalaya	1170	202	59	76	135	10	-	10
16.	Mizoram	*	*	*	50	50	*	-	*
17.	Nagaland	329	49	73	90	163	-	-	-
18.	Orissa	7558	39030	1141	1382	2523	2615	22000	4815
19.	Punjab	-	150000	-	-	-	34674	50504	85178
20.	Rajasthan	7515	100000	1098	1147	2245	10574	10711	21285
21.	Sikkim	167	-	35	30	65	-	-	-
22.	Tamil Nadu	42	200000	15	16	31	40628	41993	82621
23.	Tripura	756	217	150	159	309	80	91	171
24.	Uttar Pradesh	25170	247950	4489	4003	8492	27904	30082	57986
25.	West Bengal	14918	100000	1330	1350	2680	8064	4842	12906
	UTs	592	2500	172	36	208	1359	1522	2881
	Total	1,18,101	23,99,678	21050	21715	42,765	4,43,327	4,97,612	9,40,939

Chapter 7

TRANSPORT

Introduction

7.1 In the Seventh Plan the crucial task for transport planning was to increase the capacity of the transport systems in step with the economic development of the country. This task was to be managed through maximising the utilisation of assets, technological upgradation, development of energy efficient modes and promotion of multi-modal transport systems. Replacement and rehabilitation of assets alongwith maintenance was to get precedence over development of incremental capacity as a more economic means of increasing the output of the system. Priority was accorded for completion of ongoing schemes which either improve the efficiency or add to the transport capacity. The development of rural roads was to be pursued vigorously in an effort to open up backward areas and accelerating their socio-economic development. Last but not least, special attention was to be given to development of manpower skills consistent with emerging technologies in future. A review of the Sector is made in relation to these strategies.

Growth

7.2 The growth of the transport sector in the first two years of the Plan has been in line with the objectives and policy instruments enunciated in the Plan. The trend in the third year is equally encouraging. All this augurs well for the remaining two years. This is a ignificant achievement, particularly when viewed in the background of marginal increase in the output in the past decades.

7.3 During the first two years of the Seventh Plan, the Railways carried an additional freight traffic of over 42 million tonnes, thereby increasing the originating tonnage from 265 million tonnes in 1984-85 to 306 million tonnes in 1986-87 and is expected to reach a level of 320 million tonnes in 1987-88. Thus during the first three years of the Plan, the annual growth achieved will be more than 18 million tonnes as against about 9.4 million tonnes per annum achieved in the Sixth Plan (1980-85). If this rate of increase is maintained, even at somewhat deaccelerated rate, the Railways should have no difficulty in achieving the Plan target of 340 million tonnes and could perhaps

exceed it by a small margin. This itself would mean an additional loading of 75-80 million tonnes - an increase of the order achieved in the past in nearly a quarter of century (1962-85).

7.4 Equally significant was the record handling of traffic by Major Ports. In 1986-87, the traffic handled was 124 million tonnes as against 106 million tonnes in the last year of the Sixth Plan.

7.5 Inland Water Transport handled 3.2 lakh tonnes in 1986-87 as against only 2.5 lakh tonnes in 1984-85, an increase of 27.4 per cent. However, the increase in tonne kilometers was even greater, 41 per cent in the two years of the Seventh Plan.

7.6 The road network expanded at the rate of 5 per cent consistent with the past growth. The thrust of providing accessibility to villages was maintained.

7.7 Airline passenger traffic recorded a growth of 10 per cent as against a moderated growth of 8 per cent envisaged in the Plan.

7.8 The shipping industry in a bid to adjust its fleet to the changed requirements of international trade resorted to massive scrapping of overaged vessels. It led to a decline in shipping tonnage from 6.36 MGRT in 1984-85 to 5.77 MGRT in 1986-87 without any significant decline in the volume of freight carried. Traffic carried by coastal vessels increased from 5 million tonnes in 1984-85 to 7 milion tonnes, thereby achieving the Seventh Plan target in 1986-87 itself. It is estimated that about 8.5 to 9 million tonnes of traffic will be carried by coastal shipping in the terminal year of the Plan.

7.9 The improved output particularly of the critical modes of the transport like Railways greatly helped to ease the transport availability. It is perhaps after a decade or two that the transport constraints were not felt in the economy in any pronounced way.

Productivity

7.10 The Seventh Plan places special emphasis on improvements in productivity as one of the major strategies to achieve the declared objectives. The productivity of the diverse modes of transport improved substantially during the first two years of the Seventh Plan and this trend is being maintained in the third year as well.

7.11 The singular breakthrough in improvement in productivity was achieved by the Railways. The net tonne kilometers (NTKMs) per wagon day, on Broad Gauge system, which accounts for 80 per cent of the freight loading, rose from 1150 in 1984-85 to 1390 in 1986-87 and is likely to further improve to 1400 in 1987-88, which is the target fixed for the terminal year of the Plan. At this rate of progress, the performance for the terminal year 1989-90 is anticipated to be around 1500 NTKMs, an increase of 30.4 per cent as against 18.3 per cent actually achieved in the Sixth Plan. The NTKMs performance would have been considerably better but for the relative stagnation in average speeds of freight trains caused by high incidence of failure of equipment. On the Meter Gauge, NTKMs improved from 565 in 1984-85 to 695 in 1986-87 and are likely to improve further to 725 in the terminal year. The performance with regard to NTKMs per engine hour remained in phase with NTKMs per wagon day.

7.12 There was a distinct improvement in the productivity of the State Road Transport Undertakings during the first two years. As will be seen from the Table 7.11 below, most of the productivity indices have already surpassed the targets set for the Seventh Plan:

Table 7.1 : Productivity Indicators for SRTUs

	84-85	85-86	86-87	87-88 (anticipated)	89-90 Target
Fleet utilisation (%age of buses on road to buses held)	83.9	84.9	86.3	86.9	87.0
Vehicle productivity (Kms per bus/day)	218	229	236	244	236
Staff productivity (Kms per worker/day)	30.5	31.8	33.1	33.9	31.0
Fuel consumption (Kms per litre)	4.21	4.29	4.35	4.38	4.35

However, wide differences still exist in the performance,efficiency and productivity of the various SRTUs.

7.13 During the last two years, there was a

noticeable improvement in the productivity of the ports. The average turn-round time for all ports taken together declined from 11.9 days in 1984-85 to 8.1 days in 1986-87, a reduction of 32 per cent and the average pre-berthing time from 3.6 days to 2 days, a reduction of 44 per cent. During the same period, the output per ship berth day improved by 38 per cent. Despite this creditable improvement, there were several ports which accounted for high levels of turn-round time. These were Calcutta, Bombay, Paradip and New Mangalore. The availability and utilisation of cargo handling equipment was unsatisfactory at almost all ports, largely contributed by poor maintenance and obsolete equipment. Labour productivity continues to be low because of disproportionately high manning scales, completely out of line with the present state of port technology and the type of cargo handled.

7.14 In the Inland Water Transport productivity improved albeit marginally after a prolonged period of stagnation. The average turn round time of CIWTC fleet improved on selected routes. The average utilisation also showed improvement by 7.5 per cent, load factor by 15 per cent while the staff ratio came down by 14.2 per cent in the same period. It is necessary to sustain this tempo of improvement in the Seventh Plan.

7.15 In the Civil Aviation Sector, the utilisation of wide bodied aircraft improved by 12 per cent in the Indian Airlines. This improvement enabled the Indian Airlines to meet much of additional traffic demand without augmenting its fleet. The utilisation of fleet of Air India also improved, though marginally in case of B-747 and somewhat more for the Air Bus aircraft.

Replacement of Assets

7.16 At the end of the Sixth Plan, the transport infra-structure was burdened with overaged and obsolete assets and the backlog of replacements had assumed enormous proportions. One of the major objectives of the Seventh Plan was to give priority to replace the overaged assets; realising, however, that it was not possible to fully rectify the position during the course of a single plan period. One of the heartening features of the performance is the substantial reduction in the arrears of the obsolete assets that had afflicted the diverse modes of transport. This has also provided an opportunity for the introduction of new technologies and the much desired modernisation of the infrastructure. In fact, in several areas like civil aviation, shipping, railways, upgrading has gone hand in hand with replacements.

7.17 On the basis of performance of the Railways so far achieved, it is expected that there will be hardly any overaged stock left in respect of locomotives and wagons by the end of the Seventh Plan. However, the fleet of coaches would continue to have overaged units, mainly due to constraint of indigenous capacity. With the setting up of a new coach manufacturing unit, the position will improve substantially during the Eigth Plan. In respect of plant and machinery, the proportion of overaged equipment is expected to decline from 80 per cent at the beginning of the Seventh Plan to around 50 per cent by the end of the Plan. The phased programme for track renewals is likely to be as per target and the carry forward to next Plan would be within manageable levels to be wiped out during the course of the Plan.

7.18 In the case of State Road Transport Undertakings, there has been a significant reduction in the percentage of overaged buses, from 15.9 per cent in 1984-85 to 9.5 per cent in 1986-87 with prospects of a further drop to 7.3 per cent in 1987-88. As a result, nearly 28,500 overaged buses would be phased out in the three years 1985-88. It is reckoned that in the Seventh Plan, about 48,000 buses would be retired and replaced against the Plan projection of 59,000. The tempo of phasing out the overaged fleet needs to be sustained.

7.19 In the Shipping Sector, about 1.61 Million Gross Registered Tonnage (MGRT) constituting about 25 per cent of the tonnage held at the end of the Sixth Plan has been disposed off. This level of scrapping is welcome and is in line with the thrust of the Seventh Plan. If this tempo is maintained, it would be possible to weed out 40 per cent or 2.5 MGRT of the overaged uneconomic fleet by the end of the Plan, as targetted. The stress placed on scrapping of obsolete ships has brought down the average age of the fleet. The percentage of the fleet in the age group of 15 years and above has progressively come down from 30 per cent in 1984-85 to 16.7 per cent in 1986-87.

7.20 In Coastal shipping, 58,000 GRT was scrapped and if this tempo is maintained, it would be possible to weed out the overage tonnage of 0.17 MGRT in the coastal fleet during the Plan period.

7.21 In the Inland Water Transport sector, the pace of condemnation of overaged fleet is extremely tardy in as much as only 4 out of 57 vessels have been scrapped during the last two years. This pace needs to be accelerated.

7.22 In the Port Sector, equipment rationalisation

plan brought about by the changing cargo handling technologies has finally taken off. A preliminary survey has revealed that obsolete and redundant equipment worth Rs.10 crores can be easily phased out.

7.23 Replacement of obsolete and overaged dredgers with technologically superior and larger capacity dredgers is one of the thrust areas of the Plan. During the first three years of the Plan, seven dredgers with ports will get decommissioned, with one more to be decommissioned before the end of the Plan. Thus,in all eight overaged dredgers accounting for 24 per cent of the fleet will be phased out in the Seventh Plan.This trend needs to be sustained till a satisfactory age profile emerges.

Maintenance

7.24 The Seventh Plan placed special emphasis on the need to provide adequate maintenance of transport infrastructure. Maintenance has been, more or less, neglected in the past in all forms of transport. Thus, on the railways,the maintenance procedures and systems applied are obsolete resulting in frequent failures of equipment, which in turn, lead to inefficient utilisation of assets. For the road sector, again, not merely maintenance practices are obsolete but also the necessary financial provisions have been wanting. All this has resulted in tremendous avoidable costs in terms of energy consumed and of repair and maintenance of vehicles etc. While in the first two years of the plan, increased attention has been paid to maintenance of assets, particularly, in railways and road sector, it is important to evolve systems approach to maintenance in future. It is necessary, at the same time, to bring in use improved materials and tools for maintenance and arrange for the necessary training of staff at all levels. Provision for maintenance must be established before resources are established for developmental activities.

Technological Upgradation

7.25 The recent years have witnessed significant technological upgradation in the transport sector. The automotive sector in India is undergoing a major transformation. The introduction of fuel efficient, environmentally clean and modern vehicles and rapid quantitative growth are important aspects of this transformation. During the last few years, a series of policy measures have been taken to facilitate expansion and technological upgradation and to open the industry to competitive impulses. The effect of these

measures has already been felt by way of improvement of quality and easier availability of vehicles. While there has been significant technological upgradation in the automotive sector, the state-of-art technology has not been applied to development of improved bus chassis and bus body. The chassis is the same as used on trucks, not conducive for riding comfort and the bus body is not built on modular concept so as to reduce tare weight, reduce fuel consumption and improve its look and aesthetics. The State Road Transport Undertakings, being the largest consumer of automotive industry should act as catalyst to foster such technological upgradation as will ensure better fuel efficiency and cleaner vehicle emissions to mitigate air pollution.

7.26 Another aspect of modernisation of transport is the emergence of a multi-modal system in the form of container transport. It is already carrying major share of general cargo traffic dealt with at the ports. Since this trend is anticipated to continue, the Seventh Plan laid emphasis on development of dedicated infrastructure in ports. The developments in this direction are two fold. First, more and more cargo is getting containerised. During the last two years, the container cargo as a percentage of total general goods traffic increased from 18.6 per cent (3.48 million tonnes) in 1984-85 to 26 per cent (6.11 million tonnes) in 1986-87 and is likely to reach 31.7 per cent (9.5 million tonnes) by 1989-90. Second, the capacity to handle containerised cargo will more than double from 3.48 million tonnes in 1984-85 to 8.70 million tonnes at the end of the Plan. This increase in capacity will take place at Calcutta (0.54 MT), Haldia (0.36 MT) Madras (0.96 MT) Nhava-Sheva (3 MT) and Bombay (0.36 MT).

7.27 Another thrust area of the Seventh Plan was the mechanisation and modernisation of cargo handling facilities. At the end of the Seventh Plan, as many as six ports will have fully mechanised facilities for handling fertilizer traffic. These ports are Kandla, Cochin, Nhava-Sheva on the West Coast and Haldia, Paradip and Madras on the East Coast. Vizag port will, however, continue to have semi-mechanised facilities. But so far as iron ore traffic is concerned, its ore handling plant will undergo massive modernisation to improve the throughput.

7.28 In the shipping sector, fleet modernisation is taking place alongside massive scrapping of old and uneconomic units and their replacement by fuel efficient and technologically modern ships. Shipping industry is diversifying its fleet to enter specialised areas by acquiring edible oil carriers, commercial

tankers, oil drilling rigs, multiple support vessels and cellular container vessels. At the end of the Plan, the Shipping Corporation, which accounts for 54 per cent of the tonnage is expected to have fuel efficient fleet accounting for 45 per cent of its total tonnage

7.29 Hitherto, road construction was largely based on traditional labour intensive technology. The little machinery component that was used was outmoded. It is encouraging that technology is being upgraded with the use of hot-mix plants, pavers etc. to achieve a high riding quality of roads. An important concern in road construction technology relates to better and more effective compaction of earthwork and other layers of granular and bituminous construction. The traditional static road roller has to give way to vibratory rollers to modernise the road construction techniques and achieving a large amount of work in a short time. Steps have also to be taken to replace obsolete and worn out equipment.

7.30 In the Railways, the Seventh Plan started in a situation of technology freeze which had persisted for more than two decades. Steps have now been taken to induct new generation of diesel locos of 4,000 horse power with latest traction technology for hauling heavier freight and passenger trains. Its electric counterpart will be 6,000 horse power loco with thyristor 3-phase option for similar haulage chores. The designs of freight wagons are being modernised in order to improve their reliability and productivity, both of which leave much to be desired. Taking advantage of new materials and light weight components as well as new technologies of fabrication, new designs of coaches are proposed to be inducted to reduce their tare weight as well as to improve their reliability. Steps are being taken to modernise signalling systems on the basis of solid state inter-locking and greater use of electronics in replacement of mechanical signalling. As far as rail track is concerned, new rail-to-tie fastening systems, longer rails and new innovations in track maintenance which substitute machines for labour are either under way or are prospects in the near future. All such improvements will enhance the capacity of the system within the present configuration and improve efficiency of assets. The conventional methods to upscale the system would not be sufficient to accomplish the task in the years to come. The Railways need to explore the potential in the new areas like higher axle loads and liberal standard moving dimensions.

7.31 In attempting to upgrade existing

facilities, in the transport sector it has to be remembered that we are not planning the transport network and vehicle fleet de-novo but have to re-mould the existing structure built up over a long period. For instance, the Indian Railways system would continue to be the prime low-cost carrier of goods and passengers over long-distances. The road network has to serve not just a few specific concentrations of production and population but a much wider area. Hence upgradation must proceed from local needs and not be imitative of technologies used in some developed countries.

Energy Conservation

7.32 At the close of the Sixth Plan, transport infrastructure was burdened with energy inefficient, old and outmoded assets. This coupled with poorly maintained road network unduly increased the fuel consumption. During the first two years of the Plan, some positive steps were taken in the field of energy conservation. The Railways accelerated the pace of phasing out steam locos on the one hand, and of electrifiction (3400 route kms) on the other. As a result, a reduction occured in the consumption of fuel oil and cost per unit of traffic carried. In the shipping and inland water transport sectors, the massive scrapping of overaged vessels paved the way for the acquisition of modern fuel efficient vessels. The consumption in the road sector was much less than it would have been if the Railways had not increased their freight capacity. Unfortunately, however, similar improvements in the consumption of aviation turbine fuel were not brought about on account of their expansion of short-haul air services. Diesel consumption in road transport increased so also motor gasoline due to increased personalised transport. In road transport too, while there had been significant technology upgradation in the automotive sector, as stated earlier the state of art technology had not been applied to the development of improved bus chassis and body.

Financial Management

7.33 There has been a marked improvement in the self-financing capability of the Central Sector Trasnport Undertakings in the first three years of the Plan. They were able to generate a higher level of internal resources which was further supplemented by capital market borrowing and inter-corporate loans. As a result, the dependence of these undertakings on budgetary support for Plan development substantially declined.

7.34 In Railways, the budgetary support in the first three years (1985-88) was 42% of plan allocation as against 58% in the Sixth Plan, in Civil Aviation, 15% as against 40*5 and in Ports, 39% as against 55% in the same period. Shipping, Inland Water Transport, however, did not generate any internal resources as in the past and continued to rely on budgetary support for their development.

7.35 The provision for depreciation continues to be made on a "Straight Line Method" based on historical costs. A redeeming feature, however, is the awareness to make adequate provision for depreciation. The Railways stepped up depreciation provision from Rs. 850 crores in 1984-85 to Rs. 1350 crores in 1987-88, an increase of over 58%. The position in case of Civil Aviation is satisfactory, but considering the capital intensive nature of the Sector, it has been suggested that they should provide for depreciation on the basis of replacement costs. In the case of Ports, the position is far from satisfactory and the depreciation provision needs to be stepped up.

7.36 On the whole the Central Public Sector including Government Undertakings have done well. Railways were able to meet their dividend liability in full after making adequate provision for depreciation. In fact, they generated a surplus of Rs.258.83 crores during the three years as against a loss of Rs.274.83 crores in the Sixth Plan. The Civil Aviation sector as a whole also earned profits though a sharply declining trend of profits is a disturbing feature. In 1987-88, Air India ia likely to incur a loss, as also Helicopter Corporation of India, Yayudoot and National Airport Authority. The financial performance of the Ports showed a welcome, though marginal improvement. The same was the case with the Shipping Corporation of India.

Planning for the Future

7.37 Improvements in the performance of the transport sector, commendable as they are, should give no cause for complacency. The transportation system in the country on the whole still remains deficient in several respects and there is no in-built assurance that transport capacities will be always available in step with the economic development in the country. However, the achievements made in the last few years provide a basis to plan for balanced development of the sector in long term perspective consistent with the needs of overall economic growth of the country. Indeed, efforts have already been initiated in the last two years to prepare a perspective transportation plan

on an integrated basis. In planning for the future, special emphasis is being placed on technological upgradation with a view to absorb emerging technologies and improve productivity and efficiency of the services. These efforts should lead to a sytstematisation and institutionalisation of long term planning for the transport sector.

Sectoral Issues

7.38 Transport planning has to be integrated over the various modes and the strategic issues relevant for all modes have been discussed earlier. However, there are certain planning and policy matters specific to each of the major sectors and are dealt with below.

Railways

7.39 On the basis of the performance of the Railways so far and the developments in respect of the major sectors, the demand for rail transport in the terminal year of the Plan - 1989-90 - is now placed at 345-348 million tonnes as against the earlier assessment of 340 million tonnes. The component of coal traffic is,however, expected to be lower by 8 to 10 million tonnes because of slippages in coal production/demand. The increase in rail demand would be largely for foodgrains,petroleum products, cement and general goods traffic .The average lead of freight traffic is estimated to reach 730 kms as against the Plan assessment of 680 kms. During the past few years, the lead has displayed a persistent upward trend which is in keeping with the assigned role of the Railways in long-haul freight traffic.

7.40 The pattern of loading continues to oscilate during busy and lean season largely because of seasonal variation in coal loading. If a determined effort were made to reduce the amplitude of variation in loading, it will significantly improve the overall output of the system through stockyards at consumption centres and differential tariffs.

7.41 As cautioned, the railways are facing shortage of motive power for freight operation largely due to delay in stepping up the manufacturing capacity of electric locomotives at Chittaranjan, further compounded by the delay in initiating technological upgradation of the existing locos, both Diesel and Electric. It is reckoned that this position is not likely to get relieved by indigenous production in the next two years or so. It may, therefore, be necessary to go in for one-time import of the required

number of locomotives to tide over the situation. At the same time, the Railways must exercise restraint in introducing passenger trains, so that the available fleet is able to meet the growing requirement of freight traffic.

7.42 So far as the procurement programme for rolling stock is concerned, it can be considered satisfactory except for wagons, a large number of which have had to be stabled due to non-availability of components like wheel-sets. The pace of procurement of rolling stock will have to be stepped up substantially during the remaining period of the Plan if the traffic targets are to be achieved by the Railways.

7.43 The Seventh Plan stipulated that "given the scarcity of resources and priority to be accorded to freight traffic, it will be necessary to contain the demand for passenger traffic with the aid of an appropriate pricing policy". It was, therefore, assumed that increase in non-suburban passenger traffic could be restricted to 2 per cent per annum. However, during the first two years the increase has been around 7 per cent per annum which means the trend observed during the Sixth Plan, when the non suburban passenger traffic registered an overall annual increase of little over 2.5 per cent, appears to be getting altered. This has implications, both on investment requirements and the capability of the Railways to carry freight traffic.

7.44 As a share of the transport output, passenger traffic accounts for about 55 per cent of the total traffic units(goods tonne kilometers + passenger kilometers) but only 27 per cent of the total earnings. It is,therefore,apparent that the prices are not in line with the prevailing costs. For the financial viability of the Railways, price adjustments are essential in this area.

7.45 The Railways are carrying a large portfolio of ongoing projects, particularly that of new railway lines. In a situation of constraint of resources, priority has,therefore, been accorded for completion of new railway lines in North Eastern Region, strategic railway lines, project oriented schemes and development of alternative routes. Calcutta Metro Project is expected to be completed by December 1990. Kapurthala Coach Factory is on schedule - March 1988; but production in respect of improved coaches will commence 18 months thereafter. The project on Operations' Information System is under review and may perhaps need reappraisal of costs and benefits and the scope of the project.

7.46 Project formulation leaves much scope for

improvement. Large shelf of projects with a thin spread of resources inevitably results in time and cost over runs. Though the situation has somewhat improved, there is still a tendency to take up new starts without adequate consideration being given to availability of funds and the long term needs.

7.47 The policy of replacement of overaged assets has been adhered to and adequate provision is being made towards depreciation requirements. One of the redeeming features of the Plan is the shift in investments towards capacity build up of the system to meet the expected demand. The proportion of investments for creation of additional capacity has been increased, from 32 per cent during the Sixth Plan to over 46 during 1987-88. This trend needs to be sustained.

7.48 The incidence of on-line failure of equipment is fairly high. Such failures on the crowded traffic corridors even if stray tend to bring about a quasi paralysis of the corridor which the system cannot take in its stride. The sine qua non of economic freight operations on the Indian Railways is the rigorous reliability of the equipment and unless the failure frequency is reduced to near zero, the available transport capacity would continue to be heavily wasted resulting in under utilisation of costly assets and even somewhat nullifying the investments. Hence the imperative need to improve design, manufacture maintenance capabilities.

7.49 The proportion of the fleet awaiting repairs, though improving, is still high in relation to realistic norms. The pace of modernisation and rationalisation of maintenance facilities requiring reduction in the number of workshops, conversion of multi-activity shops as uni-activity shops is extremely slow. The Railways continue to engage in production activities leading to sub-optimal utilisation of workshop capacities. They need to offload, some of their manufacturing activities and concentrate more on their assigned role as transport operators.

7.50 The development of rapid handling terminals has not made any meaningful headway. This is despite the fact that 40-50 per cent of the average turn round time of the freight wagon is spent in terminals.

7.51 The manpower costs in the working expenses of the Railways form a substantial proportion; presently about 45 per cent of the earnings are taken up by these. Effective control of this outgo is of vital importance for the financial viability of the Railways.

7.52 Presently, the Railways capacity has reached a plateau and additional traffic output is posible only on the basis of additional capacity build up with adequate investments. As is well known, the Railway projects are highly capital intensive with a long gestation period. As it is,the demand for rail services is expected to show a quantum jump from the present level before long. Considering all these factors, it is necessary to initiate works which will create the requisite capacity in the initial years of the Eighth Plan.

Roads

7.53 The development Plan for roads during the Seventh Plan makes an important change in terms of the outlay provided, completion of the 1590 spill-over works, the phased upgradation of the National Highway network, the modernisation of road construction technology and the shift to a smaller number of large size works which also provides an opportunity to attract good contractors to the road sector.

7.54 The prime weakness in the road sector is the prolonged neglect of the maintenance revealed by a recent study of the Planning Commission. This is the result of a continuing gap between requirement and allotment of funds for the maintenance of roads. If this gap is not bridged very soon, a significant proportion of the road network is likely to break down beyond redemption. On the basis of such information as is available, it is surmised that:

i) At least one Km. out of every three of our National Highways is in need of attention due to cumulative neglect of the past two decades;

ii) The corresponding proportion of State Highways in need of attention varies from State to State but overall it is estimated to be three Kms. out of every five;

iii) The situation regarding Major District/Other District Roads is so confused that even a rough assessment cannot be made. All that can be said is that the proportion of such roads in urgent need of repair and restoration is much higher than that of National and State Highways.

7.55 To avert the crisis, we have to lay emphasis on the maintenance of the network rather than its continual extension till the clearance of the pile of accumulated past arrears. In the State sector,

the most important programme is the construction of rural roads under the Minimum Needs Programme (MNP). The Seventh Plan targets for such rural roads would be met in several States but are not likely to be achieved on all India basis. Some of the State Governments have yet to prepare master plans for road development. Roads are also being constructed under Area Development Programmes and Anti Poverty Programmes, besides other special programmes like Command Area Development Programme which have a road component etc. Lack of co-ordination among the different programmes and agencies executing rural road works is another area of concern.

Road Transport

7.56 There has been a positive change in the road transport sector. It has borne fruit in increased productivity of state road transport undertakings in the last two years as already indicated earlier. On the financial front, the losses per bus per year fell by 42 per cent from Rs.30,800 in 1984-85 to Rs.17,800 in 1986-87. But these improvements are not sufficient to curb the mounting losses of undertakings. The cumulative losses during the first three years of the Seventh Plan are estimated to be around Rs.657 crores though the annual losses have somewhat stablised in the order of Rs.220 crores, despite increase in size of operations.

7.57 The financial viability of STUs has been seriously impaired by inflexible fares in an environment of rising costs, concessional travel, uneconomic routes and above all high level of taxation. The position has come to such a pass that unless these undertakings are supported with lower taxes and given flexibility to adjust fares to match their costs, they may become a serious burden on the economy. In addition, they should have priority access to institutional finance. What is needed is a more liberalised and stable policy regime. It is necessary to expedite the formation of an apex Transport Finance Corporation as envisaged in the Seventh Plan to coordinate the funding needs of road transport sector. The STUs on their part must pay as much attention to workshop facilities as to the acquisition of new vehicles.

7.58 The Seventh Plan recognises that the public transport system requires to be strengthened, being much more energy efficient than personalised motor transport. However, as things have turned out in actual practice, personalised modes of transport have

received an unprecedented impetus. This trend needs to be reversed. Top priority has, therefore, to be accorded to beefing up public transport system, both for inter-city and intra-city traffic.

7.59 As is now well known, demand for passenger services is not likely to be met in full and satisfactorily through state-owned systems. The Seventh Plan visualises the induction of private sector and envisages a more stable regime for this purpose. State Governments need, therefore, to work out a balanced policy in this regard.

7.60 While bus transport would continue to be the backbone of the overall transport system in inter-city movement, the traffic density in a metropolitan city cannot be handled by a purely road-based system. The Seventh Plan visualising this situation had suggested the need to adopt other modes like electric based systems. Unfortunately , hardly any progress has been made in this regard except completion of many studies. The substantive problem is that electric rail-based systems are extremely expensive and there is severe constraint on resources. Agreement has been reached in principle to initiate a Metropolitan Transport Fund. The idea is that such a fund would provide project specific funds to metropolitan cities on matching basis. Meanwhile, it is imperative to search for and implement low cost solutions. Such solutions involve better traffic engineering and management, introduction of dis-incentives for the use of private motorised transport in order to reduce traffic and expansion of supply of cheap public transport by the introduction of different levels and quality of services and other forms of para transit usually operated by private and cooperative sectors.

7.61 The capacity of the trucking industry to move freight is increasing. The production of light commercial vehicles(LCVs) has steadily increased while the production of medium and heavy commercial vehicles has stablised during the last two years. The productivity of the truck fleet in terms of load carried has continued to show improvements over the years. Their operation, however,continues to be affected adversely due to preponderence of overaged vehicles, absence of assured loads owing to the fact that the truck owners are lone operators, poor facilities for loading/unloading at terminals and the frequently punctuated travel due to stoppages at octroi points.

7.62 For greater operational efficiency, the

growth of goods transport cooperatives needs to be encouraged. Professional organisations for providing such services could be developed similar to Travel Agencies. If a network of such agencies is established, it will be possible to evolve a computerised data base and booking of goods. Franchise operations could be developed in each area under all-India agencies. Training of personnel for such agencies and franchise operations would be important in bringing professionalism into this unorganised area.

7.63 The abolition of octroi in 19 states and Union Territories is a welcome feature. The scheme of granting all-India permits without any restriction should also go a long way to improve the productivity of the road transport industry. The most adverse feature that needs rectification is the high rate of road accidents. In this regard,India is at top of the world league barring a few African countries. A National Road Safety Council has recently been set up to devise safety measures and oversee their implementation. But much still needs to be done in this regard.

Ports

7.64 The Seventh Plan attempted to steer major ports development to diminish the gap between capacity and its actual utilization as measured by traffic throughput. To do so, the planned programmes aimed at some build up of capacity and rectifying major capacity eroding factors. Throughput during the first two years of the Seventh Plan rose in spite of a decrease in fertilizer traffic due to reduced imports. However, it now seems that the original throughput target for 1989-90 will have to be revised to 145 MT and the overall port capacity build up by the end of the Seventh Plan will be 152 MT against 161.65 MT originally envisaged.

7.65 The capacity of the ports, now envisaged, will suffice for the traffic in the terminal year of the Plan. But, it is apprehended it may fall short of the higher levels of throughput during the early years of the 8th Plan. It will, therefore, be necessary to initiate action on new capacity building schemes in view of the longish gestation period of infrastructure development. These schemes are linked with specific projects and include deepening of ports for larger size vessels, development of port infrastructure at Paradip, augmentation of capacity for petroleum products at New Mangalore and Kandla and development of facilities at the proposed satellite port at Madras.

7.66 Regarding deepening of the ports, the position has considerably improved. By the end of the, plan the position would be as under:-

Type of Vessels	Ports capable of receiving
1. Third Generation Container Vessels	Nhava-Sheva, Madras
2. Second Generation Container Vessels	Bombay
3. Combination vessels and smaller size Container Vessels	Calcutta, Haldia
4. Iron Ore vessels of size 1.3 lakh DWT	Madras
5. Fertilizer raw material:	
a) 45,000 DWT	Paradip
b) 60,000 - 80,000 DWT	Nhava-Sheva
6. a) Tankers of size 100,000 DWT	Madras
b) Tankers of size 150,000 DWT	Vizag

7.67 The achievements in the ports sector are substantial. But there are a number of areas of concern. The most important of these are:

(i) unsatisfactory availability and maladroit operation of cargo handling equipment in many ports;

(ii) low-level capacity of handling systems which is only half of international standard;

(iii) low productivity of labour and over- manning which is conservatively estimated to be 30 to 40 per cent; and

(iv) unsatisfactory operating ratio which needs to be improved; all ports are not able to meet their operating costs;

These areas of concern underline the need to pay greater attention to equipment productivity, manning standards and financial returns in the Ports Sector. If ports are to meet their obligations by way of

interest etc. and generate resources for development it will be necessary to undertake capital restructuring, tariff reforms, adopt more economical ways of working including reduction in staff strength.

7.68 The Seventh Plan had recommended pooling of resources of the ports whereby surplus ports would lend to deficit ports for their development. This recommendation was a radical change from the financial regime, hitherto, followed in the port sector. In the Seventh Plan, a beginning was made in this direction when Bombay Port started lending to Nhava-Sheva Port and also to Madras Port. The implementation of this scheme has recently run into legal problems and the Ministry is taking appropriate action to sort out the issues.

7.69 Nhava-Sheva Project is expected to become operational in February, 1989. The infrastructure for this port will have the benefit of state of art technology. It is equally essential that the operational practices and techniques are also brought in line with the international standards, lest this port gets swamped with the maladies that have afflicted most of the ports in India - over staffing, poor operating and maintenance methods. Though the port will have a capacity to handle 2.9 million tonnes of fertilizer traffic, it is feared this capacity may not be fully utilised. A study needs to be commissioned to analyse the stream of traffic to and from the port including use of mono-commoidity berths for handling other commodities so as to make optimum use of available capacity and assets.

Inland Water Transport

7.70 The Seventh Five Year Plan is an important landmark in the development of inland water transport. The outlay for this sector in the Plan is more than double the expenditure incurred right up to the end of the Sixth Plan. The policy regarding declaration of national waterways is being pursued and the necessary legisation to declare river Brahmaputra as National Waterway No.2 during this Plan period is underway. The Inland Waterway Authority has been set up which is a big step forward and should help in the accelerated development of inland water transport. This, however, will happen only if the States where this mode of transport has a potential also set up separate IWT organisations to implement their programmes. A review of work on National Waterway No.1 shows considerable delay in the development of infrastructure.

7.71 The interest subsidy scheme specially designed to benefit the weaker sections of the society engaged in the IWT operations was not implemented with the necessary will and commitment with the result that the benefits did not reach the targetted group. Corrective measures have once been taken by the Ministry.

Shipping

7.72 The last few years has been difficult for the international shipping industry and so has been the case with Indian Shipping. Uneconomic freight rates, preponderance of overaged and fuel inefficient vessels with high operting costs, lack of diversified fleet have affected the fortunes of shipping. Despite these odds, the performance of the Indian shipping during the last two years has shown positive developments. It has set its course right and has embarked upon an extensive fleet modernisation linked with massive scrapping/ disposal of old and uneconomic units and their replacement with fuel efficient and technologically modern vessels.

7.73 The shipping industry structure too has undergone changes. While some new lines have emerged, a large number of existing financially non-viable shipping lines have been forced out of the market. This trend will continue till a healthy and financially viable fleet emerges in the shipping industry.

7.74 A positive sign on the shipping financial front is the opening of a new window - the SCICI - under the aegis of the ICICI for financial assistance to the private sector and in the recent past a few rehabilitation measures for the shipping companies have been undertaken such as encouraging shipping companies to diversify into areas other than shipping as it was felt that a composite company can sustain the periods of recession better and also allowing defaulting companies to scrap vessels and use the proceeds for improving their liquidity position. Rescheduling of loans on the basis of the market value of their assets is also contemplated. Other measures envisaged are the reduction in custom duty levied on scrapping of ships.

7.75 The advent of latest shipping technologies has necessiated reorientation of training programmes to suit these changes. In this connection, the institute for training of maritime personnel, set up by SCI with the IMO assistance will go a long way in building up being set up in replacement of training ship " Rajindra" ,to conform with the latest training requirements prescribed by international conventions.

7.76 Despite these significant changes for the better, there are areas of concern which call for special attention.

i) The tonnage acquisition programme of shipping industry has been rather slow. There has been delay in firming up proposals, placing of orders etc. As a result, a number of opportunities to build the fleet strength at highly competitive prices have been lost. Firm orders for cellular container and specialised vessels are yet to be placed.

ii) The share of traffic carried by Indian vessels has shown a decline especially in dry bulk and liner cargoes. The country is not likely to achieve the long term goal of gaining 50 per cent of the dry bulk and 40 per cent of liner trade.

7.77 Indian Shipping cannot be expected to function in isolation from the international shipping environment. Most developed and developing maritime nations provide concessions to the shipping companies in some form or the other. India will also have to adopt suitable supportive measures such as cargo support, buying on FOB and selling on CIF terms by government departments, priority berthing, strengthening of TRANSCHART operations and imposition of code of conduct for Liner Conferences which reserves 40 per cent of liner cargo for national ships.

Civil Aviation

7.78 In the Civil Aviation Sector the last two years of the Seventh Plan witnessed far reaching structural changes and a massive acquisition programme, both for replacement of aircraft and for capacity build up. National Airport Authority was set up to manage the domestic airports in the country. A separate organisation for running helicopter services was established with the task of providing helicopter support services for the oil sector and also to provide means of communication in inaccessible areas and difficult terrain. A Central Academy for training the pilots was set up and has become operational. Computer and communication facilities were strengthened to meet the real time reservation capabilities of the two airlines. The fleet induction during the Seventh Plan would include 28 wide bodied aircraft, 48 Helicopters, 7 Dorniers, and 12 single/twin engine Turbo- Prop trainer aircraft with total cost of Rs.2520 crores. This includes orders for 6 wide bodied aircraft placed in the Sixth Plan. Besides, Air India

would have acquired leased capacity of two aircraft for their operations.

7.79 Indian Airlines recorded a growth of 10 per cent in traffic as against the moderated growth of 8 per cent suggested in the Plan. Air India recorded a negative growth as against the projected growth of 4 per cent largely due to decline in traffic on India-Gulf route compounded by loss of an aircraft. Vayudoot, a second level domestic airline, expanded its operations to cover 84 stations including 18 stations in the North Eastern Region.

7.80 Despite impressive achievements, the Sector continues to suffer from several weaknesses. Air India's share of interntional traffic from and to India which had gradually declined from 48 per cent in 1981 to 35 per cent at the end of the Sixth Plan, continues to hover around this level. Out of 15 routes operated only 3 routes made profits while the remaining routes incurred losses. The fortunes of the airline were largely determined by India-Gulf route, and with the tapering off of the traffic on this route the overall profitability has been seriously affected. The performance of its freighter services was somewhat better but the profits were low because of directional imbalance and export cargo covered under low mandatory rates. The financial health of Hotel Corporation of India, a subsidary of Air India, is far from satisfactory.

7.81 As regards Indian Airlines, only 53 routes out of 145 were profitable. The long haul services between the metropolitan towns generated 80 per cent of the total surplus of the airline of which Delhi-Bombay route accounted for about 25 per cent. This was in line with the dominant role of air transport on long-haul routes. Vayudoot recorded losses, which are increasing with the expansion of its short-haul services. The Helicopter Corporation of India is at its cross-roads as a result of non - materialisation of projected demand for helicopter services and scaling down of anticipated productivity parameters of choppers. Despite various concessions, the Corporation incurred losses in the first two years of its existence.

7.82 Air transport being dependent mainly on import of aircraft and equipment from abroad and being also heavy on fuel consumption puts a great strain on country's foreign exchange resources. It is, therefore, necessary that the rate of growth of domestic air services be moderated by appropriate pricing policy as stipulated in the Seventh Plan.

7.83 It is important to ensure that Civil Aviation sector as a whole generates additional resources so as to be able to finance its expansion programme without any allocations from the general exchequer, though the incidence of the latter has substantially come down in the Seventh Plan. It is apprehended that this may not be the case in the Eighth Plan due to higher interest burden on newly acquired aircraft.

7.84 A recent development is the introduction of numerous short-distance flights. Most of these services apart from being non-remunerative do not result in substantial savings in journey time. It is important at this stage, therefore, to undertake detailed studies and evaluate the viability of the services operated and those proposed to be added in future.

7.85 Domestic Airlines do not generate enough foreign exchange for the purchase of aircraft, spare parts and fuel. It is necessary to adopt a system approach and align the services more for the need of foreign tourists to generate enough foreign exchange.

7.86 The most noticeable feature of airline operations at all major airports is the bunching of the flights resulting in suboptimal utilisation of infrastructure during off-peak period. Operational and tariff measures designed to even out traffic peaks need to be undertaken.

Chapter 8

COMMUNICATION

8.1 The Seventh Plan recognised the special role of the communication system in the economy and society and stressed the importance of information flows in motivating and managing the development process. It recognised that electronic media radio, TV and telecommunications will play a major role in this process. This increased emphasis on communications, and more broadly, on information technology is one of the special features of the Seventh Plan. The progress with regard to tele-communications and other sectors is dealt with below:

Telecommunication

8.2 The targets and achievements in the telecommunication sector are shown in Annexure 8.1. Nearly three-quarters of the target for local switching will be realised in the first three years of the Plan. However, the pace of progress with regard to long distance switching, transmissions and telex is low. The new technology of optical fibre transmission will make itself felt in 1987-88.

8.3 A significant development in the telecommunication sector in the first two and half years of the Seventh Plan is the work of the Centre for the Development of Telematics (CDOT). 128-port EPABXs based on CDOT design have already been commercialised and are working satisfactorily. A 128-port RAX has also been designed and working prototypes installed in two semi-urban areas. A 512-port MAX is undergoing final field tests while a 16000-port design of a MAX will be subject to field trials early next year. Commercial production based on these designs is expected to begin in the next six months. From a cost, technology and organisation point of view, the work of CDOT so far is most encouraging and similar such efforts need to be supported on a substantial basis.

8.4 A major technology mission has been launched in the telecommunications sector. The objective of the mission is to improve the quality of service to existing and prospective customers, to improve accessibility within the existing network and to support indigenous development of certain selected technologies and products. Specific time-bound activities being undertaken to improve the quality of service include training of staff, reduction in the

delay in delivery of telegrams, reduction in fault rates, improvement in call success rates and improvement in manual trunk service. Specific time-bound activities being undertaken to improve accessibility include increasing the number of public telephones, providing of telex connections on demand and expanding the rural network. The results of the mission approach are already visible and the achievements in some areas are highlighted in Table 8.1.

Table 8.1 : Achievement of Telecommunication Mission Approach

Activity	Target for March 88	Position on March 86	Achievement on 1.11.87
1.Delivery of all telegrams within 12 hours(per cent)	60	20	61
2.Reduction in faults per 100 telephones per month	20	35	23
3.Increase in call success rate			
(i) Local (%)	95	90	97
(ii) STD (%)	40	20	72
4.Improvement in Manual Trunk Services (%)	75	73	79

8.5 The network continues to be modernised. At the beginning of the Seventh Plan, the network had no digital component. It is now about 5 per cent digital. All other targets are expected to be met. A whole array of digital products has been introduced in the country. These include electronic teleprinters, digital telephone instruments, digital radios and MUXs and electronic EDXs. Production plans for the manufacture of fibre optic system have also been finalised.

8.6 Today, large users are planning for their own dedicated communications facilities based largely on imported equipment. Some of these users include railways, defence, banks, power stations and enterprises in the steel, coal and oil industries. An integrated view keeping in mind the advantages of standardisation of products has to be taken and there is need to plan for a single national consolidated telematics network.

Rural Postal Development

8.7 The Plan envisages the opening of 6000 additional post offices in the rural sector. However, at the very inception of the Seventh Plan, the Central Government ban on creation of new posts had come into effect. Since opening of post offices invariably involved creation of posts and recruitment of staff, this programme could not take off.

8.8 It is now expected that the number of post offices to be opened in rural areas during the remaining three years of the Seventh Plan may be 500 to 1000 per year. The focus of this programme will be on backward areas including hilly areas.

8.9 The Seventh Five Year Plan has laid great emphasis on investment in the physical assets of the Department, particularly in postal real estate. Over the years, the growth in the number of post offices has not been matched by increase in physical assets. Majority of post offices continue to function in rented accommodation which in most cases are unsuitable and consequently the quality of service has remained below expectations. At the end of the Sixth Plan, there were 207 office buildings and 3791 staff quarters under construction to be completed in the Seventh Plan. Besides, it has been planned to provide for 1250 offices and 4000 staff quarters during the Seventh Plan. About Rs. 10 crores have been earmarked for acquisition of sites.

8.10 The mechanisation/modernisation of postal services has been given special importance in the Seventh Plan. The programme includes not only installation of machines, such as high speed stamp cancelling machines and high speed franking machines, cash registers/multi-purpose counter machines and digital weighing scales to improve productivity and to reduce the cost of operations but also computerisation and introduction of electronic sorting systems.

Sound Broadcasting

8.11 Some of the schemes included in the Fourth, Fifth and Sixth Five Year Plans could not be completed in respective Plan periods and spilled over to the Seventh Plan. Most of the schemes have already been completed while some are in various stages of progress and likely to be completed by the end of the Seventh Plan. The new schemes for the Seventh Plan inter-alia, include modernisation and replacement of studio equipments and transmitters at existing centres, upgradation of power ratings of transmitters, installation of new radio stations, development of software and installation of new transmitters. Between 1985-87, 184 broadcasting centres have been set up. Of these., 166 are full-fledged stations, 8 auxiliary centres, 6 commercial centres and 4 relaying centres. The target for 1987-88 include setting up of 97 broadcasting centres, as many as 90 of these will be full-fledged stations while there will be only 2 auxilliary centres, 3 commercial centres and 2 relaying centres.

8.12 The progress regarding installation of transmitters during the first two years (i.e. 1985-87) has been installation of 271 medium wave, 71 short wave and 8 VHF (FM) transmitters. The target for 1987-88 is installation of 141 medium wave, 40 short wave and 4 VHF (FM) transmitters.

Doordarshan

8.13 The Seventh Plan outlay, inter-alia, includes Rs. 163.56 crores for continuing schemes carried over from the Sixth Plan. The Seventh Plan for Doordarshan aims at consolidating and augmentation of programme production facilities besides extending the coverage from 70 per cent to 80 per cent population of the country. One of the main objectives of the Plan is to provide primary service produced in the respective States in the local languages. The number of programme production centres in the country is expected to increase from 17, at present, to 48 when schemes included in the Seventh Plan are completed. Eventually, a three-tier service viz National, Regional and Local Service is envisaged to be provided, depending upon availability of resources

8.14 TV Studio Centres at Calcutta, Trivandrum, Jaipur and Ahmedabad have been commissioned. The TV transmitters carried over from the Sixth Plan have also been completed and commissioned except for those included in the North-East region sanctioned in 1984. These transmitters along with associated programme production centres are expected to be

commissioned during the remaining period of the Seventh Plan. TV Studio Centres at Bangalore, Hyderabad, Guwahati and Lucknow are also expected to be commissioned during the next two years. Relay of primary service by all transmitters in the States of Maharashtra and Andhra Pradesh has been introduced with the help of INSAT-1B. Telecast of similar service by TV transmitters at Kodaikanal in Tamil Nadu and Behrampur in West Bengal has also started using microwave link. A 2 x 10 KW TV transmitter at Delhi is expected to be commissioned during 1987-88 on completion of 235 Mt. RCC tower. The power of the Second Channel TV transmitter at Delhi is also proposed to be augmented simultaneously.

8.15 Sites for most of the new schemes, included in the Seventh Plan, have been selected and building works taken up at a number of places. Most of the long delivery equipment required for Seventh Plan projects has been ordered. Twenty-six additional TV transmitters have been set up during the Seventh Plan period, including 3 unmanned solar powered TV transmitters, one at Rawatbhata (Rajasthan) and two in Lakshadweep islands. Sixty three low power (100 Watt and 2x10 Watt) TV transmitters are proposed to be commissioned into service during 1987-88. In addition, 6 LPTs in North East region are proposed to be replaced by high power transmitters. Programme Production Centres are envisaged to be set up at Kohima, Imphal, Silchar and Dibrugarh. Civil works for studio and transmitter building and erection of tower are in progress at all the 8 Centres in the North East where HPTs and Programme Production Centre are expected to come up. System design and procurement of equipment is in hand in respect of TV studios at 48 Centres.

Annexure 8.1

Telecommunications

Targets and Achievements

	Unit	Seventh Plan Target	Achievements		Target
			85-86	86-87	87-88
Local Telephone System					
1.Switching capacity	lakh lines	13.04	3.60	3.21	3.00
2.Direct Exchange lines	-do-	11.00	2.68	3.24	2.40
Long Distance Switching					
1.TAX capacity	°000 lines	57.90	5.6	7.4	23.2
2.Manual Trunk Boards (Nos.)	-do-	1100	217	145	65
Long Distance Transmission					
1.Coaxial cables	Route kms.	8620	1507	1032	1400
2.Microwave	-do-	11184	2304	1547	1925
3.UHF	-do-	12697	1605	1605	1365
4.Fibre Optic	-do-	5144	-	-	1064
5.Earth stations	Nos.	65	1	1	22
Telex and Telegrams					
1.Long distance public telephones	Nos.	9000	1509	1558	1200
2.Telex Exchange capacity	Lines	32200	1580	2450	5800

Chapter 9

HUMAN RESOURCE DEVELOPMENT

Introduction

9.1 The development of human resources is both a means and an end. Education, cultural expression and improved health are desirable in themselves. But they are also an essential base for social and economic development. Recognising this, a special effort has been made in the Seventh Plan to reorient and accelerate the pace of human resource development. In the field of education in particular the New Education Policy 1986 marks the beginning of a new epoch.

9.2 A major theme of the Seventh Plan is the integration of human resource development programmes with other programmes. Some progress has been made towards this. First, integration between different activities within the sector has been promoted e.g. between health care and family welfare. Second, integration between health, education and related sectors has been pursued e.g. between child care and pre-primary education, between education, health and nutrition in the Intergrated child health care and enrolment and retention in the School Health Programme. Third, human resource development is being integrated with other development activities e.g. by the use of National Rural Employment Programme (NREP) Rural Landless Employment Guarantee Programme.(RLEGP) funds for constructing school and health centre building. The objective of integration is also reflected in the formation of a Ministry of Human Resource Development at the Centre.

EDUCATION

9.3 In the Seventh Plan, the thrust areas in the education sector are i) Universal elementary education; ii) Eradication of illiteracy in the age-group 15-35 years; iii) Vocationalisation and skill-training programmes at different levels of education; iv) Upgradation of standards and modernisation at all stages of education with effective links with the world of work and development with special emphasis on science and environment and on value-orientation; v) Spread of education of high quality and excellence in every district in the country; and vi) Removal of obsolescence and modernisation of technical education, especially to meet emerging requirements.

9.4 In the Seventh Plan Document it was pointed out that the commencement of the seventh Plan coincides with a comprehensive review of the education policy. The achievements in the field of education since 1947 have been impressive and the general formulations of the 1968 policy were unexceptionable. But they did not get translated into a detailed strategy of implementation accompanied by the assignment of specific responsibilities and financial and organisational support. As a result, problems of access, quality, quantity, utility and financial outlays assumed massive proportions necessitating a new formulation. The National Policy of Education was adopted in May, 1986 and its Programme of Action was adopted in August, 1986.

9.5 These call for comprehensive efforts covering a wide range of concerns and comprising both long term and medium term measures. These emphasise the need for careful planning and prioritisation with a feasible time-frame within which adequate academic, technical, legislative, financial and administrative inputs may be made available in a coordinated manner. Among the areas on which the Policy envisages concerted action are i) early childhood care and education and integrated child development service. (ii) universalisation of elementary education through formal and non-formal methods so as to realise the goal by 1995 (iii) reduction of wastage and involvement of local community in the management of elementary education (iv) vocationalissation of education in order to divert 10 per cent of students at plus two stage to the vocational stream by 1990 and 25 per cent by 1995 (v) selective support to R&D infrastructure in higher education system including COSIST programme and critical areas of research, (vi) cultural heritage and curriculum and (vii) media and educational technology.

9.6 Some of these objectives are time-bound and target - specific while some others would take time to get fully incorporated into the national education system. In a few cases, inter-disciplinary investigation may be necessary for exploring the subject areas and for identifying policy initiatives. It is realised that successful implementation of the policy would depend upon the extent to which the interface between education, human resource development and socio-economic systems is strengthened towards a mutually reinforcing endeavour as contemplated in the Seventh Plan. The implementation of some major provisions of the National policy on Education (1986) has been taken on hand in 1987-88 and several new programmes have been initiated by the Central Government.

9.7 It may be relevant to point out here that in persuance of the National policy on Eduation, the target dates laid down in the Seventh Plan for realising universal elementary education and for eradication of illiteracy among the population in the age group of 15-35 years have been reassessed and fixed to end with the Eigth Plan i.e. 1995. In the case of vocationalisation of secondary education, the policy lays down specific milestones for 1990 and 1995, viz. 10 per cent and 25 per cent of the student enrolment at the higher secondary stage to be provided for in national stream.

Universalisation of Elementary Education

9.8 The target indicated in the National Policy on Education is to achieve universal primary education upto the age of 11 by 1990 and education of all children upto 14 years of age by 1995. A major effort in the Seventh Five Year Plan was to extend formal school education facilities, organise meaningful non-formal education programmes and to improve the quality, relevance, effectiveness and usefulness of elementary education. Special attention was to be paid to the promotion of education of girls, first generation learners and children from Scheduled Castes/Tribes. The extension of elementary education is a part of the Minimum Needs Programme. The Table 9.1 indicates the targets set for the Seventh Five Year Plan and the likely achievement during the first three years in full-time/formal education:

Table 9.1 : Additional Enrolment in Elementary Schools

(figures in lakhs)

Stage	85-90 VII Plan Target	85-86 likely achie-vement	86-87 likely achie-vement	87-88 likely target	85-87 addi-tional	Col.6 as % of Col. 2
1.	2.	3.	4.	5.	6.	7.
I. Classes I-V						
Boys	38	17	15	14	46	121
Girls	68	18	19	20	57	84
TOTAL:	106	35	34	34	103	97

1.	2.	3.	4.	5.	6.	7.
II. Classes VI-VIII						
Boys	76	13	13	10	34	45
Girls	73	8	9	8	25	34
TOTAL:	149	19	22	18	59	40
III. Classes I-VIII						
Boys	114	28	28	24	80	70
Girls	141	26	28	28	82	58
TOTAL:	255	54	56	52	162	64

9.9 While the Seventh Plan enrolment target for classes I-V is likely to be achieved by the end of the first three years of the Plan, it is likely to realise only 40 percent of the enrolment at the middle school stage by then. Special attention is, therefore, called for here, in the remaining period of the Plan, so that necessary programmes and momentum are developed to help realise 100 per cent enrolment by 1995. Also the progress has not been even in all the States. Taking boys and girls together, the progress of enrolment in Classes I-V has been slow in Karnataka, Orissa and Rajasthan. In several States, the gross enrolment ratio was above 100 in classes I - V at the beginning of the Seventh Plan. It was then assumed that at this stage, with the improvement of educational institutions and introduction of non-detention policy, the wastage rate would be reduced to the minimum, the proportion of overaged and underaged children in the elementary education would be reduced gradually and that enrolment would be stabilised and maintained at a ratio of 100. All this has not happened. Thus effective steps are required to be taken to remove stagnation in the Schools.

9.10 The emphasis in the plan is on the education of girls. Two out of three children to be addtionally enrolled in Classes I-V in the Seventh Plan and one out of two in classes VI-VIII are expected to be girls, but in the first three years of the Seventh Plan it is likely that girls may account only 55 per cent and 40 per cent respectively of the addtional enrolment at these stages. Progress of enrolment in classes I-V has been particularly low in Gujarat, Himachal Pradesh, Karnataka, Orissa, Rajasthan and West Bengal. Unless enrolment of all eligible girls is ensured, the goal of universal elementary education will remain unfulfiled.

9.11 The other important programme for universalisation of elementary education is non-formal education with the enrolment target of the order of 25 million during the Seventh Plan. A Centrally Sponsored Scheme of non-formal education was taken up in the nine educationally backward States from 1981-82. The total enrolment at about 1.50 lakh centres is expected to be of the order of 4 million in 1986-87. At this rate, the Seventh Plan target would not be realised.

9.12 In the field of elementary education, the New Education Policy tries to tackle the problems of enrolment, drop-outs and quality through a large programme symbolically called "Operation Blackboard" coupled wih a large systematic programme of non-formal education.

Operation Blackboard :

9.13 Operation Blackboard seeks to eliminate disparities in educational facilities and helps to improve the quality in publicly funded schools. Through the strategy of establishing common School System, the fqucs of Operation Blackboard will be on the under-privilaged, economically weak, and educationally disadvantaged sections of the society.

9.14 It envisages to cover 20 per cent of the primary schools/sections in all the States and Union Territories in 1987-88 to equip them with at least: a) two reasonably large rooms usable in all weather; b) two teachers as far as possible one of them a women; and c) provision of essential teaching and learning materials including blackboards, maps, charts, a small library, toys, games, sports and some equipment for work experience. Over the next few years, the scheme is proposed to be implemented in the entire country.

9.15 In regard to the construction of school buildings envisaged under the Operation Blackboard, funds would be supplemented from NREP and RLEGP in addition to the normal budget provisions of the State Governments. Community participation will be sought for land for construction of school buildings, local community preferably Village Education Committee undertaking responsibility for repairs and maintenance of building and for fencing. Provision of separate toilets for boys and girls will form part of the programme.

Non-formal Education :

9.16 The New National Programme of non-formal education introduced from 1987-88 as part of the New Education Policy extends to all the States. While educationally backward States would continue to be assisted for various types of Centres as in the Sixth Plan, financial support will also be extended to selected regions and client-groups in the educationally advanced States (viz., hilly tracts, pre-dominantly tribal areas known for educational backwardness, urban slums and projects for education of working children). The national programme of NFE is targetted towards school drop-outs, children from habitations without schools, working children and girls who cannot attend whole day schools. It is further envisaged that modern technological aids will be used to improve learning environment of NFE Centres. Talented and dedicated young men and women from the local community will be chosen to serve as instructors with particular attention paid to their training. Products of the Non-formal education system will be enabled to enter the formal system by ensuring that the quality of Non-formal education is comparable to that of the formal education. The successful implementation of this programme will require deep local community involvement, flexibility and adjustability of the operational details and freedom to experiment with a variety of models. The NCERT and NIEPA have recently completed evaluation of academic and other aspects of non-formal education programme in selected States and the findings of this evaluation need to be built into the implementation strategy of the programme.

Vocationalisation

9.17 In the Seventh Five Year Plan, a very high priority has been given to Vocationalisation of Secondary Education. The Plan lays down that facilities for vocational education will be suitably diversified to cover a large number of fields in agriculture, industry, trade and commerce and services sectors. Presently 15 States and UTs have introduced vocational courses covering 2.5 per cent of the total number of students at higher secondary stage of education.

9.18 The programme has been under implementation in a variety of ways in the States. As a follow up of the National Policy on Education, 1986 it is proposed to commence a large and substantially funded Centrally Sponsored Scheme for giving financial assistance to State Governments for introduction of vocational

courses at the +2 stage of Secondary Education. The Central Scheme builds on the recommendations of the Expert Committee referred to in the Seventh Plan Document.

9.19 The National Council of Educational Research and Training (NCERT) has developed a series of exemplar instructional materials for different subjects. While the larger programmes would commence from July 1988 after careful planning and necesssary preparations, some of the States which had already taken steps in this direction would be assisted from 1987-88 itself. 5,000 schools are proposed to be equipped with vocational facilities during the Seventh Plan period and relevant vocational courses would be introduced on the basis of area vocational surveys and assessment of manpower needs. It is important and necessary that the various systems and different works which are presently under implementation are suitably harmonised and fitted into this Centrally Sponsored Scheme.

Science Education

9.20 The importance of science education has been high-lighted in the Seventh Five Year Plan. It is proposed to update and modernise science teaching, improve laboratories and libraries in schools and ensure quality of science teachers through the large scale in-service orientation programme. The existing teacher training colleges are also being improved for pre-service and in-service training to teachers. It is also proposed to give environmental orientation to school education. Separate Centrally Sponsored Schemes have been finalised during 1987-88 to give Central assistance to States for improving and extending facilities for science and environment education in schools.

Navodaya Vidyalaya :

9.21 In order to make available facilities for quality education to rural children and to make up for the absence of good quality schools in rural areas, a major effort in the Seventh Plan was to provide residential model schools in all the districts of the country. Such schools will also help promote national integration. A programme for the establishment of Navodaya Vidyalayas at the rate of one per district has been taken up in the Central Plan. By the end of 1987-88, 209 such institutions have been sanctioned under an autonomous society set up by the Ministry of Human Resource Development.

Teacher Education :

9.22 In-service teacher training oriented towards innovative programmes in the thrust areas such as education of the first generation learners and children from poorer and deprived sections of the community, vocationalisation, science and environmental education, group specific non-formal education, equity in access to education, etc., constitutes one of the major strategies of the Seventh Plan. The National Policy on Education envisages estabishment of District Institutes of Education and Training (DIETs) with the capability to organise pre-service and in-service courses for elementary school teachers and for the personnel working in non-formal and adult education. Selected secondary teacher training colleges would be upgraded to complement the work of State Councils of Educational Research and Training. The National Council of teacher education is proposed to be empowered to accredit institutions of teacher education and provide guidance regarding curricula and methods. In 1986-87, NCERT conducted a mass in-service teacher re-orientation course covering about 5 lakh teachers; such re-orientation courses would be organised annually till the end of the Seventh Plan so as to ensure maximum coverage.

Eradication of Adult Illiteracy :

9.23 Eradication of illiteracy in the age group 15-35 years has been accorded a high priority in the Seventh Plan and is regarded a major thrust area. It is one of the components of the Minimum Needs Programme. The Seventh Plan target was to cover all such illiterates (90 million) by 1990. This target is not likely to be achieved. In the first two years of Seventh Plan, about 14.5 million of people were covered. For 1987-88, the target is to cover 8.92 million of people. The National Policy on Education has reiterated the emphasis on the eradication of illiteracy. According to the Programe of Action, 40 million people in the age group of 15-35 will be covered in the Seventh Plan and the remaining 60 million in the Eighth Plan. Various evaluation Studies have brought out that the existing programme of Rural Functional Literacy Project (RFLP) which influences the State Adult Education Programme (SAEP) and the programme of assistance to Voluntary Agencies (VA) suffers from several inadequacies relating to motivation, training of functionaries, teaching materials, physical facilities, supervision and post-literacy and continuing education activities. The work of voluntary agencies has also recently been evaluated

by Joint Evaluation Teams (JETS). Previous experience has also underlined the fact that programes of literacy can become meaningful only when they come along with the package comprising practical information and skills relevant to day to day needs of learners. All these deficiencies are sought to be made good in the National Literacy Mission.

9.24 The objectives of the Mission include identification of areas in which science and techno-pedagogic inputs are essential and feasible, identification of institutions which can contribute in technology and pedogogic research and support, creation of nation-wide network of training of field functionaries, creation of environment conducive to teaching learning process of adults, reorganisation and harnessing of all on-going programmes of adult education and literacy as well as the creation of managerial system for planning, implementation, monitoring and evaluation of the Mission. The programme of mass education through students and other educated people which was launched in 1986, and the on-going programmes of RFLP's/SAEP's VA's would be strengthened and incorporated in the Mission. Alongwith the programme of eradication of illiteracy, programmes for imparting functional knowledge and skills and also awareness about the socio-economic developments would be undertaken. Special attention is being given to post-literacy follow up and continuing education through a network of Janashikshan Nilayamas. It has been suggested that a National Authority for Adult Education (NAAE) be set up to manage the National Literacy Mission as well as to ensure the implementation, monitoring and evaluation of the several programmes at the national level.

Higher Education :

9.25 At the higher education level, the main attempt was to be to improve standards and to make the courses more relevant and flexible and link them to the development needs of the country. The plan also provides for selective strengthening of higher education system, particularly in post-graduate education and research. Greater autonomy in management, flexibility in courses with emphasis on new and relevant combination of subjects, multi-disciplinary studies, innovative experiments and reform of examination system are other major areas of effort in the field of higher education.

9.26 According to the National Policy on Education, 1986, urgent steps would be taken to "protect" the higher education system from "degradation". Courses and programmes of study would be redesigned to meet the demands of specialisation better. Coordinative methods would be developed by the University Grants Commission and the State Level Councils of Higher Education to keep a watch on standards. Research in the universities will be provided enhanced support and steps will be taken to ensure its high quality. An effort will be made to encourage the setting up of national research facilities within the university system, with proper forms of autonomous management. The Indira Gandhi National Open University will be strengthened; the scheme of open university distance learning will be developed with care and extended with caution. A beginning will be made in delinking degrees from jobs in selected areas. Concomitant with de-linking, a National Testing Service will be established to conduct tests on a voluntary basis to determine the suitability of candidates for specified jobs and to pave the way for the emergence of norms of comparable competence across the nation. The new pattern of the Rural University will be consolidated and developed on the lines of Mahatma Gandhi's revolutionary ideas on education so as to take up the challenges of micro-planning at grassroot levels for the transformation of rural areas.

9.27 The University Grants Commission have prepared implementation guidelines/modalities for priority areas like autonomous colleges, redesigning of courses, promoting research and development and education for minorities, Scheduled Castes/Tribes, handicapped and women and for normal development of universities and college. The Seventh Plan development proposals of the universities have been discussed with the Vice-Chancellors keeping in view the policy initiatives and are being implemented.

9.28 The on-going schemes of the UGC for quality improvement and research support, etc. are being strengthened. In regard to the scheme for Strenghening of Infrastructure in the Science & Technology in the university system (COSIST), financial support is provided on selective basis with a view to achieve high quality performance and to raise universities to the level of excellence comparable to their counterparts elsewhere in the other developed countries. It aims at strengthening of curriculum, promotion of laboratory works, making the methods of teaching more conducive to student's learning and creativities, adoption of new techniques of evaluation and restructuring of the courses based on inter-disciplinary needs and contents.

9.29 In order to coordinate policies relating to higher education in all aspects and disciplines including agricultural education, medical education and education in law, a National Council of Higher Education is being set up as an apex body at the national level. The National Testing Service referred to above together with measures being taken by agencies like the Department of Personnel, would facilitate early delinking of university degrees from jobs.

9.30 For fostering linkages between universities, development sectors and society, the UGC has laid emphasis on programmes like redesigning of courses, Computer Education, Bio-technology, Environmental Science, Ocean Development and other inter-disciplinary areas. Faculty improvement programmes, professional training programmes for University & College Teachers, Summer Schools/Institutes for Teachers & Students and Establishment of Curriculum Development Centres, are the notable steps in this area. Programmes for strengthening of Post-Graduate & Under-Graduate teaching, College Science Improvement Programme (COSIP), College Humanities and Social Improvement Programmes (COHSSIP) and Examination Reforms, will be continued.

Modernisation of Technical Education :

9.31 The Seventh Plan stresses the importance and urgency to renovate technical education system to support national development goals and tasks. In particular, it calls for modernisation of and removal of obsolescence in technical educational institutions, programmes, courses and facilities. It also envisages development of facilities for manpower training in emerging technology areas. Active collaboration was to be forged between technical education system and the user-agencies like industry. These aspects have been highlighted in the NPE, 1986. According to NPE, 1986, the reorganisation of technical and management education has to take into account the anticipated scenario by the turn of century, with specific reference to the likely changes in the economy, social environment, production, management processes, the rapid expansion of knowledge and the great advances in science and technology. It has been decided to give statutory status to All India Council for Technical Education and the Parliament has passed the relative legislation recently. Among the major programmes to be taken up are the setting up of new institutions, viz., IIT, Assam, Longowal Institute of Technology and

Engineering, four new Central Residential Polytechnics for Women to be established in a phased manner the provision of additional facilities, viz., student hostels, staff quarters, technical education and training of the handicapped, leave training reserves for teachers, continuing education--as well as reorganisation of the existing structures, viz., strengthening of curriculum development centres, grant of autonomy to selected technical education institutions and structures for promotion of industry institution interaction. It is intended to expand the continuing schemes for modernisation, consolidation and removal of obsolescence in technical education institutions, programmes and course contents. The scope of T.T.T's is also being enhanced to cater to needs of vocational education at the secondary stage of education.

ART & CULTURE

9.32 Apart from preservation, documentation and conservation of our rich, varied cultural heritage, the main thrust in the Seventh Plan has been on dissemination, promotion and popularisation of regional cultures; building up of a sense of cohesiveness; and involvement of the masses in cultural activities. A recent initiative has been the Indira Gandhi National Centre for Arts (IGNA) for which an autonomous trust has been established by the Department of Arts. The IGNA will develop and build upon the Naional effort in the field of Arts during the last four decades and serve as a national clearing house for Arts. It will have four major components, viz., Centre of Information & Data Bank; Folk and Tribal Reference Centre; Multi-volume Encyclopaedia of Arts; and IGNA Building Complex for creative expression through exhibitions, performing arts, seminars, etc.

9.33 An important programme of the Central Government in the Seventh Plan is the establishment of seven zonal cultural centres as autonomous institutions with a corpus fund of at least Rs.25 crores to be contributed by the States/UTs participating in its activities. The Central Government is to provide a grant of Rs.5 crores to each of them to meet non-recurring expenditure. The location of the zonal cultural centres and the names of the participating States are given below:

Zone	Location	Participating States/UTs
1. North	Patiala	Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan and Chandigarh.
2. East	Santiniketan	Bihar, Manipur, Orissa, Sikkim, Tripura and West Bengal.
3. West	Udaipur	Gujarat, Maharashtra, Rajasthan & Goa, Daman & Diu.
4. South	Thanjavur	Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Andaman & Nicobar Islands, Lakshadweep & Pondicherry
5. North-East	Dimapur	Assam, Meghalaya, Mizoram, Nagaland, Tripura & Arunachal Pradesh.
6. South-Central	Nagpur	Andhra Pradesh, Karnataka, Madhya Pradesh and Maharashtra.
7. North-Central	Allahabad	Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh & Delhi.

All these centres have become operational.

SPORTS & YOUTH SERVICES CENTRE

9.34 Emphasis has been placed in the Seventh Five Year Plan on promotion of sports, adventure and relative activities of the Youth. National Service Scheme is being expanded to provide for a 10 per cent increase in the student involvement in it. The Seventh Plan target is to raise the strength of NSS from 600,000 at the end of the Sixth Plan to one million at the end of the Seventh Plan, 7.70 lakhs students are expected to participate in NSS during 1986-87. Students are involved in programmes of national development like cleaning of Ganga, conservation and enrichment of environment and mass education.

9.35 The Seventh Plan envisages that Nehru Yuva Kendras will be set up in all the districts of the country. The target for 1986-87 is to increase the

number of Kendras to 300. These will now be managed by an autonomous organisation which has been set up under the Department of Youth Affairs & Sports. A National Youth Policy is under finalisation.

9.36 The Seventh Plan lays emphasis on the development of infrastructure and facilities for sports and games at the grassroot levels as stated in the National Sports Policy. The Seventh Plan also provided for intensifying the activities of the Netaji Subash National Institute of Sports, Patiala and its several regional centres as well as for enlarging their coverage for training of coaches in various sports disciplines. Two more regional centres of NIS are being set up for the North-Eastern Region in Manipur and Assam. The Sports Authority of India has been set up for promotion and broad basing of Sports for improving physical fitness of people in the country. It has taken up schemes for adoption of a number of schools, establishment of Sports Medicine Centre and award of Sports Science Research Scholarships. It also promotes Neighbourhood Community Sports Centres and Indigenous Sports and Martial Art, as well as general sports in rural and urban areas.

HEALTH CARE

9.37 An improvement in the health status of the population is a crucial component in raising the standard of living and developing human resources. The role of the government in this field is critical in the following areas:

- the provision of primary health care facilities, particularly in rural areas,
- drug policy.
- control programmes for major communicable and non-communicable diseases,
- facilities for medical/para-medical education and training,
- the provision of family planning, MCH, immunisation and related services,

Primary Health Care

9.38 The establishment of a network of health centres in rural areas is the principal element in the provision of primary health care. This is part of the Minimum Needs Programme and the progress with regard to targets has been dealth with earlier in Chapter 3 on the Minimum Needs Programme. Taking into account the target for 1987-88, roughly 45 per cent of the Plan target will be covered in the first three years. The Plan targets can be achieved if steps are taken to correct the three principal problem areas: underspending relative to outlays provided, shortages of medical and para-medical manpower and training facilities for such manpower, non-availability of land sites and delays in construction. The specific schemes provided in the Plan for training and manpower development for these centres have not progressed satisfactorily and need to be implemented with vigour.

9.39 The health services being developed in the country emphasise Primary Health Care as the main instrument of action, to achieve health for all by the year 2000 A.D. Comprehensive Health Care Services are being organised. Health and Family Welfare Services are being provided in an integrated manner for their optimal utilisation. Efforts are being made for inter-sectoral health action coupling of health with health-related sectors like nutrition, housing, water supply and sanitation, education, etc.

9.40 Community participation and people's involvement in the Health & Family Welfare is a well-recognised need. All out efforts are being made to enhance community participation in health programmes by involving NGO's & formal and non-formal village institutions/leaders in the programmes.

Drug Policy

9.41 A substantial part of health needs are met through the private system. In fact private expenditures on health are roughly twice as large as total public expenditure. The effectiveness of the private system depends, among other things, on the quality of medical education and the cost and availability of drugs. Hence, drug policy is an important issue for the health care delivery system. There are four major areas which are relevant:

- Listing of essential and life saving drugs.
- Quality control.
- Pricing policy to ensure cost effectiveness of essential and life saving drugs.
- The production and distribution of drugs.

9.42 Keeping in view the above areas a new drug policy has been evolved. With regard to pricing, some major changes have been introduced in the new Drug Price Control Order mainly to ensure the availability of essential drugs at reasonable prices. As for availability, the total production of drugs has increased roughly at the rate of 6 per cent per year in real terms. which indicates a significant increase in per capita availability. A major problem that needs to be tackled is that of spurious drugs.

Disease Control

9.43 The major disease control programmes for communicable and non-communicable diseases are run basically as Centrally Sponsored Schemes. Some of them have been in operation for over three decades. The position with regard to some major disease control programmes is given below:

9.44 There is a long standing Malaria Eradication Programme. After its resurgence in 1976 a modified plan was introduced to reduce morbidity and mortality. The incidence of total malaria cases has come down from 6.5 million in 1976 to 1.8 million (P. falciparium cases 0.5 million) in 1985 and 1.7 million (P. falciparium cases 0.6 million) in 1986.

9.45 The programme is suffering from many implementation problems, and malaria incidence has increased in some States. Higher incidence of P. falciparum infection has been noticed in many new areas besides North Eastern Region. The entire approach to malaria control eradication needs a fresh look, particularly in the context of findings of an Expert Committee which made an in-depth evaluation of this programme and submitted its report to the Government of India in October 1985.

9.46 The main objective of the leprosy eradication programme is early case detection and domicilliary treatment of cases, thus rendering infectious cases

non-infectious in the shortest possible time and imparting health education to the people. The new feature in this programme is the introduction of the multi-drug regimen projects in the districts in a phased manner. Annual Plan targets with regard to case detection and treatment have been fulfilled and the multi-drug approach has shown good results.

9.47 The National T.B. Control Programme aims at the detection of active TB cases at an early stage by sputum examination in the peripheral Health Centres and their treatment through an organised District T.B. Control Programme. The weak link in the implementation of this programme pertains to sputum examination of cases at the Primary Health Centre's level, where only 60 percent of the targets specified in the annual plans of 1985-86 and 1986-87 were achieved.

9.48 The National Programme for the Control of Blindness was launched in 1976. Since 1981-82 cataract operations have been accorded high priority. In the first two years there has been a shortfall of about 20 per cent relative to Annual Plan targets. The main problem the programme faces is the shortage of Opthalmic Assistants/Surgeons.

9.49 Apart from these programmes, action is required in certain other areas, not covered at present by national programmes. Kala-a-azar is prevalent in West Bengal and Bihar State with sporadic incidence in some other States. The Health Ministry had set up an Expert Group which recently submitted its report recommending a concrete programme of action against this killer disease. A programme of action based on the recommendation of Expert Group needs to be finalised for the control of Kala-a-azar in the coming years.

9.50 Similarly, with regard to AIDS adequate measures are being taken to prevent the spread of this infection in the country through establishment of statewise monitoring and surveillance mechanism alonwith mass health education and care for cases and infected persons.

Medical/Para-Medical Education & Training

9.51 The content of medical education has been sought to be changed through a major scheme with the objective of (i) introducing community bias in the training of under-graduate medical students with emphasis on preventive and promotive services, (ii)

orientation of the role of medical colleges, so that they become an integral part of the health care system and do not continue to function in isolation, (iii) orientation of all faculty members to ensure that hospital-based and disease- oriented training is progressively replaced by community based and health oriented training for providing comprehensive health care, and (iv) the development of effective referral linkages between PHCs, District Hospitals and Medical Colleges.

9.52 This scheme has been implemented in its first phase in about 106 medical colleges. But the objectives of the scheme could not be achieved to the desired extent largely due to lack of commitment to the programme at all levels, slow progress in the utilisation of central funds and the lack of efforts to restructure teaching and training programme at the college levels. In order to correct this it may be desirable to take up 5 or 6 well functioning Medical Colleges on a regional basis and develop them as models during the remaining part of the Seventh Plan.

9.53 Training programmes for multi-purpose workers, specialists, and para-medical staff and community health officers required for the rural health programme have not made satisfactory progress. The health programme can only be as good as the people who deliver it and a special effort is required to implement the programmes for reorientation of medical education and for training of health workers.

FAMILY WELFARE

The Demographic Perspective

9.54 The medium estimates prepared by the Expert Committee on Population Projection (EC) were used in the formulation of the Seventh Five Year Plan, which assumed a population level of 746 million in 1984-85 and a projected level of 822 million in 1989-90. This was based on an assumed growth rate of 2.1 per cent in 1981-86 and 1.9 per cent in 1986-91.

9.55 A recent report of Registrar General based on SRS data indicates that the birth rate has not fallen as was assumed by the expert committee. This is inspite of the fact that couple protection rate (CPR) has gone up considerably during the period. On the contrary birth rates have shown a rising tendency in some states. The data on age specific fertility rate

by SRS also corroborate this fact. The difference between the birth and death rates assumed by the Expert Committee and those observed now for the period 1981-85 are as follows:

Table 9.2 : Vital Rates 1981-85

(Per Thousand Population)

	estimated	observed
Birth Rate	33.2	34.6
Death rate	12.2	12.4
Growth rate	21.0	22.2

9.56 The discrepancy between the projection and what has been observed arises mainly because the linkage between the CPR and the fertility rate is more complex than what was assumed. Initially, when the couple protection rate is around 30 per cent, genrally the older couples, say 30 plus, are likely to use family planning method, specially when 80 per cent of acceptors use a terminal method.

9.57 A comparison between the age specific marital fertility rate for the years 1961 and 1981 shows that the decline is most marked in the older age group 30-44 and less so in the age group 15-29. There is very little decline in the age groups 15-29 and 20-24. Roughly speaking the decline in marital fertility rates, which may be taken as reflecting the effect of a wider use contraceptive practices, for about half of (53 percent) the total decline in birth rate during 1961-1981. Other factors also contribute and in this case 47 per cent of the reduction has taken place due to rise in age at marriage, change in age structure of population and other factors.

9.58 Nearly 60 per cent of the total female population in the reproductive age group population is below the age of 30. In the early stage, as stated earlier, the acceptors would tend to be in the low fertility older age groups. This means that to push the CPR to 40 per cent and beyond will require an effort to persuade couples in lower age groups, with fewer children to accept family planning. Once the CPR

goes beyond 40-42 per cent the average age of acceptors would decline with the result that the decline in birth rate would be rapid with each unit of additional CPR achievement. This would be the situation when much awaited dip in birth rate can be expected.

9.59 If present trends continue the population projections on which the long-term perspective given in the Seventh Plan is based will have to be assesed. The total population level could be higher by 36 million at the turn of the century. The number of school going children would be higher by 15 million and the work force by 4 million than what is indicated by current projections. This demographic perspective is disturbing and a reappraisal of all the policies that affect fertility patterns is necessary.

9.60 Fertility behaviour depends on much more than the access to family planning services. As pointed out earlier, nearly half the decline in fertility levels that took place between 1961 and 1981 were due to other factors, most notably a rise in the age at marriage. Fertility rates themselves are influenced by factors like female literacy and female employment.

9.61 The discussion on the progress of education has brought out the shortfalls in meeting targets for enrolment of girls, particularly in states where female illiteracy is high. The new National Policy on Education recognises the special importance of girls education and a more rapid fulfilment of targets in this regard can be expected to hasten the lowering of fertility rates. A special effort to promote employment opportunities for women, particularly those in the younger age groups could help greatly in raising the age at marriage and in the spacing out of births. The legislation regarding the age at marriage needs to be enforced with vigour.

Family Planning Programme

9.62 With regard to family planning, the Seventh Plan had targetted for a couple protection rate of 42 per cent by the end of the Plan. As against this the effective couple protection rate as on 1.4.87 was 37.4 per cent. The performance of the family planning programme relative to targets is given in the Table 9.3.

Table 9.3 : Family Planning - Targets and Achievements

(Nos.in millions)

	VII Plan Target	1985-86 Targ.	1985-86 Achi.	1986-87 Targ.	1986-87 Achi.
Sterilisation	31.00	5.50	4.90	6.00	5.02
I.U.D.	21.25	3.25	3.27	3.75	3.93
C.C. & O.P.Users	14.50*	10.50	10.74	11.50	11.48

*This indicates Terminal year Target.

9.63 In the first two years of the Plan the targets specified for sterilisation operations have not been achieved and the indications are that there will be a shortfall in the achievement of the Plan target of 31 million sterilisations. However, the IUD programme and the use of conventional contraceptives is proceeding as planned.

9.64 According to available statistics half the eligible couples in the country have three children or above. Sterilisation is the appropriate method to promote amongst such couples. At present the average number of living children is 3.7 for those who undergo sterilisation. The aim must be to bring this figure down steadily and persuading a younger group of acceptors with lesser number of living children to undergo sterilisation. In fact, as the CPR rises, further progress will depend critically on this.

9.65 In our country, marriage takes place early resulting in early child bearing. Therefore, more emphasis is needed on delaying the age of marriage, avoiding early pregnancy and/or spacing after the first child. This is possible only if greater emphasis is given in promoting non-terminal methods like IUD, Oral Contraceptive Pills, etc. According to available statistics, the mean number of living children among I.U.D. acceptors is 2.7 today. Efforts are needed for boosting the acceptance after one child. At the same time greater efforts are needed to popularise oral contraceptive pills, condoms, etc.

Maternal and Child Health

9.66 The family welfare programme also includes a programme for maternal and child health with focus on immunisation and prophylaxis against nutritional

anaemia and blindness and a programme for the promotion of family planning. The country-wide Expanded Programme of Immunisation has been further strenghtened with introduction of universal programme of immunisation with the objective of covering 100 per cent pregnant women and 85 per cent of infants. During 1985-86 and 1986-87, 30 districts and 62 districts respectively have been covered under U.I.P. and by the end of 1990 all districts in the country will be covered under this scheme. The progress of the immunisation programme and the programmes directed at preventing nutritional anaemia and blindness are given in the table 9.4.

Table 9.4 : MCH Programmes - Targets and Achievements

(Nos.in millions)

	VIIPlan Target	1985-86 Targ.	1985-86 Achi.	1986-87 Targ.	1986-87 Achi.
Immunisation					
T.T.	92.45	12.86	10.36	15.20	10.98
D.P.T.	87.55	14.04	15.17	15.30	12.03
Polio	87.55	14.04	13.19	15.30	10.38
Measles	50.45	2.30	-	5.70	3.15
B.C.G.	82.20	14.00	6.59	15.30	11.52
DT	73.00	11.19	12.52	12.10	10.34
Typhoid	62.80	11.19	7.88	12.10	7.56
TTSC(10yrs.)	38.40	5.54	4.54	6.70	5.28
TTSC(16yrs.)	24.00	3.30	3.00	4.10	3.47
Prophylaxis against nutritional anaemia among					
Children	80.00	14.00	17.15	19.43	15.78
Women	80.00	14.00	18.01	18.64	17.70
Prophylaxis against blindness due to Vitamin A deficiency	150.00	24.96	29.38	28.97	28.48

9.67 A Technology Mission on Vaccination & Immunisation of vulnerable population, particularly children has been launched on the 19th November, 1985. Ministry of Health & Family Welfare is entrusted with

the responsibility of administration of vaccines, monitoring and evaluation as also the storage and distribution of vaccine. Department of Bio-technology has been entrusted with the responsibility of vaccine production and vaccine research and development. The main objective of the Mission is to reduce morbidity and mortality due to Diptheria, Pertussis, Tetanus, Poliomyelitis, Tuberculosis, Measles and Typhoid among children and achieve self-sufficiency in vaccine production. Under the programme 100 percent pregnant women will be given Tetanus Toxide by 1990 and 85 percent of infants with DPT, Polio, Measles, BCG and Typhoid vaccines. During the year 1985-86, 30 districts have been covered under the universal immunisation programme. During 1986-87, 62 districts have been covered and during the current year 1987-88, 90 more districts are being covered. By 1990 all the 420 districts will be covered under the Mission.

Social Development

9.68 Under Social Welfare sector, preventive, developmental and rehabilitative services are provided to the vulnerable sections of society like children, women and the handicapped, etc. The major programme under implementation for the development of children below 6 years of age, pregnant and nursing mothers in the 'Integrated Child Development Services' (ICDS) projects. By the end of 1987-88, 1659 projects including 179 State sector projects were sanctioned throughout the country. The programme has proved quite useful and there is great demand for its expansion. In the last 3 years, steps have been taken for its qualitative improvemet. However, certain inadequacies like fall in the coverage of subsequent immunisation doses, recurrance of diseases, inadequate arrangements for cold chain for vaccines, ineffective coordination mechanism, backlog in training of functionaries, inadequate budgetary support for nutrition component, etc., are still persisting.

9.69 The other important schemes for children are 'creches/day care centres' and 'Services for children in need of care and protection'. Under the former about 9,000 creches covering 2.25 lakh children have been set up whereas under the latter, the coverage is about 37,000 children. Besides, there are quite a good number of institutions being run by the State Governments/UTs and voluntary organisations for the neglected and delinquent children, women in distress, physically and mentally handicapped, aged, etc. These programmes need further strengthening but it needs to be ensured that these institutions maintain the required standard of services and benefits flow to the

targetted group.

9.70 The National Institutes for the handicapped continued their on-going programmes, consolidating and strengthening these, wherever necessary. All these institutes are at different stages of development. They are expected to function as premier agencies in the areas of training, research and rehabilitation. However, they have not been able to achieve their objectives in full primarily because of severe limitations in terms of physical infrastructure. The coverage under the scheme of 'scholarships to the handicapped' has been low, specially upto 8th class, due to inadequate publicity, lack of educational institutions, concentration of effort in urban areas and delay in sanction and release of scholarships. The scheme of 'Assistance to disabled persons for purchase/fitting of aids/appliances' has helped in making the handicapped persons functional to the extent possible. Since the scheme is in operation for more than 5 years, it needs to be evaluated to identify the operational difficulties, if any, specially after the fitment of aids/appliances. More emphasis should be given on prevention and early detection of handicaps. This will help in reducing the cases of disabilities and financial burden at a later stage.

9.71 A new Central legislation, namely, Juvenile Justice Act 1986 has been enforced to deal with the growing problems of juvenile delinquency, repealing the existing Children Acts in the States/UTs. However, care needs to be taken that the States/UTs do not expand the services mechanically. The existing services will have to be upgraded in the first instance. Additional services will have to be started depending on the assessed requirement. Before starting vocational training centres in the institutions, possibility of sending the children to the ITIs or other such agencies already in the area may be explored.

9.72 Voluntary organisations are being encouraged through grants-in-aid to promote various welfare programmes. These organisations are still to be encouraged in the backward and rural areas. They will have to be impressed upon to make their activities self-supporting so as to reduce their dependence on Government grants.

9.73 The research studies conducted/sponsored so far by various agencies need to be consolidated. Status papers on important programmes will have to be prepared bringing about the available information together so as to utilise the same for effective planning and implementation.

9.74 In some States, social welfare programmes are being administered by more than one department and there is no coordination thereby adversely affecting the implementation of Plan schemes. The progress reporting also has been very poor, specially in terms of the achievement of physical targets. This will have to be corrected in the remaining years of the plan.

Conclusion

9.75 In the sphere of education, the NEP marks the renewal and strengthening of a commitment which is enshrined in the Constitution. Its successful implementation will mean qualitative change in our society and economy. At this mid-term point the crucial task is to ensure that the momentum generated by the NEP is maintained.

9.76 In health care the changes and improvements that can be expected in the Seventh Plan period are substantial in maternal and child health. By the end of the Plan the basic network centre will be in position and the time will be ripe for focussing greater attention on improvements in the quality and effectiveness of service.

9.77 Family Planning Programmes need urgent attention. Despite the increase in the couple protection rate, the birth rate does not seem to be coming down and is still around 2.1 per cent according to SRS data. At the same time there is evidence of a growing willingness to accept family planning methods. A major effort to appraise and redirect the programme seems to be necessary.

9.78 Education and health care require extensive state support. However, a substantial part of these services are privately provided. Thus the ratio of public and private expenditure is roughtly 2 to 1 for education and 1 to 2 for health. In this situation, the concern for level and orientation of public spending is not enough. The policies which affect the quality and cost of privately provided and privately purchased education and health are as important. Hence, Plan objectives for education and health must be reflected in the regulations governing aided institutions in drug policy, in the policies that influence the use of paper and printing, etc.

Chapter 10

SCIENCE & TECHNOLOGY

Introduction

10.1 A major effort during the Seventh Five Year Plan has been to optimally utilise the capabilities and infrastructure already created for scientific and technological development; and to augment these for undertaking selected specific programmes. New structures have been set up only when absolutely essential to implement high priority programmes of national relevance.

10.2 A sustained effort has been made to implement well defined, time bound programmes in the areas of: atomic energy; space; promotion of research and development, and support,for science and society related schemes; scientific and industrial research; biotechnology; ocean science and technology; and biomedical research. An integrated intensive S&T programme to combat drought is under implementation,on both short and long term basis.

S&T Expenditure

10.3 There has been a continuing increase in the expenditure on S&T over successive Plan periods. The S&T expenditure in the 7th Plan, in terms of percentage of GNP, will be close to 1 percent as against 0.6 percent in the 6th Plan period. There is an estimated stock of over 3.5 million S&T personnel in the country.

Mission-Approach

10.4 Scientific and technological capabilities must contribute to development objectives. The Seventh Plan recognises the "feeling that science and technology are not reaching the bulk of the population and not contributing in sufficient measure to growth". In order to correct this the Seventh Plan laid special emphasis on mission oriented projects, involving new management structures and the development of strong linkages between scientific departments, socio-economic ministries and user organisations. The main objective of this "end-to-end" approach is to produce a visible impact on society of the scientific and technological developments that have already taken place in the

country. Five National Technology Missions and eight major Science and Technology projects in the mission mode were launched. The National Technology Missions are in the areas of - (i) Vaccination and immunisation of vulnerable population, specially children; (ii) Edible oil - intensive cultivation and oil extraction; (iii) Better communications; (iv) Drinking water in every village and water management and (v) Eradication of illiteracy. These are being implemented by the concerned Ministry, which has been designated as the nodal Ministry. Efforts have been made to evolve a new implementation and management strategy for all these projects. These are dealt with under the respective sectors.

10.5 Eight Science and Technology projects have been in the areas of (i) Development of immuno-diagnostics; (ii) Immunological approaches to fertility control; (iii) Integrated vector control of malaria, filaria and other vector borne diseases; (iv) Control of iodine deficiency disorders in U.P.; (v) National Medium Range Weather Forecasting Centre (NMRWFC) and setting up and development of agro-meteorological services; (vi)Embryo transfer in cattle and buffaloes; (vii) Establishment of a pilot plant for amorphous silicon solar cells and modules - 1 MW capacity and (viii) Operationalisation of National Natural Resources Management System (NNRMS) and Natural Resources Data Management System (NRDMS).

Immunological Approaches to Fertility Control

10.6 The objective of this project is to develop safe and effective contraceptive vaccines for control of fertility in human beings and animals. The Department of Biotechnology with Collaborating Agencies like Indian Council of Medical Research (ICMR), is implementing this multi-institutional project with National Institute of Immunology, New Delhi; Indian Institute of Science, Bangalore; Central Drug Research Institute, Lucknow; Post Graduate Institute for Medical Research, Chandigarh; National Institute of Health & Family Welfare, New Delhi and Institute for Research in Reproduction, Bombay as participating institutions. The female (Beta hCG) vaccine trials under the first phase have been successful without any side effects. The male (FSH) vaccine used for immunization of monkeys has also given promising results.

Integrated Vector Control of Malaria, Filaria and other Vector borne Diseases

10.7 A holistic approach has been successfully tried out to control the vectors of communicable diseases like Malaria and Filaria, based on an environmentally sound approach, without recourse to the extensive insecticidal spraying, along with other benefits to society.

10.8 Work on control of Malaria has progressed particularly well at Malaria Research Centre, Delhi and 10 field stations at Nadiad (Kheda,Gujarat), Haldwani, Shajahanpur, Shankargarh (Allahabad), Haridwar (all UP), Mandla (Madhya Pradesh), Madras (Tamil Nadu), Sonapur (Assam), Berhampur (Orissa) and Delhi. Significant fallouts include inculcation of scientific temper in these villages; the health education programmes have been successful through this holistic approach to disease control. Under the Filaria Control Programme, the involvement of the local people has been ensured. An integrated approach has been adopted, introducing fish culture, compost making etc. Parasitological and clinical screening are being conducted. There has been some delay in the experimental studies but the research programme is aimed ultimately at reducing and controlling the disease. New management strategies and implementation structures have been evolved.

National Goitre Control Programme (NGCP): Full Coverage of UP within the Seventh Five Year Plan: S & T Inputs for Monitoring

10.9 NGCP is being implemented by the Ministry of Health. The main objective of taking up this project as an S & T mission project is to ensure full coverage of the most endemic area of UP during the Seventh Plan period, along with monitoring based on scientific inputs. New project management structures have been evolved. Public awareness activities have been started regarding the introduction of iodized salt. AIIMS, New Delhi has been engaged for monitoring and samples have been collected and analysed from Gonda district, Padrauna, Deoria etc.

Development and Production of Immunodiagnostics

10.10 Development and production of low-cost reliable immunodiagnostic kits for detection of pregnancy and communicable diseases such as typhoid, tuberculosis, leprosy, brucellosis, hepatitis-B etc., have been taken up by the Department of Biotechnology. Success in developing and producing such kits, and introducing

them into the health care system of the country, will be of enormous significance, as it will enable earlier, lower cost treatment, reduction in morbidity and mortality and control of epidemics and spread of disease. Three different methods have been developed for the detection of pregnancy, namely tube test, latex agglutination and dipstick test. For typhoid, specific monoclonal antibodies have been analysed. Antibody detection test has been standardised for amoebiasis. In the case of leprosy, considerable work has been done and techniques validated. Similarly, in case of tuberculosis and hepatitis, the preliminary tests have been completed. A training programme has been organised. The principal problem in this project is in the conversion of laboratory successes into production essential for large scale utilisation . Tie-up with industry constitutes a major thrust of immediate concern. Instead of taking up a large number of items for production it has been decided to concentrate on a few selected, important areas such as pregnancy ,filariasis and amoebiasis for production of diagnostic kits in the first instance.

Cattle Herd Improvement for Increased Productivity through Embryo Transfer Technology

10.11 To standardize Embryo Transfer Technology (ETT) in Indian cows and buffaloes, to undertake research and development in related areas of ETT, especially in sexing and cloning of embryos; to create a skill pool and training facilities in India; and to create a seed stock of high quality bulls and dams both for cattle and buffaloes. Department of Biotechnology with National Dairy Development Board , (NDDB) Anand and various ICAR institutes as collaborating agencies, has been implementing this project. Progress has been very good. The work at IVRI, Izatnagar; NDRI, Karnal; and NII, New Delhi have all made sustained progress. Work relating to in-vitro fertilization, micro-manipulation, sexing, early detection of pregnancy etc. has progressed well. An interim embryo transfer laboratory has been equipped and is functioning at Bidaj. At Nasik, Rai Bareilly, Hessarghatta (Karnataka), Tiruvur(Andhra Pradesh), work for setting up of the laboratories is going on. Technical difficulties in developing methods for embryo transfers in buffaloes have been noted. Experiments are being conducted to study these features in detail; there have been some scientific breakthroughs already. In the case of cows, it is expected that full success can be achieved in making this technique a widely used field programme.

Operationalisation of the National Natural Resources Management System (NNRMS) and Natural Resources Data Management System (NRDMS)

(i)National Natural Resources Management System (NNRMS)

10.12 With the Department of Space as the nodal agency, NNRMS is a nationally coordinated effort, evolved and being implemented with the participation of a range of user agencies. Work is progressing well,mostly on schedule,in the areas of: crop acreage and production estimation; identification, classification and monitoring of drought at the national level; mapping of wastelands; flood mapping; soil salinity and soil mapping; land-use and land cover and urban sprawl; groundwater potential zone mapping; biennial monitoring of vegetation cover; bio-resources and environment studies; geology and mineral resources; ocean resources and coastal environment. This is a project which will become extremely useful in terms of data bases, production statistics monitoring, evolving implementation strategies etc, to a large number of user departments like Agriculture, ICAR, Irrigation, Water Resources, Environment & Forests, NWDB, Mines etc. These agencies have begun to appreciate the importance of the use of remote sensing technology and are now getting fully into operational programmes. The Department of Space is making full efforts to demonstrate these opportunities.

(ii) Natural Resources Data Management System (NRDMS)

10.13 Under this project, an attempt is being made by DST to develop a comprehensive methodology of standardisation, organisation, storage, retrieval and dissemination of data to help optimise utilisation at district level of data created by different agencies. The first phase involves five districts, viz. Sultanpur (UP), Koraput (Orissa), Gurgaon (Haryana),Vishakapatnam (Andhra Pradesh) and Kheda(Gujarat); in these, computer centres with staff have been set up, and data bases relevant to these districts created. In the present phase, the concepts of decentralised district level planning through necessary information back up in relevant sectors is being established. It has been agreed to that highest priority would be given to working out methodological aspects in these five districts so that the data generated and stored here could be optimally utilised by the state Governments and local authorities and this can become a demonstration cum training programme for further expansion.

National Centre for Medium Range Weather Forecasting (setting up of) and Development of Agrometeorological Services

10.14 The Department of Science & Technology is the nodal agency for implementing this project with a large number of collaborating agencies, e.g., IMD, ICAR, Departments of Agriculture, Telecommunications, Electronics, Ministry of I & B etc. The project has been reframed to give necessary emphasis to the agromet component. There have been a lot of uncertainties because of the lack of a clear picture on availability of the supercomputer needed for large scale weather modelling. In the initial phase, an effort has been made to evolve an integrated work plan using : i) the existing computer facilities and infrastructure; ii) strengthening the existing groups and ensuring the availability of manpower by planning to initiate specialised manpower development programmes ; and iii) in anticipation of the availability of a suitable supercomputer, evolving a work plan through a Brain-Storming Session organised where most of the concerned Departments and experts participated. The progress on this has been slow.

Development of Amorphous Silicon Solar Cell Technology

10.15 A pilot plant is being set up by DNES, of 500 KW per annum capacity, to produce amorphous silicon PV cells; and to achieve 13 to 15 per cent efficiency solar cells at laboratory level. BHEL is the executing agency for the pilot plant, which would be fully related to indigenous R & D efforts which are presently being carried out in various research institutions in the country. The project Office, has initiated work; the main R & D tasks have been identified; negotiations and contracts relating to the pilot plant have been finalised; research in this area is fully under way.

S & T Component in Socio-Economic Sectors

10.16 An important element in the Seventh Plan has been to make Science and Technology an essential and integral component of all major socio-economic sectors, and to develop capabilities essential for the fulfilment of S&T tasks in important areas for development. S&T programmes are being identified and implemented in the major socio-economic sectors. Research Advisory Committees (RAC), Science Advisory Committees(SAC) and Forward looking groups have been set up in many of the socio-economic Ministries. As a result, in sectors such as steel, petroleum,

telecommunications, information and broadcasting, railways etc., there has been major emphasis to accelerate S&T related activities and programmes. Specific achievements and progress would be dealt with in respective sectoral chapters.

10.17 In order to develop Science and Technology in the States, efforts were made to initiate a dialogue with the State Governments, to convince them about the need for identifying and implementing location specific Science and Technology programmes relevant to the development of the State. All the States and UTs have now got a Plan budget head - "Scientific Services and Research". State S & T Councils and departments have been set up in almost all the States and UTs. Programmes have been taken up on popularisation of science, S & T entrepreneurship development, application of remote sensing for survey of natural resources, S & T for rural development etc.

Technology Policy

10.18 The Technology Policy Statement (TPS) of the Government of India was announced in January 1983. Modernisation and technological upgradation are a central element of the plan strategy for industry and infrastructure. In order to promote this the Seventh Plan recognised the need for mechanisms to implement the Technology Policy Statement. A Technology Policy Implementation Committee (TPIC) has been evolving instruments and mechanisms for implementation of the Technology Policy.The principal measures envisaged have been:

(i) The setting up of a Technology Information, Forecasting and Assessment Council (TIFAC),which will be responsible for ensuring the availability, on a rapid and comprehensive basis, of information on major technology developments internationally, and forecasting developments that are likely to take place, that would have an impact and would be of relevance to national needs and priorities. It will also deal with the assessment of technology imported or developed indigenously, from the view point of aspects such as energy, environment, employment, efficiency and economics. This body will also be responsible for furnishing an "Annual Technology Report". The setting up of this mechanism has been approved by Government. DST would be the nodal department for supporting its activities.

(ii) Technology Development Fund : With a view to financing and supporting 'growth-oriented' research, design and development activity in industry, and providing risk/venture capital for setting up pilot plants/proving units/demonstration plants etc to

upscale and prove newly developed technologies at the commercial level, it has been proposed that Government will set up a 'Technology Development Fund' of a viable size at the national level, to be supported through a general R&D cess on industrial and mining undertakings. The existence of such a fund will ensure that large enough allocations are available for bringing through to industrial production, new technologies, products and processes based on indigenous capability. In the absence of such a fund, there has been a major gap between the large scientific infrastructure and capabilities in the country and know-how generated through it, vis-a-vis translating this into products and services. This proposal is being processed.

(iii) Technology Data Bank : As part of strengthening the technology information system in the country, it is proposed that a Technology Data Bank be set up as a national facility.

(iv) Major areas in which other recommendations have been made relate to : steps to develop and strengthen design engineering and engineering consultancy ; ways by which technology imported into the country is meaningfully absorbed and can form the base for further improvement, and new generation technologies; guidelines for international R&D collaborations; procedures for assessment and evaluation of technology to be imported into the country ; mechanisms for continuous monitoring and upgradation of the quality and efficiency of technology generation and delivery systems; guidelines for the grant of development contracts to promote the development and utilisation of indigenous technology; encouragement for the protection of industrial property rights arising from indigenous technology development; formulation of a coherent national policy for the utilisation and recycling of wastes; and several other such issues. It is expected that once these mechanisms would get instituted, there would be a visible significant impact of indigeneous technological developments on the national economy.

Sectoral programmes

10.19 Special features with regard to the major sectors in S&T are briefly given below :

Atomic Energy (R&D)

10.20 Significant achievements relate to the 100 MWe research reactor DHRUVA designed and built indigenously which attained criticality in August 1985. To overcome the earlier problems of vibration, the design of the fuel assembly was modified and loaded. The reactor resumed operation in November, 1986 and the power

level was raised to 25 MWe. Subsequent to the satisfactory performance of the fuel assembly and reactor systems, the power level was slowly raised to 40 MWe and 80 MWe; by 1988-89 reactor operation would be at full power i.e. 100 MWe. Radio isotope production commenced soon after raising the power level to 25 MWe. The Fast Breeder Test Reactor (FBTR) of Indira Gandhi Centre for Atomic Research (IGCAR) achieved first criticality on October, 1985. Full power operations of the reactor will commence in 1988, and the station will be producing rated power during 1988-89. Mixed carbide fuel for FBTR has been one of the significant achievements of the Bhabha Atomic Reaearch Centre (BARC). The FBTR fuel developed and manufactured at Trombay is based entirely on indigenous raw materials. The IGCAR is engaged on the development of a 500 MWe Prototype Fast Breeder Reactor (PFBR), the preliminary design of which has been completed. Indigenous capabilities have now been established covering the entire nuclear cycle. The heavy ion accelerator, pelletron, a joint endeavour of BARC and Tata Institute of Fundamental Research (TIFR), is in the final stages of installation.

10.21 The Centre for Advanced Technology (CAT) at Indore is coming up fast with its thrust on Lasers, Accelerators and Fusion related research and technology development. There has been significant progress in the construction of Giant Meter Wave Length Radio Telescope(GMRT) which will be among the largest radio telescopes in the world. This would offer unique opportunities to do front line research in this area.

10.22 The Magneto Hydrodynamics (MHD) Plant,a joint effort of BHEL , and Deptts. of Atomic Energy and Non-conventional Energy Sources, has been successfully operated at the rated input parameters. More than twenty six technologies developed by DAE have been transferred to industries. The teaching materials and aids developed at Homi Bhabha Science Centre have had a good impact on students from the weaker sections in the State of Maharashtra. The effort is being extended to other states. The work done at Tata Memorial Centre on Cancer therapy and research has made a significant impact.

Space Technology

10.23 Achievements in this area relate to launcher projects, satellite development and fabrication, operationalisation of remote sensing technology and development of new materials. The first ASLV launch did not succeed fully but the technologies developed, especially the strap on motors, on-board computers and closed loop guidance are significant. The second

development flight of ASLV is expected to take place in March/April 1988. The PSLV project is progressing on schedule with marginal slippages, with the first launch scheduled for 1989. This involves the use, for the first time, of a liquid engine, and has many other 'firsts' including the use of indigenously produced maraging steel booster motor casing, indigenous production of liquid propellants, and of HTPB trial binder resin for the solid motor.The launch of Indian Remote Sensing Satellite (IRS)-IA is now scheduled to take place in early 1988 from USSR. This will be a state of art satellite comparable to Landsat-4 (USA) and SPOT (France). Work on INSAT-II TS project is progressing satisfactorily. The second generation INSAT-II satellites are to be designed and built in the country to replace the first generation INSAT-I satellites built abroad. Two test spacecrafts, identical in configuration and service capabilities to the follow-on operational INSAT-II spacecraft will be developed for launch in the 1990-92 time frame.

10.24 Efforts are being made in parallel, with cryogenic engine development, to critically configure a launch vehicle maximally utilising the PSLV modules, with a view to keeping the new development required at the minimal essential level, and thereby leading to a speedy realisation of launch capability for the INSAT-II class satellites. Various configurations for GSLV capable of placing INSAT-II class satellite in orbit are under evaluation. The National Natural Resources Management System (NNRMS) is meant to energise users to set up remote sensing facilities and start operational application. Five Regional Remote Sensing Service Centres are currently being set up. Interactive image processing systems configured around sophisticated computers and array processor systems are being installed at five locations viz. Bangalore, Kharagpur, Dehradun, Jodhpur and Nagpur. The Bangalore and Dehradun Centres have already been commissioned and the other centres are expected to be commissioned progressively.

10.25 INSAT-I ,a unique multipurpose system, comprises a two satellite configuration, of which currently only the first satellite, INSAT-IB, launched in 1983, is operational. It is very heavily subscribed; full capacity utilisation by the various user Departments as planned has been achieved.

10.26 The programmes in the Space decade profile (1980-90) are progressing on schedule in spite of minor slippages. One of the noteworthy features of this sector has been the system of zero based budgetting and fullest deployment and redeployment of the trained manpower and facilities.

Ocean Science & Technology

10.27 Major efforts have been related to the promotion of oceanographic survey, and exploration of living and non-living resources, exploration for polymetallic nodules from the deep sea bed, Antarctic Research, development of underwater technology and manpower training in Ocean Research and Management. So far seven scientific expeditions to Antarctica have been successfully accomplished, two during this plan, and the third one has just sailed. An Antarctic Study Centre is being set up at Goa. There have been significant fall-outs and results from these expeditions, in terms of scientific data, training of scientists, and testing of equipments, clothing etc. to work in extreme conditions. In August 1987, the Preparatory Commission for the International Sea Bed Authority (PREPCOM) unanimously decided on the registration of India as the first pioneer investor under the Law of the Seas Convention and allocated a mine site to India in the Central Indian Ocean. This decision grants India an exclusive right to explore and develop a mine site of 1,50,000 Sq. kilometers in the Central Indian Ocean which contains rich deposits of polymetallic nodules.

Scientific & Industrial Research

10.28 The focus in the area of scientific and industrial research has been in 33 identified thrust areas which include cellular and molecular biology, radiophysics, atmospheric science, geo-physics, new materials, etc. The modernisation of the infrastructure is aimed at implementing mission oriented time bound projects. Sponsored research programmes, in close collaboration with the major developmental sectors of Coal, Petroleum, Mines, Electronics, Ocean Development, etc., have been launched by the National Laboratories.

10.29 Some important technological developments include:

A new catalyst Encilite-2 has been used for the production of ethylbenzene, which is used in manufacture of Styrene at a plant of Hindustan Polymers Limited. Medium conductivity aluminium alloy conductor (NKL-PM 215), based on NML technology, is being used by electricity boards, conductors based on this alloy lead to reduction in the overall loss of energy in transmission; CSMCRI has set up Reverse Osmosis plants for providing drinking water from brackish water in rural areas in Gujarat and Tamil Nadu. A process for the manufacture of a novel polymeric product called 'Jal Shakti' has been developed by NCL. The product has

significant potential for applications relating to water manage agriculture, horticulture, forestry and medical fields, a pilot plant with a capacity 200 TPA has been set up for the manufacture of Jal Shakti.

10.30 A Review Committee appointed by Government has analysed the overall role, objectives and functioning of the National laboratories, Its recommendations are under consideration. There has been a major reorientation of the programmes of CSIR and a more directed and focussed approach has been adopted. Memoranda of Understanding have been signed with many user departments to get sponsored research.

R & D in Industry for Industry

10.31 To ensure that S & T infrastructure and capabilities are fully utilised in the country, it is necessary that there is research capability within industry itself, which can act as a bridge between outside research and production. Government has been giving special attention to promotion and support to Industrial Research in Industry. Providing equity and loans to public sector undertakings has resulted in their establishing in-house R & D units. There are about 1000 recognised in-house R & D units; of these 90 units are in Public Sector. Simultaneously several tax incentives have also been provided which encourage and make it financially attractive for private sector industrial units to establish their own in-house R & D Centres. The In-house R & D units have made significant contributions towards new products, process development, process improvements, quality improvement, energy saving, cost reduction, etc. However, most of these units are in the small scale sector though there are a few reasonably large R & D units in industry such as BHEL, SAIL etc. This lacuna has to be rectified through the mechanism of establishing a Technology Development fund.

Promotion of Research and Development and Support for Science and Society Related Schemes

10.32 A large number of Universities and research institutions have received financial support for advanced R&D in the areas of physical, life, chemical, engineering, atmospheric and earth sciences. Core groups and units have been set up as part of intensification of research in high priority areas for neural transplantation, medical and surgical applications of lasers, MST Radar, Arid Zone Research, Himalayan Glaciology, Seismicity and Seismotectonics, Laser Spectroscopy etc. The 2.34 metre Vainu Bappu

telescope was commissioned at Kavalur. Work on Plasma physics initiated in the Sixth plan has picked up momentum; an institution has been set up, in which the setting up of a Tokomak would provide opportunities for highly sophisticated research in this area. Work at the Raman Research Institute relating to liquid crystals and millimetre-wave astronomy; and the development and manufacture of blood bag and disposable oxygenator at Sri Chitra Tirunal Institute for Medical Science and Technology are noteworthy. Special science and technology schemes to benefit women, young scientists, scheduled castes and scheduled tribes and weaker section and the large population in rural areas have been initiated and are under implementation. Training programmes, setting up of core groups and support to voluntary agencies have helped in promotion of these programmes.

10.33 There has been considerable focus on the science and technology entrepreneurship development activities; viz., setting up of six science and technology parks, at BITS Ranchi, Shroff Research Institute, Bombay; Jadavpur University, Calcutta; S.J. College of Engineering, Mysore; HBTI, Kanpur; and REC, Tiruchirapalli. This programme has progressed by and large with financial support from the Government and marginal support from financial institutions. The commitment of the financial institutions will have to be significantly enlarged. Science Communication and Popularisation programmes, have been initiated in rural areas, and at the State level . Training of science communicators, organisation of science jathas, preparation of audio-visuals, films etc. have been able to disseminate scientific information to different parts of the country. The activities of the scientific surveys, particularly the Survey of India have been slow and the schemes envisaged for the 7th Plan have started very late. It is recognised that the activities of the Survey of India and NATMO,and particularly their modernisation, will have to be significantly geared up. Collaborative programmes with many countries in S & T have been initiated in front line areas of R & D as also for application, production etc. Important collaborative programmes include a long term activity between India and USSR, extension of Indo-US Science and Technology initiative. Efforts have also been made to take on collaborative programmes with developing countries. Although the centre for non-aligned and the Indo-French Centre for advanced research have not yet taken off, all the formalities for setting up of these have been completed.

Meteorological Services

10.34 Efforts have been made to re-orient scientifically the meteorological programmes, and also to embark upon : large scale modernisation of India Meteorological Department; improvement in the forecasting services, augmentation of facilities. Efforts to re-orient the research activities of the IMD and a more focussed and directed effort for medium and long range weather forecasting are under way .It is necessary to speed up the whole process since IMD is an essential service organisation and a large part of country's economy is dependent upon the weather forecasting services. IMD is implementing a S & T Mission Project on medium range weather forecasting.

Biotechnology

10.35 Special emphasis has been given to develop manpower, infrastructural facilities, special research and development projects and major projects in a mission mode. Development , production and application activities are extremely important in agriculture, medicine and industry. A new Department of Biotechnology was set up in February, 1986 to give greater impetus to this areas. At present it does not have an institutional framework for implementation of these programmes. Therefore, progress has been slow, particularly in production and application activities for vaccines, biologicals, enzymes etc. This would need to be corrected so that there can be a large scale application of new biotechnologies in the country. Inspite of organisational constraints the progress in terms of R & D, manpower generation, creation of infrastructural facilities etc has been very good.

10.36 Microbial Collection Centre at IMT, Chandigarh; Blue Green Algal Cultural Collection Centre at IARI, New Delhi; Regional Experimental Animal House Facilities at Hyderabad, Lucknow and Bangalore; Biochemical Engineering and Pilot Plant; Bio-information Centres have all been set up.

10.37 Applied R & D projects in the areas of biocides, tissue culture (bamboo, coconut etc), microbial leaching etc. have been started and several field trials have been conducted successfully.

10.38 One component of the International Centre for Genetic Engineering and Biotechnology (ICGEB) has been approved to be set up in India. The actual setting up of the Centre has been slow due to some procedural delays; but from 1987-88, it has picked up momentum.

10.39 The setting up of the National Institute of Immunology has opened up new vistas in research in the front line area of Immunology; work relating to immunodiagnostics, and vaccines is noteworthy. The introduction of biotechnology courses in 13 Universities has resulted in generating man power. Efforts are being made to deploy this man power for industrial activities. The important mission projects under implementation have been described earlier.

Medical Research

10.40 In the Seventh Five Year Plan, special emphasis is being given to bio-medical research in the country, with the main objective of relating the research efforts to national health policy and the 20-Point Programme, and to enlarge the scientific basis of preventive medicine and health promotion, particularly through support for work in the newly emerging areas of modern biology. Programmes under way include: control of communicable diseases: fertility control; work on nutritional disorders; work on non-communicable diseases including occupational and environmental health problems; mental health, cancer and cardio-vascular sciences; promotion of maternal and child health; research on basic medical sciences and traditional systems of medicine; alternative strategies for health care delivery system through the primary health care approach etc. Development relating to simplified mass applicable tests for early recognition of diseases, and approaches to apply available knowledge to improve the delivery of health services have been promising.

10.41 Through extra-mural research, support has been provided to research institutions and medical colleges in the areas of maternal and child health, nutrition, contraception, basic medical sciences, non-communicable diseases, traditional medicine and information systems. About 380 national task forces covering 22 disciplines have been set up. To look into the health problems of Tribal and under-privileged classes, a network of six Regional Medical Research Centres has been established. This will require to be substantially strengthened in future. The National Cancer Registry Project has been enlarged; population based cancer registries have been set up at Chandigarh, Dibrugarh and Trivandrum. Through 29 permanent research institutions several important programmes and projects in the area of bio-medical research are being implemented. Two new initiatives during the 7th Five Year Plan include: work on the health effects of exposure to toxic gas at Bhopal and development of monitoring and surveillance system for AIDS. 24 research projects ranging from epidemiology

to molecular biology have been taken up in 15 institutions for studying the effect of the toxic gas at Bhopal.

10.42 Research priorities and programmes in the biomedical area in general are being implemented in accordance with the national health priorities and basically in relation to the fulfilment of goal of "Health for All by 2000 A.D".

Science and Technology for Ameliorating Drought

10.43 The failure of monsoon this year has resulted in severe drought conditions countrywide. Science and Technology inputs are already being made use of in several programmes in facing the current drought situation. There are also areas where new short term measures can be immediately embarked upon especially in the areas of drinking water, increasing food production, animal welfare and fodder production, nutrition and water management.

10.44 Science and technology inputs in themselves can not provide all the solutions to the problems of drought. They will largely provide a data base, analysis, and specific techniques for water targetting,management etc.

10.45 Several scientific departments and agencies have taken up specific programmes as per their capabilities and expertise especially, CSIR, Space, ICAR, ICMR and DST.

New Technologies, Development and Application

10.46 Rapid developments are taking place in science and technology in the world, resulting in major transformations of societies, economies and ways of life. It was recognised that the highest administrative levels of Government should get an exposure to these advances so as to build up appropriate interaction mechanism with the scientific infrastructure of the country, to incorporate these newer S&T developments into the socio-economic developmental programmes in a manner that the country derives the maximum advantages. Significant and productive efforts have been organised in this direction to cover Informatics, Computer Applications, Telematics, Biotechnology, New Materials and Robotics & Automation including system capabilities generated under NICNET (National Informatics Centre) and INDONET (CMC Ltd) to show the rapid strides in recent past in computer networking capabilities and on-line uses of various computerised data bases in the country.

10.47 As a result, a number of new initiatives have been developed. Interactions, linkages and S & T inputs are being ensured through Science Advisory Committees and Forward Looking Groups which are now functioning in many socio-economic ministries: additional training programmes in various ministries with respect to uses of modern tools like computers, have been initiated. It is necessary that fears in the minds of people with respect to introduction of new technologies are removed and also arrangements made to ensure minimum social upheaval. Special efforts are being mounted in all these areas of new advancing technologies to develop front-line capabilities as well as to ensure their utilization.

10.48 In order to have a focussed approach for R & D and application oriented programmes in the newly emerging area of high temperature superconductivity, high level organisational structures have been set up. Institutions under the scientific agencies such as CSIR, Departments of Atomic Energy, Science and Technology and educational institutions already in the field would work on this important area having great relevance.

10.49 As a result of the significant base already created in high technology areas of nuclear, defence and space technologies, the country is moving to large operational systems in the form of reactors, rocket launchers, satellites, radars, missiles, armoured fighting vehicles and the like. This is now leading to industrial production of many hundreds of crores of highly sophisticated items. One is therefore seeing already the spin-offs from indigenous research efforts and technology development to industrial production.

10.50 The progress of implementation of the Plan programmes in the Science & Telchnology Sector by and large has been good. The slippages on some prjects have been on account of certain administrative and procedural problems, but the preparatory work in the important sectors and for major programmes has already been done. Expeditious implementation of the mission projects and other thrust area programmes in superconductivity, new materials, lasers, accelerators, cell and molecular biology, immunology would have significant impact on the socio-economic development of the country as a whole.

Chapter 11

ENVIRONMENT & ECOLOGY, FORESTRY & WILDLIFE

Organisational Features

11.1 The integration of environmental management in the development has been progressively strengthened from the Fourth Plan onwards, when the need for such integration was clearly articulated. In the Seventh Plan this process was sought to be greatly strengthened by organisational and legislative changes to strengthen the implementation of environmental measures and the launching of major action programmes for the river Ganga and for wasteland development.

11.2 In order to give greater impetus to the environment protection, conservation and ecological research and for better integration with Forestry Sector, a Ministry of Environment, Forests & Wildlife was established in September, 1985 with a Department of Environment, Forests and Wildlife. With this, environmental concerns are more closely integrated into forestry policies. A National Wastelands Development Board was set up in 1985 to coordinate and monitor the development of wastelands in the country and ensure massive afforestation. Accordingly, the social forestry schemes being implemented under the Department of Forests were transferred to the NWDB. The Environment Protection Act, 1986 came into force from November, 1986 and rules and regulations for implementing it have been framed.

ENVIRONMENT AND ECOLOGY

11.3 The main activities which have made significant progress in terms of environmental protection, conservation, education, awareness, etc. have been launched at the central and state level. Under the Pollution Control and Monitoring, formulation of Minimal National Standards for polluting effluents from ten specific Industries and zoning and classification of fourteen major inter-State rivers are important. The Environmental Impact Assessment studies for river valley, mining, industrial, thermal power, atomic power and harbours projects have been carried out expeditiously. Guidelines have been framed. But in the absence of data for various projects and institutional framework which is not available with various institutions, there have been delays in giving

environmental clearance. Conservation and survey activities have been intensified through Botanical and Zoological Surveys of India. Vegetation mapping is being done by application of Remote Sensing. Preparation of National Vegetation Map by Forest Survey of India has been completed. A noteworthy feature is the setting of Nilgiri Biosphere reserve; this area represents one of the finest ecological and genetic diversities in terms of flora and fauna. Preparatory activities with regard to four more biosphere reserves viz., Nanda Devi, Uttar Khand, Thar Desert or Gulf of Mannar, Little Rann of Kutch or Namdapha are in advanced stages of finalisation. Eco-development activities, environmental research promotion, education and awareness programmes have progressed very well. More than eighty thousand students and fifty five voluntary organizations have been associated. The formalities to set up Himalayan Institute for Environment and Development took more time, therefore it has not become functional. Now the Institute has been renamed as Govind Ballabh Pant Himalayan Paryavaran Evam Vikas Sansthan; it has been registered under the Societies Registration Act and would work through Universities and research institutions in the Himalayan regions. From 19th November to 18th December, 1986 as part of the National Environmental Awareness Campaign, a National Environmental Month was organised. These activites involve more than 120 voluntary groups from all over the country. There has been a significant impact of this programme. A Research Matrix has been prepared indicating priorities. New centre of excellence on Mine Environment Studies has been set up at Dhanbad in addition to two existing ones at Ahmedabad and Bangalore. These are providing opportunities for Environmental Research, Training, Awareness building, etc. Ten Environmental Information Centres have been established covering pollution control, toxic chemicals, ecotoxicology, biodegradation, coastal and off-shore ecology.

11.4 The Environmental Protection Act came into force with effect from November, 1986. The Act will mainly coordinate activities and functions of the statutory and other agencies in the field of Environmental Protection at Centre and State levels. All the State Pollution Control Boards are being modernized and strengthened for implementation of EPA, 1986. 11 Environmental Standards and 31 Laboratories have been notified, Consultants for 6 industries have been appointed, a list of hazardous chemicals is being finalised, Water Amendment Bill and Guidelines for Crisis Management Plan for chemical accidents are being finalized in consultation with the State Governments. In order to inculcate environmental awareness and for giving impetus to environmental protection, State level

organisations have been set up with the help of Central assistance.

Ganga Action Plan

11.5 The Ganga Action Plan for cleaning up of the river Ganga was launched in 27 Class I cities to prevent the pollution of river Ganga. Out of the 27 locations, 6 are in U.P., 4 in Bihar and 17 in West Bengal. The objective of this programme has been to ensure the quality of river which would be fit for bathing, swimming and recreational and agricultural purposes. The various types of schemes undertaken include:-

- Interception of the waste water flowing into the river and diversion away from the river to treatment locations.
- Treatment of waste water with recovery of resources such as bio-energy, sludge, treated effluent as irrigant, possibilities of sewage fed fish farming, etc.
- Low cost sanitation.
- Facilities for direct river users through river front development schemes.
- Biological conservation schemes.

11.6 The Ganga Project Directorate has been set up as a wing of the Ministry of Environment and Forests in June 1985; a Central Ganga Authority headed by the Prime Minister, a Steering Committee headed by the Secretary to Government of India, Ministry of Environment and Forests and a Monitoring Committee under the chairmanship of the Member in charge of Environment in the Planning Commission have been functioning for the speedy implementation and monitoring of the Ganga Action Plan. In spite of several constraints of coordination and liaison with the State Governments, the efforts have been made to speed up the sewage treatment programme in different locations.

11.7 Out of the 27 cities, work has started in 22. The schemes at Hardwar-Rishikesh, Ramnagar, near Varanasi and recommissioning of the treatment plants at Beur and Saidpur, Patna have been completed. Work at other sites is in progress. A detailed scheme for monitoring of water quality has been prepared. Several programmes relating to public information,

participation and awareness are under implementation in close collaboration with the Ministries of Human Resource Development, Information & Broadcasting, State Governments and Voluntary Agencies. Ganga Seva Shivirs have been organised and exhibitions held. A programme to involve school children in monitoring of sample water quality parameters is under formulation.

11.8 The weakness of the present programme has been that it has been by and large implemented as a municipal works programme. The finalisation of the schemes by the State Governemnt has been slow and as a result of this, there have been slippages. The scientific inputs are still weak. The effort is now to take up special programmes with S & T inputs through National Laboratories at several locations. A computerised monitoring format is used for monitoring the action plan. Presently there is no plan for utilisation of the cleaned water e.g. use for agricultural, drinking, washing, irrigation, etc. The programmes for diversion/treatment of industrial wastes need to be taken up on an urgent basis otherwise industrial effluents would become a major source of pollution.

FORESTRY & WILDLIFE

Forestry

11.9 All efforts have been directed to ensure forest protection, research and training and afforestation on large scale through people's participation. The main objectives and strategy in the forestry sector have been :-

1. conservation of ecologically fragile eco-systems and preservation of biological diversity in terms of fauna and flora;

2. increasing substantially the vegetative cover by massive afforestation through Social Forestry, Farm Forestry and other planation programmes;

3. meeting the basic needs of the people in respect of fuelwood, fodder, minor forest produce and small timber;

4. ensuring close linkages between Forestry Programmes and Welfare of the tribal and other communities traditionally dependent upon forests;

5. special emphasis on forestry research, education, training and extension;

6. implementing the National Wildlife Action Plan for wildlife conservsation and;

7. creating a massive people's movement for achieving the above objectives.

11.10 The Forestry and Wild life schemes have progressed well except for some programmes like the forestry research which has been delayed due to reorganisation. An Indian Council of Forestry Research and Education has been set up with five regional Research Institutes which would work on location specific problems. There is urgent need to provide research and development inputs in the forestry sector to strengthen the afforestation,enrichment and natural regeneration of forests, protection and conservation strategies. Specific research projects would need to be undertaken in forest genetics, pathology, physiology, silviculture etc.

11.11 Fourteen Agriculture Universities have intiated B.Sc.Forestry courses for which financial assistance is being provided through ICAR. To impart training to the forestry personnel, Indira Gandhi National Forest Academy with an autonomous status has been set up in Dehradun. A project on introduction of modern forest fire control methods has been taken up with the assistance of UNDP in Maharashtra and Uttar Pradesh, primarily for tackling the problems of forest fires.

11.12 Two important schemes namely beneficiary oriented scheme for tribal development and development of minor forest produce including medicinal plants have been delayed. The implementation would start only from 1988-89. It has also been noted that no specific schemes for regeneration and enrichment of degraded forest land was initiated by the Ministry of Environment and Forests; efforts are now on to workout the modalities for these schemes.

11.13 The forest survey activities were also completely reorganised. A Computerised National Forest Data Management Centre (NFDMC) is being set up at New Delhi. A Centrally sponsored scheme of development of infra-structure for protection of forest has been initiated with the objective of assisting the States and UTs in re-inforcement of their existing protective mechanisms of counteracting organised gangsterism in vulnerable areas and consolidation of forests through acquisition of enclaves of private forests.

Wildlife

11.14 For the preservation and development of wildlife, 60 National Parks,360 Wildlife Sanctuaries and 15 tiger reserves have been established. Many Centrally sponsored schemes, such as control of poaching and illegal trade, assistance for the development of wildlife education and interpretation, captive breeding and rehabilitation of endangered species have progressed satisfactorily.A new scheme on 100 percent central assistance basis for Rhino conservation in Assam has also been started. For the first time a status report on National Parks and Sanctuaries has been prepared as a base document for the assessment of these schemes. An autonomous structure of the Wild Life Institute of India set up in Dehradun would be able to take many important research, management, training and education activities.

Wastelands Development Programmes

11.15 Due to soil erosion, excessive deforestation, over grazing, etc., vast areas of wastelands of various descriptions covering approximately half of the land areas of the country need to be developed with a biomass cover. In order to accomplish this, a National Wastelands Development Board (NWDB) was set up in May 1985 as a nodal, coordinating, monitoring and policy making body at the apex level. The main thrust of the wastelands development programmes is to step up the rate of afforestation with people's participation. A shift of emphasis from social forestry and block plantation on Government land to farm forestry and community plantation on private and community lands has been envisaged for accomplishing a target of 5 million hectares per year afforestation and 25 million hectares by the end of the Seventh Five Year Plan. People participation will need to be fully ensured.

11.16 The physical progress during the first two years of the Plan has been significant in terms of seedlings planted, areas covered and training imparted to a large number of voluntary organisations. The rural Fuelwood Plantation Scheme has not been very successful. The setting up of decentralised nurseries has taken off very well. About 40 voluntary organisations have been involved in wastelands development and in setting up of decentralised nurseries.

11.17 The physical targets and achievements in the first two years of the current plan with regard to wastelands development are given in Table 11.1.

Table 11.1 : Physical Targets and Achievements

Year	Target (crore seedlings)	Achievements (crore seedlings)	% of Achievement
1985-86	280.96	302.01	107.50
1986-87	342.84	349.11 (estimated)	101.83

11.18 After careful analysis it has been noted that there have been several problems encountered in implementing the wastelands development programmes. These include availability of funds from different sources, accountability of many agencies and lack of coordination at the NWDB level due to various procedural bottlenecks. Inspite of an increase from 20% to 25% for afforestation under NREP and RLEGP, the afforestation efforts under these have not been fully satisfactory. It may be possible to achieve the Seventh Plan target of 10 million hectares, but it appears difficult to achieve the target of 25 million hectares until and unless a major integrated effort of all concerned organisation/agencies would be mounted carefully. NWDB will need to consider this aspect.

11.19 It is suggested that NWDB will have to depend on the State Forestry Departments for development of the degraded and depleted forest areas and on the Central & State level research, academic and voluntary organisations, for demonstrating in large parts recovery of different types of wastelands. The policies relating to leasing of lands, pattern of Central assistance; guidelines for preparation of project documents, etc., will need to be evolved and coordinated by NWDB. The Forestry Departments will have to impart training to the local people and voluntary organisations. A computerised monitoring format is being evolved; the categorisation of wastelands on scientific lines has been done and training and awareness programmes launched to involve the people. While tapering the scheme of rural fuel plantation gradually,a new scheme of area oriented fuel wood and fodder programme would be launched; almost all the states would be participating in this on 50 percent sharing basis. Under this scheme effort would be to use different types of wastelands for fuel wood and fodder cultivation through scientific inputs. The NWDB has accorded high priority to this scheme. A similar scheme on setting up of silvipastural farms has been initiated. The efforts under various schemes are to ensure fullest participation of the people to maximise the benefits to the rural population in terms of fuelwood, fodder,small timber and employment opportunities.

Development of Ecologically Vulnerable Areas

11.20 The integration of environmental considerations with development is particularly necessary in certain types of areas which are ecologically vulnerable. The manner in which this consideration is taken into account in the special programmes for hill, desert and island areas is described below.

Hill Area Development

11.21 The basic objective of the Hill Area Development Programme (HADP) is to restore, preserve and develop the eco-system in hill areas in such a manner that it serves the socio-economic requirements of the people. Hill areas have some special problems due to the terrain, variable agro-climatic conditions, high unit cost of infrastructure and distinct socio-cultural features of the communities that inhabit hills. These difficulties constrain economic development. In order to strengthen and supplement the efforts being made by the concerned State Governments, the Hill Area Development Programme (HADP) was mounted by the Central Government.

11.22 The special problems of hill areas which are co-extensive with the boundaries of the States like J&K, Himachal Pradesh, Sikkim,Manipur, Meghalaya, Nagaland, Tripura, Arunachal Pradesh and Mizoram, all of which are Special Category States, are taken care of in the formulation of the overall State Plan. In hill areas which form only a part of a state the sub-Plan approach is followed. The concerned State Governments allocate funds for the development of their hill areas, which are augmented through Special Central Assistance (SCA) under HADP.This approach is followed in two hill districts of Assam, 8 hill districts of Uttar Pradesh, part of district of Darjeeling in West Bengal and the Nilgiris district of Tamil Nadu. In the case of a number of talukas (163) of Maharashtra, Karnataka, Tamil Nadu, Kerala and Goa under Western Ghat Development Programme (WGDP) a schematic approach is followed for want of separate flow of state resources at taluka level.

11.23 Shifting cultivation, commonly called °Jhum' in the North Eastern Region, poses a major problem in some hill areas. The Planning Commission has evolved (1986) a fresh strategy to overcome and replace Jhum. The strategy has been communicated to all the concerned State governments. It has also been built into the State Plans for the North Eastern Region through the annual planning process. According to the strategy,

all resources directed for the development of jhum predominant areas are to be pooled for evolving location specific integrated package of schemes, that provide viable alternative to replace jhum, without disturbing the settled villages. It encourages self-sufficiency in foodgrains and other food items on settled cultivation in isolated and remote areas. In the case of villages located on or near the road side, self-sufficiency in foodgrains need not be an objective. In this case, in addition to viable alternatives to be provided to replace jhum, strengthening of foodgrain distribution system is necessary. To augment the resources of the State governments for replacing jhum, a Central sector scheme has already been extended beginning 1987-88, to the North Eastern Region, Orissa and Andhra Pradesh.

11.24 Soil erosion and deforestation are a cause for concern in virtually all hill areas. The emphasis to control deforestation caused through commercial as well as non-commercial activities, will need renewed emphasis. In many hill states as well as under the HADP areas, soil conservation measures are being taken piece-meal by different departments. There is need for a coordinated action. A Master Plan for soil erosion control programme for each state/HADP area needs to be prepared and systematic coordinated effort is called for. Watershed and water catchment areas need to be properly identified and systematically treated and developed.

11.25 Firewood fodder requirements, especially, where forest cover has already been impaired, are endangering the ecology and environment. In order to lighten these burdens, alternative energy policies, especially, the development of non-conventional sources of energy like micro-hydel power need to be accelerated. Pursuit of an integrated rural energy programme, will therefore, continue to be an important component of HADP.

11.26 The livestock and cattle development programme will have to be supported with fodder and cattle feed development schemes so that the animals could be stall-fed and the bio-mass could produce non-conventional energy as well as manure. However, propagation of goats, sheep will have to be discouraged.

11.27 Horticultural development and plantations of various cash crops play an important role in promoting ecologically sound development in hill areas. Packages of multi-purpose mixed plantations that could provide higher incomes, need to be evolved for each area. For packaging of fruits and other horticultural products, suitable, non-wood based packing material for different commodities will have to be developed on a viable

basis, so that trees are not cut for making packing boxes. This would require research as well as setting up of pilot plants that could domonstrate the benefits.

11.28 Special care needs to be taken to ensure that hill roads are constructed strictly as per scientific design for hill roads, so that siltation is contained, proper drainage system is developed and chances of land slide minimised. The hill area pockets, where the density of population is low, villages are small and scattered over long distances, construction of porter tracks/poney tracks need to be built/maintained.

Desert Development

11.29 The general problem of arid and semi-arid areas is more essentially that of human ecology. Over centuries, the natural resources available in these areas have been over exploited. As the population increases the stress becomes greater and eventually leads to an increasing imbalance between human beings and animals on the one hand and the plant, water and land resources on the other. As the human demands persist and intensify, the endowed resources tend to get further depleted.

11.30 The area prone to drought and desertic conditions are universally characterised by water stress (owing to less rainfall), soil erosion and environmental degradation. The Desert Development Programme in both hot arid and high altitude cold deserts was introduced in 1977-78 with the objective of controlling desertification, restoration of ecological balance in hot arid and high altitude cold desert and semi desert areas, and for creation of conditions which would improve the level of production, income and opportunities of employment for the inhabitants of these areas.

11.31 The strategy adopted in the Sixth Plan is being continued with an increased stress on activities which contribute directly to the restoration of ecological balance and drought proofing. As the shifting sand dunes pose hazard to the adjoining cultivable land, dune stabilisation assumes priority in development activity. Equally important is shelter-belt plantation which provides protection to the field crops, arrests soil erosion and restores the ecological balance. For meeting the fodder requirements of the cattle, appropriate fodder and grassland development schemes are being taken up. Judicious exploitation of ground and surface water consistent with ecological requirements and accompanied by measures for conservation of rain water are being given due importance.

11.32 Serious efforts are being made through extension methods to promote agronomic practices, cropping pattern, species of trees, livestock development pattern which demand least water and moisture. The programme is being implemented in close cooperation with the agencies implemeting programmes like NREP, RLEGP, Drinking Water Supply scheme and IRDP. Efforts are being made to concentrate the sectoral activities in identified water-sheds and zones.

11.33 There is also a need to implement the programme on a micro-watershed basis for which detailed and comprehensive micro watershed plans will have to be prepared. Lack of requisite data and information required for planning on a watershed basis, shortage of experts and skilled officers have stood in the way of preparation of integrated micro watershed plans in every district.

11.34 Though the programme has been going on for about a decade yet its impact has not been studied. The Programme Evaluation Organistion of the Planning Commission will be taking up a comprehensive evaluation of the programme. The programme is not being monitored very effectively. The flow of information from the States regarding the physical and financial achievements under the programme has not been regular. As a result of inadequate monitoring there have been shortages in expenditure and it has not been possible to assess the physical achievements against a definite target.

11.35 There is little by way of infrastructure for technology research in cold deserts, which has hampered the pace of development in these areas, where the problems are vastly different from those in the hot deserts. Serious efforts will be made to encourage technology research in certain identified fields and also for obtaining appropriate technologies suited to these areas from other sources.

Island Development

11.36 In order to ensure protection of ecologically sensitive and beautiful islands namely Andaman and Nicobar and Lakshadweep, it was decided in November, 1985 to reorient the developmental programmes of these islands during the 7th Five Year Plan period. Two reports were prepared on the subject. An Island Development Authroity was set up in August, 1986 to decide on policies and programmes for an integrated development of island keeping in view all aspects of environmental protection as well as the special

technical and scientific requirements of the islands and review programmes of implementation and impact of the programmes of development. A Steering Committee was also constituted to identify the programmes for development of these islands keeping in view their special requirements and limitations; identify studies that need to be undertaken, evolve an implementation strategy coordinating various activities with Central Ministries and Departments and to monitor the progress of programmes identified as also evaluate their impact in specified time periods. So far six meetings of the Steering Committee and three meetings of the IDA have been held. In addition, several meetings have been taken up at the highest level to discuss various items and issues which need to be resolved expeditiously to speed up the development of these islands.

11.37 About 30 studies were commissioned out of which 19 reports have been received and discussed in the areas of land-use pattern, human resource development plan, carrying capacity of the Islands, Master Plan for transportation, setting up of structures for developmental studies in Islands, exploring the possibility to set up non-conventional energy sources, decentralised industries, tourism, environmental studies, fisheries, oceanography, etc. Decisions taken on many of these items would be approved by the Island Development Authority and accordingly implemented in a time bound manner.

11.38 After the setting up of the IDA, many new initiatives have been taken for developing the Islands on a sustainable basis without disturbing the ecology. An Integrated Development Corporation would be set up to deal with fisheries, tourism, housing, transportation, and related aspects in A&N Islands and a similar Corporation in Lakshadweep, which will, to begin with,take up the marketing aspects for fisheries development. The transportation facilities have been greatly improved in the last one year with the introduction of air-services,Vayudoot and also a new ship NAJD-II, have been commissioned for A&N Islands.A Master Plan for Telecommunication has been prepared and it is expected that before the end of the 7th Five Year Plan, all major facilities would be operational. STD service between Delhi and Kavaratti and Delhi and Port Blair has been started. A comprehensive plan of human resource development, fisheries potential, setting up of decentralised industries for generating employment for the local population etc., are under implementation. A structure would be set up by the Central Government to take up several studies of significance to two groups of the Islands, particularly keeping in view the environmental aspects and the natural beauty of the Islands as also the aspirations

of the local population. In accelerating the pace of developmental programmes in these two groups of Islands, two important aspects have been fully kept in view, viz., that both the groups of the Islands have fragile, critical and sensitive eco-system. Andaman & Nicobar Islands are characterised by the unique terrestrial eco-system consisting of tropical, evergreen forests and also the mangroves and marine corals; the Lakshadweep Islands have the precious marine eco-system consiting of lagoons and important marine life from the view point of genetic diversities. Therefore, all developmental programmes are being implemented in a way to protect and conserve the natural beauty and the environment. Simultaneously, efforts have also been made to provide benefit to the local population, make use of the natural resources of the Islands and ensure that carrying capacity of the Islands would be fully kept in view while initiating any major activities, such as tourism, industrial development, etc.

LIST OF ABBREVIATIONS

List of Abbreviations

ASLV	Augmented Satellite Launch Vehicle
ASMF	Assistance To Small And Marginal Farmers
BALCO	Bharat Aluminium Company
BARC	Bhabha Atomic Research Centre
BHEL	Bharat Heavy Electricals Limited
BHPV	Bharat Heavy Plates & Vessals
BIFR	Board for Industrial and Financial Reconstruction
BIT	Birla Institute of Technology
C DOT	Centre for Development of Telematics
CAD	Command Area Development
CAT	Centre for Advanced Technology
CCS	Cash Compensatory Scheme
CEA	Central Electricity Authority
CMC Ltd.	Computer Maintenance Corporation Limited
CNC	Computer and Numerically Controlled
COHSSIP	College Humanities and Social Improvement Programme
COSIP	College Science Improvement Programme
CPR	Couple Protection Rate
CSIR	Council of Scientific and Industrial Research
CSMCRI	Central Salt and Marine Chemical Research Institute
DAE	Department of Atomic Energy
DIET	District Institutes of Education and Training
DNES	Department of Non Conventional Energy Sources
DPAP	Drought Prone Area Programme
DST	Department of Science & Technology
ECIL	Electronics Corporation of India Ltd.
EDX	Electronic Data Exchange
EOU	Export Oriented Units
EPA	Environmental Protection Act
EPBAX	Electronic Private Branch Auto Exchange
FBT	Food Beverages And Tobacco
FBTR	Fast Breeder Test Reactor
FM	Frequency Modulation
FTZ	Free Trade Zone
GCA	Gross Cropped Area
GDP	Gross Domestic Product
GIA	Gross Irrigated Area
GMRT	Giant Meterwave length Radio Telescope
HADP	Hill Area Development Programme
HBTI	Hart Court Butler Technical Institute
HPT	High Powered Transmitter
HSD	High Speed Diesel
HTPB	Hydroxyl Terminated Poly-Butadience
HYV	High Yielding Varieties
IARI	Indian Agricultural Research Institute
ICAR	Indian Council of Agricultural Research
ICDS	Integrated Child Development Service

ICGEB	International Centre for Genetic Engineering and Biotechnology
IDA	International Development Agency
IDA	Island Development Authority
IDBI	Industrial Development Bank of India
IGCAR	Indira Gandhi Centre for Atomic Research
IGNA	Indira Ghandhi National Centre for Arts
IMD	India Meteorological Department
IMF	International Monetary Fund
IMT	Institute of Microbial Technology
INSAT	Indian National Satellite system
IRDP	Integrated Rural Development Programme
IRS	Indian Remote Sensing Satellite
JETS	Joint Education Teams
LPT	Low Powered Transmitter
LSI	Large Scale Integration
MAMC	Mining and Allied Machinery Corporation Ltd.
MAX	Major Auto Exchange
MDM	Mid-day Meal Programme
MES	Minimum Economic Size
MGCC	Maharashtra Gas cracker Complex
MHD	Magnetic Hydro Dynamics
MNP	Minimum Needs Programme
MODVAT	Modified Value Added Tax
MRTP	Monopolies and Restrictive Trade Practices
MST	Mesosphere, Stratosphere, Toposphere
MUX	Multi User Exchange
NAAE	National Authority for Adult Education
NALCO	National Aluminium Company
NATMP	National Atlas and Thematic Mapping Organisation
NCL	National Chemical laboratory
NF	Non Ferrous
NFDMC	National Forest Data Management Centre
NFE	Non- Formal Education
NGO'S	Non Government Organisations
NICNET	National Informatic Centre Network
NIEPA	National Institute of Educational Planning and Administration
NIS	National Institute of Sports
NML	National Metallurgical Laboratory
NMRWFC	National Medium Range Weather Forcasting Centre
NNRMS	National Natural Resources Managment System
NODP	National Oilseeds Development Project
NPDP	National Pulses Development Programme
NPE	National Policy on Education
NRDMS	Natural Resources Data Management System
NREP	National Rural Employment Programme
NSA(MH)	Net Sown Area(Million Hectares)
NSS	National Service Scheme
NTC	National Textiles Corporation
NTKm	Net Tonnes Kilo Meters
NWDB	National Wasteland Development Board

NWDP	National Watershed Development Programme
NWDPRA	National Watershed Development Programme For Rainfed Agriculture
OPTP	Oilseeds Production Thrust Project
PDS	Public Distribution System
PHC	Primary Health Centre
PLF	Plant Load Factor
PMP	Phased Manufacturing Programme
PREPCOM	Preparatory Commission for the International Sea Bed Authority
PSLV	Polar Satellite Launch Vehicle
RAC	Research Advisory Committees
REC	Regional Engineering College
REC	Rural Electrification Corporation
RFLP	Rural Functional Literacy Project
RLEGP	Rural Landless Employment Guarantee Programme
S & T	Science & Technology
SAEP	State Adult Education Programme
SAIL	Steel Authority of India Ltd.
SCA	Special Central Assistance
SCL	Semi Conductor Complex Limited
SEPUP	Self-Employment Programme for the Urban Poor
SFDA	Small Farmers Development Agency
SIA	Secretariat of Industrial Approvals
SIDF	Small Industries Development Fund
SRPP	Special Rice Production Programme
TAX	Trunk Auto Exchange
TIFAC	Technology Information Forecasting and Assessment Council
TIFR	Tata Institute of Fundamental Research
TMO	Technology Mission On Oilseeds
TPA	Tonne Per Annum
TV	Television
T&D	Transmission And Distribution
T&V	Training And Visit
UHF	Ultra High Frequency
UTI	Unit Trust Of India
VLSI	Very Large Scale Integration
VO	Voluntary Organisations
WGDP	Western Ghat Development Programme
WPI	Wholesale Price Index

A P P E N D I C E S

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APPENDIX-1A

SEVENTH PLAN OUTLAY AND PROGRESS OF EXPENDITURE

CENTRE, STATES AND UNION TERRITORIES

(RS. CRORES)

Head of Development	Seventh Plan Outlay 1985-90	Annual Plan 1985-86 Actuals	Annual Plan 1986-87 (R.E.)	Annual Plan 1987-88 Plan Outlay
(1)	(2)	(3)	(4)	(5)
I. Agriculture & Allied Activities	10523.62	1825.92	2262.82	2378.01
II. Rural Development	8906.08	2226.14	2528.50	2714.20
III. Special Area Programmes	2803.59	447.33	585.98	696.70
IV. Irrigation and Flood Control	16978.65	2792.24	3228.39	3761.90
V. Energy	55128.96	9678.97	12117.37	12998.95
VI. Industry and Minerals	22107.85	5437.12	5891.21	5635.04
VII. Transport	22644.86	4072.19	5415.90	6243.38
VIII. Communications	4474.52	942.12	1062.69	1231.17
IX. Science, Technology and Environment	2463.06	404.78	538.91	670.33
X. General Economic Services	1395.60	179.05	321.44	425.40
XI. Social Services	31545.24	4858.45	6013.27	7586.42
XII. General Services	1027.97	195.59	294.26	356.93
TOTAL (I to XII)	180000.00	33059.90	40260.74	44698.43
Advance Plan assistance for natural calamities		361.19	556.05	

Note:- Figures are as per revised budget classification.

APPENDIX-1B

Seventh Plan Outlay - Centre, States and Union Territories

(Rs. in crores)

Sl.No.	Heads of Development	Centre	States	U.Ts	Total
1	2	3	4	5	6
I	Agriculture & Allied Activities	4006.71	6248.40	268.51	10523.62
1	Crop Husbandry	1314.00	1959.54	58.36	3331.90
2	Soil & Water Conservation	110.00	597.30	33.09	740.39
3	Animal Husbandry	95.00	434.94	41.04	570.98
4	Dairy Development	315.00	187.70	3.00	505.70
5	Fisheries	170.00	305.42	23.77	499.19
6	Forestry & Wild Life	446.71	1340.08	72.31	1859.10
7	Plantations	141.00	-	-	141.00
8	Food, Storage & Ware Housing	275.00	31.07	1.01	307.08
9	Agricultural Research & Education	425.00	277.17	2.43	704.60
10	Agricultural Financial Institutions	70.00	158.56	0.10	228.66
11	Other Agricultural Programmes	70.00 (a)	86.44 (b)	3.00 (b)	159.44
12	Cooperation	575.00	870.18	30.40	1475.58
II	Rural Development	4901.59	3974.70	29.79	8906.08
1	Special Programmes for Rural Development	1816.79	1931.19	4.70	3752.68
2	Rural Employment	2994.59	1293.33 (c)	-	4287.92
3	Land Reforms	36.71	353.88	5.24	395.83
4	Other Programmes of Rural Development	53.50	396.30 (d)	19.85 (d)	469.65
III.	Special Area Programmes	-	2803.59	-	2803.59
	1. Hill Areas				
	Western Ghats)	-	116.50	-	116.50
	Other Hill Areas)	-	753.50	-	753.50
	2. North Eastern Areas	-	675.00	-	675.00
	3. Other Special Area Programme				
	a) Backward Areas	-	244.59	-	244.59
	b) Tribal Areas	-	756.00	-	756.00
	c) Others	-	258.00	-	258.00
IV.	Irrigation & Flood Control	834.93	15949.77	193.95	16978.65
	1. Major & Medium Irrifation	50.00	11445.96	59.60	11555.56
	2. Minor Irrigation	135.00	2615.52	54.47	2804.99
	3. Command Area Development	500.00	1161.91	8.80	1670.71
	4. Flood Control	149.93	726.38	71.08	947.39

(a) For management of natural disasters (Rs.10 crores)and agricultural marketing and rural godowns (Rs. 60 crores)
(b) For Marketing & Quality Control
(c) Includes Rs.1236.66 crores for N.R.E.P.
(d) For Community Development & Panchayts.

Appendix-1B(contd.)

(Rs. in crores)

Sl.No.	Heads of Development	Centre	States	U.Ts	Total
1	2	3	4	5	6
V	Energy	31799.84	22786.15	542.97	55128.96
1	Power	11051.54	22686.76	535.16	34273.46
2	Petroleum	12935.37	-	-	12935.37
3	Coal & Lignite	7400.58	-	-	7400.58
4	Non-Conventional Sources of Energy	412.35	99.39	7.81	519.55
VI	Industry & Minerals	18199.99	3785.88	121.98	22107.85
1	Village & Small Industries	1284.84	1378.52	89.38	2752.74
2	Iron & Steel Industries	6420.13	-	-	6420.13
3	Non-ferrous Mining & Metallurigical Industries	2050.00	-	-	2050.00
4	Cement & non-metallic mineral Industires	413.00	-	-	413.00
5	Fertilizer Industries	2660.75	-	-	2660.75
6	Petrochemical Industries	592.30	-	-	592.30
7	Chemical Industries	114.25	-	-	114.25
8	Engineering Industries	999.80	-	-	999.80
9	Telecommunication & Electronics Industries	901.22	-	-	901.22
10	Consumer Industries	587.50	-	-	587.50
11	Atomic Energy Industries	1010.00	-	-	1010.00
12	Other Industries	16.20	-	-	16.20
13	Other outlays on Industries and Minerals	1150.00	2407.36	32.60	3589.96
VII	Transport	16320.69	5608.19	715.98	22644.86
1	Railways	12334.30	0.25	-	12334.55
2	Ports & Light Houses	1134.79	97.31	28.32	1260.42
3	Shipping	693.42	7.00	126.46	826.88
4	Civil Aviation	730.21	24.72	2.91	757.84
5	Roads & Bridges	1019.75	3666.98	513.16	5199.89
6	Road Transport	203.92	1744.73	41.60	1990.25
7	Inland Water Transport	155.00	67.20	3.53	225.73
8	Other Transport Services	49.30	-	-	49.30

Appendix-1B(contd.)

(Rs. in crores)

Sl.No.	Heads of Development	Centre	States	U.Ts	Total
1	2	3	4	5	6
VIII	Communications	4465.78	8.49	0.25	4474.52
1	Postal Services	295.00	-	-	295.00
2	Telecommunication Services	4010.00	8.49	0.25	4018.74
3	Overseas Communication Services	146.55	-	-	146.55
4	Other Communication Services	14.23	-	-	14.23
IX	Science, Technology & Environment	2300.49	157.28	5.29	2463.06
1	Atomic Energy Reseaech	315.00	-	-	315.00
2	Space Research	793.96	-	-	793.96
3	Oceanographic Research	110.00	-	-	110.00
4	Other Scientific Research	731.53	81.57	3.09	816.19
5	Ecology & Environment	350.00	75.71	2.20	427.91
X	General Economic Services	416.62	941.41	37.57	1395.60
1	Secretariat Economic Services	9.00	64.54	2.80	76.34
2	Tourism	138.68	164.31	23.17	326.16
3	Foreign Trade and Export Promotion	79.00	-	-	79.00
4	Census, Surveys & Statistics	40.78	48.24	4.00	93.02
5	Meteorology	72.00	-	-	72.00
6	Civil Supplies	67.00	41.21	2.80	111.01
7	General Financial & Trading Institutes.	1.00	-	-	1.00
8	Technical & Economic Cooperation with other countries	-	-	-	-
9	Other General Economic Services	9.16	623.11 (a)	4.80 (b)	637.07

(a) Includes Rs. 622.31 crores for District Planning Rs. 0.80 crore for National Saving.

(b) Includes Rs.4.75 crores for District Planning Rs.0.05 crore for small Savings Scheme.

Appendix-1B(contd.)

(Rs. in crores)

Sl.No.	Heads of Development	Centre	States	U.Ts	Total
1	2	3	4	5	6
XI	Social Services	11938.44	17782.96	1823.84	31545.24
1	General Education	1518.64	2863.18	393.48	4775.30
2	Technical Education	220.00	388.12	73.67	681.79
3	Sports & Youth Services	300.00	122.55	20.88	443.43
4	Art & Culture	350.00	114.86	17.27	482.13
5	Medical & Public Health	897.34	2240.33	255.22	3392.89
6	Family Welfare	3256.26	-	-	3256.26
7	Water Supply & Sanitation	1236.83	4848.06	437.58	6522.47
8	Housing	259.87	1928.91	239.43	2428.21
9	Urban Development	168.01	1352.18	281.10	1801.29
10	Information and Publicity	71.51	90.84	7.06	169.41
11	Broadcasting	1400.00	-	-	1400.00
12	Welfare of SC, ST & Other Backward Classes	1211.56	1219.21	20.00	2450.77
13	Labour & Employment	95.10	728.99 (a)	18.53 (b)	842.62
14	Social Security & Welfare	946.00	191.87	20.62 (c)	1158.49
15	Nutrition	7.32	1693.86	39.00	1740.18
16	Secretariat Social Services	-	-	-	-
XII	General Services	348.92	651.18	27.87	1027.97
1	Currency, Coinage & Mint	240.45	-	-	240.45
2	Other Fiscal Services	34.55	-	-	34.55
3	Police	20.12	-	-	20.12
4	Supplies & Disposals	0.25	-	-	0.25
5	Stationery & Printing	6.00	50.08	6.00	62.08
6	Public Works	34.88	549.92	18.90	603.70
7	Other Administrative Services	12.67 (d)	51.18 (e)	2.97 (f)	66.82
	GRAND TOTAL (I to XII)	95534.00	80698.00	3768.00	180000.00

(a) Includes Rs.219.75 crores for Labour & Labour Welfare and Rs.509.24 crores for Special Employment Schemes.
(b) For Labour & Labour Welfare only.
(c) Includes RS. 0.10 crore for Rehabilitation.
(d) Includes Rs. 5.74 crores for unallocated as shown in Seventh Plan Document.
(e) Includes Rs. 42 crores for unallocated as shown in Seventh Plan Document, Rs. 8.98 crores for Training for development and Rs. 0.20 crore for Parliamentary Affairs.
(f) Includes Rs. 2.90 crores for Tranining,Rs.0.05 crore for Strengthening of accounts & Audit cadres on Directorate of Accounts and Rs. 0.02 crore for Goa Gazetteer.

Appendix 1-C

Actual Plan Expenditure by Heads of Development 1985-86 Centre, States and Union Territories

(Rs. in cores)

Sl.No.	Head of Development	Centre	States	U.Ts(a)	Total
1	2	3	4	5	6
I.	Agriculture & Allied Activities	745.52	1040.93	39.47	1825.92
	1. Crop Husbandry	175.08	333.26	8.52	516.86
	2. Soil and Water Conservation	36.28	103.85	4.93	145.06
	3. Animal Husbandry	12.92	70.41	6.19	89.52
	4. Dairy Development	82.72	31.06	0.33	114.11
	5. Fisheries	23.37	48.81	3.29	75.47
	6. Forestry & Wild Life	43.55	230.75	10.38	284.68
	7. Plantations	27.61	0.30	-	27.91
	8. Food,Storage & Warehousing	119.92	5.58	0.24	125.74
	9. Agricultural Research and Education	69.19	47.92	0.61	117.72
	10.Agricultural Financial Institutions	72.85	25.00	-	97.85
	11.Other Agricultural Programmes	7.30	9.37	0.54	17.21
	12.Cooperation	74.73	134.62	4.44	213.79
II.	Rural Development	1235.14	986.32	4.68	2226.14
	1. Special Programmes for Rural Development	265.83	337.09	0.45 (b)	603.37
	2. Rural Employment	944.87	504.86	-	1449.73
	3. Land Reforms	3.03	71.23	0.64	74.90
	4. Other Programmes of Rural Development	21.41	73.14	3.59	98.14
III.	Special Area Programmes	-	446.29	1.04	447.33
	1. Hill Areas				
	-Western Ghats)	-	166.70	1.04	167.74
	-Other Hill Areas)				
	2. North Eastern Areas	-	96.46 (c)	-	96.46 (c)
	3. Other Special Area Programmes				
	a. Backward Areas	-	43.13	-	43.13
	b. Tribal Areas	-	140.00	-	140.00
	c. Others	-	-	-	-

(a) Includes Arunachal Pradesh, Mizoram and Goa, Daman & diu.

(b) For Integrated Rural Energy programme

(c) Includes Rs. 10 crores LIC Loans

Appendix 1-C(contd.)

(Rs. in crores)

Sl.No.	Head of Development	Centre	States	U.Ts(a)	Total
1	2	3	4	5	6
IV.	Irrigation & Flood Control	122.72	2636.53	32.99	2792.24
	1. Major & Medium Irrigation	9.58	1858.82	11.75	1880.15
	2. Minor Irrigation	12.83	470.62	9.31	492.76
	3. Command Area Development	69.81	180.25	2.17	252.23
	4. Flood Control	30.50	126.84	9.76	167.10
V.	Energy	6209.85	3294.18	174.94	9678.97
	1. Power	2160.09	3282.98	172.46	5615.53
	2. Petroleum	2935.64	-	-	2935.64
	3. Coal & Lignite	995.04	-	-	995.04
	4. Non-Conventional Sources of Energy	119.08	11.20	2.48	132.76
VI.	Industry and Minerals	4665.59	750.05	21.48	5437.12
	1. Village & Small Industries	255.03	253.63	15.69	524.35
	2. Iron & Steel Industries	1495.51	-	-	1495.51
	3. Non-Ferous Mining & Metallurgical Industries	831.65	-	-	831.65
	4. Cement & Non-metallic Mineral Industries	69.10	-	-	69.10
	5. Fertilizer Industries	648.68	-	-	648.68
	6. Petrochemical Industries	122.58	-	-	122.58
	7. Chemical Industries	42.80	-	-	42.80
	8. Engineering Industries	293.25	-	-	293.25
	9. Telecommunication & Electronic Industries	184.54	-	-	184.54
	10.Consumer Industries	160.31	-	-	160.31
	11.Atomic Energy Industries	291.88	-	-	291.88
	12.Other Industries	4.55	-	-	4.55
	13.Other outlays on Industries & Minerals	265.71	496.42 (b)	5.79 (c)	767.92

(a) Includes Arunachal Pradesh, Mizoram and Goa, Daman & Diu.

(b) Includes Rs. 39.26 crores for Mining and Rs. 1.31 crores for Weights & Measures

(c) Includes Rs. 1.72 crores for Mining and Rs. 0.27 crore for Weights & Measures

Appendix 1-C(contd.)

(3)

(Rs. in crores)

Sl.No.	Head of Development	Centre	States	U.Ts(a)	Total
1	2	3	4	5	6
VII.	Transport	2963.86	994.70	113.63	4072.19
	1. Railways	1941.58	0.10 (b)	-	1941.68
	2. Ports & Lighthouses	177.06	22.50	3.91	203.47
	3. Shipping	207.40	3.00	0.32	210.72
	4. Civil Aviation	288.39	2.47	0.60	291.46
	5. Roads & Bridges	252.48	653.85	101.31	1007.64
	6. Road Transport	74.85	303.10 (c)	6.85	384.80
	7. Inland Water Transport	16.26	9.68	0.64	26.58
	8. Other Transport Services	5.84	-	-	5.84
VIII.	Communications	942.11	0.01 (d)	-	942.12
	1. Postal Services	37.46	-	-	37.46
	2. Telecommunication Services	891.64	-	-	891.64
	3. Overseas Communication Services	8.60	-	-	8.60
	4. Other Communication services	4.41	0.01 (d)	-	4.42
IX.	Science,Technology & Environment	380.67	23.49	0.62	404.78
	1. Atomic Energy Research	47.48	-	-	47.48
	2. Space Research	182.59	-	-	182.59
	3. Oceanographic Research	7.83	-	-	7.83
	4. Other Scientific Research	120.34	15.09	0.55	135.98
	5. Ecology & Environment	22.43	8.40	0.07	30.90
X.	General Economic Services	69.85	102.86	6.34	179.05
	1. Secretariat-Economic Services	0.35	8.97	0.44	9.76
	2. Tourism	23.85	26.89	4.38	55.12
	3. Foreign Trade & Export Promotion	20.87	-	-	20.87
	4. Census,Surveys & Statistics	9.30	5.55	0.67	15.52
	5. Meteorology	7.68	-	-	7.68
	6. Civil Supplies	6.85	6.37	0.44	13.66
	7. General Financial & Trading Institutions	-	-	-	-
	8. Technical & Economic Cooperation with other countries	-	-	-	-
	9. Other General Economic Services	0.95	55.08	0.41	56.44

(a) Includes Arunachal Pradesh, Mizoram and Goa, Daman & Diu.
(b) For Kon Kan Railways.
(c) Includes Rs. 1 Lakh for Planning Development cell in Tripura
(d) For Telecommunication in Himachal Pradesh.

Appendix 1-C(contd.)

(Rs. in crores)

Sl.No.	Head of Development	Centre	States	U.Ts(a)	Total
1	2	3	4	5	6
XI.	Social Services	1731.03	2834.93	292.49	4858.45
	1. General Education	178.08	426.47	45.37	649.92
	2. Technical Education	74.14	55.07	12.82	142.03
	3. Sports & Youth Services	10.80	27.21	3.28	41.29
	4. Art & Culture	20.43	20.05	3.07	43.55
	5. Medical & Public Health	181.58	362.82	35.49	579.89
	6. Family Welfare	479.81	-	-	479.81
	7. Water Supply & Sanitation	298.44	805.67	76.97	1181.08
	8. Housing	30.78	356.90	50.26	437.94
	9. Urban Development	21.15	251.98	50.04	323.17
	10.Information & Publicity	5.60	15.50	1.43	22.53
	11.Broadcasting	100.74	-	-	100.74
	12.Welfare of S.C./S.T. & other Backward classes	202.42	210.32	2.56	415.30
	13.Labour & Employment	10.46	49.02 (b)	2.79	62.27
	14.Social Security & Welfare	116.37	48.82	2.82	168.01
	15.Nutrition	0.23	204.74	5.59	210.56
	16.Secretariat Social Services	-	0.36	-	0.36
XII.	General Services	49.13	139.23	7.23	195.59
	1. Currency,Coinage & Mint	36.35	-	-	36.35
	2. Other Fiscal Services	4.82	-	-	4.82
	3. Police	0.73	-	-	0.73
	4. Supplies & Disposals	-	-	-	-
	5. Stationery & Printing	0.17	8.03	1.06	9.26
	6. Public Works	5.67	120.88 (c)	5.44 (d)	131.99
	7. Other Administrative Services	1.39	10.32	0.73	12.44
	Grand Total (I TO XII)	19115.47	13249.52	694.91	33059.90
	Central Assistance for Relief from Natural Calamities	-	361.19	-	361.19

(a) Includes Arunachal Pradesh,Mizoram and Goa,Daman & Diu.
(b) Includes Rs. 17.52 crores for Special Employment Programme.
(c) Includes Rs. 2.79 crores for Jails.
(d) Includes Rs. 0.19 crore for Jails.

Appendix 1-D

Revised Estimates by Heads of Development 1986-87-- Centre,States and Union Territories

(Rs. in crores)

Sl.No.	Head of Development	Centre	States	UTs (a)	Total
(1)	(2)	(3)	(4)	(5)	(6)
I.	Agricultural & Allied Activities	902.04	1337.57	23.21	2262.82
	1. Crop Husbandry	224.66	427.89	4.69	657.24
	2. Soil and Water Conservation	35.57	141.57	1.04	177.18
	3. Animal Husbandry	14.23	96.37	3.99	114.59
	4. Dairy Development	71.36	36.08	0.25	107.69
	5. Fisheries	57.35	58.78	3.65	119.78
	6. Forestry & Wild Life	71.78	301.29	5.37	378.44
	7. Plantations	32.90	0.32	-	33.22
	8. Food, Storage & Ware Housing	90.12	6.44	0.20	96.76
	9. Agricultural Research & Education	76.00	56.65	0.31	132.96
	10. Agricultural Financial Instiutions	135.00	24.64	-	159.64
	11. Other Agricultural Programmes	9.20	13.75	0.12	23.07
	12. Cooperation	83.87	173.79	3.59	261.25
II.	Rural Development	1541.19	983.69	3.62	2528.50
	1. Special Programmes for Rural Development	357.43	410.20	0.77 (b)	768.40
	2. Rural Employment	1151.15	420.92	-	1572.07
	3. Land Reforms	3.60	71.41	0.48	75.49
	4. Other Programmes of Rural Development	29.01	81.16	2.37	112.54
III.	Special Area Programmes	-	585.98	-	585.98
	1. Hill Areas				
	- Western Ghats)	-	188.95	-	188.95
	- Other Hills Areas)				
	2. North Eastern Areas	-	145.00 (c)	-	145.00 (c)
	3. Other Special Area Programmes				
	a. Backward Areas	-	67.03	-	67.03
	b. Tribal Areas	-	155.00	-	155.00
	c. Others	-	30.00 (d)	-	30.00 (d)

(a) Include Goa, Daman & Diu and exclude Arunachal Pradesh & Mizoram which are shown under States.
(b) For Integrated Rural Energy Programme.
(c) Includes Rs. 20 Crores L.I.C. Loans.
(d) For Border Areas.

Appendix 1-D(cont.)

(Rs. in crores)

Sl.No.	Head of Development	Centre	States	UTs (a)	Total
(1)	(2)	(3)	(4)	(5)	(6)
	1. Major & Medium Irrigation	10.95	2115.14	11.30	2137.39
	2. Minor Irrigation	31.80	580.30	4.49	616.59
	3. Command Area Development	89.20	204.33	0.96	294.49
	4. Flood Control	31.15	138.30	10.47	179.92
V.	Energy	7934.20	3979.77	203.40	12117.37
	1. Power	2872.75	3964.04	200.95	7037.74
	2. Petroleum	3698.58	-	-	3698.58
	3. Coal & Lignite	1237.90	-	-	1237.90
	4. Non Conventional Sources of Energy	124.97	15.73	2.45	143.15
VI.	Industry and Minerals	5024.79	843.91	22.51	5891.21
	1. Villages & Small Industries	293.15	275.34	18.50	586.99
	2. Iron & Steel Industries	1366.54	-	-	1366.54
	3. Non Ferrous Mining & Metallurgical Industries	765.01	-	-	765.01
	4. Cement & Non Metallic Mineral Industries	49.57	-	-	49.57
	5. Fertilizer Industries	934.36	-	-	934.36
	6. Petrochemical Industries	275.74	-	-	275.74
	7. Chemical Industries	27.98	-	-	27.98
	8. Engineering Industries	263.05			263.05
	9. Telecommunication & Electronic Industries	263.32	-	-	263.32
	10. Consumer Industries	237.83	-	-	237.83
	11. Atomic Energy Industries	287.55	-	-	287.55
	12. Other Industries	3.57	-	-	3.57
	13. Other Outlays on Industries & Minerals	257.12	568.57	4.01	829.70

(a) Include Goa, Daman & Diu and exclude Arunachal Pradesh & Mizoram which are shown under States.

Appendix 1-D(cont.)

(Rs. in crores)

Sl.No.	Head of Development	Centre	States	UTs (a)	Total
(1)	(2)	(3)	(4)	(5)	(6)
VII.	Transport				
	1. Railways	2675.42	0.07	-	2675.49
	2. Port & Lighthouses	260.53	21.44	7.53	289.50
	3. Shipping	401.52	5.85	43.00	450.37
	4. Civil Aviation	416.10	3.95	0.58	420.63
	5. Roads & Bridges	299.51	780.61	79.03	1159.15
	6. Road Transport	66.77	311.00	5.55	383.32
	7. Inland Water Transport	16.48	12.76	1.60	30.84
	8. Other Transport Services	6.60	-	-	6.60
VIII.	Communications	1060.66	2.00	0.03	1062.69
	1. Postal Services	40.00	-	-	40.00
	2. Telecommunication Services	974.20	-	-	974.20
	3. Overseas Communication Services	38.94	-	-	38.94
	4. Other Communication Services	7.52	2.00	0.03	9.55
IX.	Science,Technology and Environment	505.89	32.05	0.97	538.91
	1. Atomic Energy Research	56.65	-	-	56.65
	2. Space Research	259.00	-	-	259.00
	3. Oceanographic Research	15.55	-	-	15.55
	4. Other Scientific Research	126.60	15.72	0.41	142.73
	5. Ecology & Environment	48.09	16.33	0.56	64.98
X.	General Economic Services	141.51	174.96	4.97	321.44
	1. Secretariat-Economic Services	1.07	8.00	0.32	9.39
	2. Tourism	30.57	33.06	3.72	67.35
	3. Foreign Trade & Export Promotion	24.79	-	-	24.79
	4. Census,Surveys & Statistics	11.29	6.80	0.63	18.72
	5. Meteorology	8.42	-	-	8.42
	6. Civil Supplies	5.02	12.06	0.30	17.38
	7. General Financial & Trading Institutions	19.50	-	-	19.50
	8. Technical & Economic Cooperation with other countries	0.15	-	-	0.15
	9. Other General Economic Services	40.70	115.04	-	155.74

(a) Include Goa, Daman & Diu and exclude Arunachal Pradesh & Mizoram which are shown under States.

Appendix 1-D(cont.)

(Rs. in crores)

Sl.No.	Head of Development	Centre	States	UTs (a)	Total
(1)	(2)	(3)	(4)	(5)	(6)
XI.	Social Services	2155.78	3554.19	303.30	6013.27
	1. General Education	247.06	622.45	48.95	918.46
	2. Technical Education	67.57	75.93	11.83	155.33
	3. Sports & Youth Services	45.76	33.60	4.19	83.55
	4. Art & Culture	76.60	31.12	6.15	113.87
	5. Medical & Public Health	183.18	454.08	45.81	683.07
	6. Family Welfare	529.96	-	-	529.96
	7. Water Supply & Sanitation	322.59	930.96	71.49	1325.04
	8. Housing	35.70	442.27	32.81	510.78
	9. Urban Development	21.02	267.17	67.45	355.64
	10. Information & Publicity	7.32	22.14	1.13	30.59
	11. Broadcasting	212.37			212.37
	12. Welfare of Scheduled Castes,Scheduled Tribes & Other Backward Classes	217.02	260.00	3.15	480.17
	13. Labour & Employment	13.72	60.57 (b)	2.71	77.00
	14. Social Security & Welfare	175.68	66.05	1.68	243.41
	15. Nutrition	0.18	276.89	5.95	283.02
	16. Secretariat Social Services	0.05	10.96	-	11.01
XII.	General Services	53.14	232.11	9.01	294.26
	1. Currency,Coinage & Mint	27.56	-	-	27.56
	2. Other Fiscal Services	9.33	-	-	9.33
	3. Police	2.89	-	-	2.89
	4. Supplies & Disposals	0.02	-	-	0.02
	5. Stationery & Printing	4.76	8.99	0.68	14.43
	6. Public Works	6.69	184.66	7.72	199.07
	7. Other Administrative Services	1.89	38.46	0.61	40.96
	Grand Total (I to XII)	23625.23	15899.98	735.53	40260.74
	Advance Plan Assistance for Natural Calamities		556.05		556.05

(a) Include Goa, Daman & Diu and exclude Arunachal Pradesh & Mizoram which are shown under States.
(b) Includes Rs. 18.16 Crores for Special Employment Programme.

Appendix 1-E

Plan Outlay by Heads of Development 1987-88 Centre, States and Union Territories

(Rs. in crores)

Sl.No.	Head of Development	Centre	States	UTs(a)	Total
(1)	(2)	(3)	(4)	(5)	(6)
I.	Agriculture and Allied Activities	911.93	1447.62	18.46	2378.01
	1. Crop Husbandry	215.55	448.39	3.95	667.89
	2. Soil and Water Conservation	36.00	128.26	0.86	165.12
	3. Animal Husbandry	24.69	112.22	3.09	140.00
	4. Dairy Development	65.31	42.53	0.14	107.98
	5. Fisheries	40.00	69.64	2.50	112.14
	6. Forestry & Wild Life	92.00	345.58	4.42	442.00
	7. Plantations	31.52	2.50	-	34.02
	8. Food, Storage & Ware Housing	72.16	8.60	-	80.76
	9. Agricultural Research & Education	82.00	68.79	0.15	150.94
	10. Agricultural Financial Institutions	155.00	29.31	-	184.31
	11. Other Agricultural Programmes	6.70	11.89	0.30	18.89
	12. Cooperation	91.00	179.91	3.05	273.96
II.	Rural Development	1650.95	1060.15	3.10	2714.20
	1. Special Programmes for Rural Development	412.40	466.08	1.06 (b)	879.54
	2. Rural Employment	1205.00	417.15	-	1622.15
	3. Land Reforms	5.75	73.03	0.28	79.06
	4. Other programmes of Rural Development	27.80	103.89	1.76	133.45
III.	Special Area Programmes	-	696.70	-	696.70
	1. Hill Areas --Western Ghats) --Other Hill Areas)		204.00		204.00
	2. North Eastern Areas	-	165.00 (c)	-	165.00 (c)
	3. Other Special Area Programmes				
	(a) Backward Areas	-	79.90	-	79.90
	(b) Tribal Areas	-	168.50	-	168.50
	(c) Others	-	79.30 (d)	-	79.30 (d)

(a) Include Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Delhi, Lakshadeep and Pondicherry

(b) For 'Integrated Rural Energy Programmes' only

(c) Includes Rs. 25 crores LIC loans.

(d) Includes Rs. 42.30 corres for Border Areas and Rs. 37.00 crores for Other Special Areas.

Appendix 1-E(contd.)

(Rs. in crores)

Sl.No.	Head of Development	Centre	States	UTs(a)	Total
(1)	(2)	(3)	(4)	(5)	(6)
IV.	Irrigation and Flood Control	167.00	3581.42	13.48	3761.90
	1. Major & Medium Irrigation	13.55	2559.53	0.37	2573.45
	2. Minor Irrigation	28.00	650.44	3.33	681.77
	3. Command Area Development	90.00	228.23	-	318.23
	4. Flood Control	35.45	143.22	9.78	188.45
V.	Energy	7690.42	5113.78	194.75	12998.95
	1. Power	2994.72	5092.59	193.60	8280.91
	2. Petroleum	3265.00	-	-	3265.00
	3. Coal & Lignite	1330.00	-	-	1330.00
	4. Non Conventional Sources of Energy	100.70	21.19	1.15	123.04
VI.	Industry and Minerals	4716.08	904.91	14.05	5635.04
	1. Village & Small Industries	295.28	297.46	10.81	603.55
	2. Iron & Steel Industries	1484.00			1484.00
	3. Non Ferrous Mining & Metallurgical Industries	359.95			359.95
	4. Cement & Non Metallic Mineral Industries	85.00			85.00
	5. Fertilizer Industries	926.00			926.00
	6. Petrochemical Industries	354.51			354.51
	7. Chemical Industries	30.00			30.00
	8. Engineering Industries	268.57			268.57
	9. Telecommunication & Electronic Industries	273.30			273.30
	10. Consumer Industries	139.44			139.44
	11. Atomic Energy Industries	277.83			277.83
	12. Other Industries	6.34			6.34
	13. Other Outlays on Industries and Minerals	215.86	607.45	3.24	826.55

(a) Include Andaman & Nicobar Islands,Chandigarh,Dadra & Nagar Haveli, Delhi, Lakshadweep and Pondicherry.

Appendix 1-E(contd.)

(Rs. in crores)

Sl.No.	Head of Development	Centre	States	UTs(a)	Total
(1)	(2)	(3)	(4)	(5)	(6)
VII.	Transport	4795.60 (b)	1329.93	117.85	6243.38
	1. Railways	3400.00			3400.00
	2. Ports & Lighthouses	375.50	23.94	8.49	407.93
	3. Shipping	113.10		10.58	123.68
	4. Civil Aviation	442.00	8.86	1.71	452.57
	5. Roads & Bridges	355.00	931.74	92.49	1379.23
	6. Road Transport	73.00	346.50	4.58	424.08
	7. Inland Water Transport	32.00	18.89	-	50.89
	8. Other Transport Services	5.00	-	-	5.00
VIII.	Communications	1229.12	2.00	0.05	1231.17
	1. Postal Services	40.00	-	-	40.00
	2. Telecommunication Services	1126.92	-	-	1126.92
	3. Overseas Communication Services	52.00	-	-	52.00
	4. Other Communication Services	10.20	2.00	0.05	12.25
IX.	Science, Technology and Environment	630.45	38.89	0.99	670.33
	1. Atomic Energy Research	67.00	-	-	67.00
	2. Space Research	296.00	-	-	296.00
	3. Oceanographic Research	20.00	-	-	20.00
	4. Other Scientific Research	172.50	19.05	0.63	192.18
	5. Ecology & Environment	74.95	19.84	0.36	95.15
X.	General Economic Services	152.46	267.30	5.64	425.40
	1. Secretariat Economic Services	1.35	20.90	0.55	22.80
	2. Tourism	37.00	48.13	2.94	88.07
	3. Foreign Trade & Export Promotion	22.20	-	-	22.20
	4. Census, Surveys & Statistics	12.00	9.29	1.34	22.63
	5. Meteorology	10.00	-	-	10.00
	6. Civil Supplies	6.60	12.44	0.81	19.85
	7. General Financial & Trading Institutions	7.73			7.73
	8. Technical & Economic Cooperation with other Countries	0.28			0.28
	9. Other General Economic Services	55.30	176.54		231.84

(a) Include Andaman & Nicobar Islands,Chandigarh,Dadra & Nagar Haveli, Delhi,Lakshadweep and Pondicherry

(b) Includes additional outlay of Rs. 420 crores Provided for Railways subsequent to the prosentation of the Central Budget for 1987-88

Appendix 1-E(contd.)

(Rs. in crores)

SI.No.	Head of Development	Centre	States	UTs(a)	Total
(1)	(2)	(3)	(4)	(5)	(6)
XI	Social Services	3010.71	4255.36	320.35	7586.42
	1. General Education	625.06	746.11	51.00	1422.17
	2. Technical Education	173.00	105.79	17.61	296.40
	3. Sports & Youth Service	61.29	45.53	3.75	110.57
	4. Art & Culture	67.00	37.65	4.97	109.62
	5. Medical & Public Health	205.00	572.97	44.42	822.39
	6. Family Welfare	585.00			585.00
	7. Water Supply & Sanitation	392.34	1098.11	70.45	1560.90
	8. Housing	41.14	524.11	40.42	605.67
	9. Urban Development	23.67	320.20	69.74	413.61
	10. Information & Publicity	14.00	22.74	1.01	37.75
	11. Broadcasting	310.00			310.00
	12. Welfare of Scheduled Castes, Scheduled Tribes & Other Backward Classes	235.04	318.27	3.53	556.84
	13. Labour & Employment	18.96	83.27 (b)	2.59	104.82
	14. Social Security & Welfare	258.25	65.60	3.70	327.55
	15. Nutrition	0.31	314.86	7.16	322.33
	16. Secretariat Social Services	0.65	0.15		0.80
XII.	General Services	87.07	259.74	10.12	356.93
	1. Currency, Coinage & Mint	58.00			58.00
	2. Other Fiscal Services	12.00			12.00
	3. Police	4.00			4.00
	4. Supplies & Disposals	0.03			0.03
	5. Stationary & Printing	2.00	11.30	0.72	14.02
	6. Public Works	6.19	191.81	8.93	206.93
	7. Other Administrative Services	4.85	56.63	0.47	61.95
	Grand Total (I to XII)	25041.79	18957.80	698.84	44698.43

(a) Include Andaman & Nicobar Islands,Chandigarh,Dadra & Nagar Haveli, Delhi,Lakshadweep and Pondicherry

(b) Includes Rs. 16.17 crores for Special Employment Programme