

## INFRASTRUCTURE

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Adequate quantity, quality and reliability of infrastructure are key determinants of the growth of the overall economy and exports. Most infrastructure services in India have until recently been provided by public monopolies and quasi-monopolies and have been beset by severe problems like lack of accountability, low productivity, poor financial performance and over-employment. In order to meet the challenges of rapid economic growth and international competitiveness, there is an urgent need to achieve greater efficiency and accountability in these sectors, much greater prevalence of commercial principles and much more competition in the provision and operation of infrastructure services. As the Government's ability to undertake investment in infrastructure is severely constrained, it is necessary to induce much more private sector investment and participation in the provision of infrastructural services. The entry of private suppliers can also encourage better risk sharing, accountability, monitoring and management in infrastructure sectors.

2. The Government has already introduced several structural reforms in the infrastructural sectors. In the power sector, a package of incentives to attract private investment has been announced. This package included reduction of import duties on power equipment to 20 per cent; a five year tax holiday for new power projects; a guaranteed 16 per cent rate of return on paid up and subscribed capital and provision of counter guarantees by the central Government. In the petroleum sector, the Government has allowed imports and distribution of certain petroleum products like domestic LPG and kerosene by the private sector at market prices to stimulate new investments and promote operational efficiency. The recently created ONGC Limited has already disinvested 2 per cent of its equity and proposes to disinvest 18 per cent more in domestic and foreign markets. Private and foreign companies are now allowed to invest in oil exploration and production in joint ventures with ONGC or OIL, and also in the

refining of petroleum products. The domestic market in lubricants has been opened up to foreign collaborations. In 1994-95, a National Telecom Policy has been announced by the Government. This has allowed private participation in basic telecom services and foreign equity up to 49 per cent.

3. The enactment of Air Corporations Act, 1994 has enabled private air taxi companies to operate in the domestic sector. During 1994-95, six air taxi operators complying with the criteria prescribed with Air Craft Rules have been granted scheduled airlines status. Areas like the development and maintenance of airport infrastructure and handling of materials at major airports have been opened for private sector participation. In postal services also, the Government has agreed to give up its monopoly control by permitting the private sector to enter into the distribution of postal stationery on commission basis. To promote private sector participation in the development and maintenance of roads, several measures have been announced in 1994-95, including declaring the road sector as an industry to facilitate borrowing from the financial institutions; amendment in the National Highway Act to enable the levy of a toll on road users and relaxation in MRTTP provisions to enable large firms to enter this sector. Following the new policy of liberalisation and competition, railways have introduced reforms in their marketing and commercial policies and simplified rules and procedures in key areas. In ports, the private sector is being invited to participate in areas such as leasing of port equipment, setting up of private ports by coast-based industries, ship repair and maintenance and transportation within ports. These measures reflect the Government's commitment to open up the infrastructural sectors for private sector participation, with a view to improving their performance and to promote expansion of capacities in these critical sectors.

4. The overall performance of infrastructural sectors was satisfactory during 1993-94. The declining trend

**TABLE 8.1**  
**Trends in the Performance of Infrastructure Sectors**

	Unit	1992-93	1993-94 <sup>1</sup>	April-December <sup>1</sup>		Change over previous year	
				1993	1994	1993-94	1994-95 <sup>2</sup>
1	2	3	4	5	6	7	8
(Per cent)							
<b>Energy</b>							
1. Coal							
(a) Production	Mn. tonnes	238.26	246.04	165.75	171.01	3.3	3.2
(b) Pit-head stocks(year-end)	"	51.30	50.69	38.73	36.52	-1.2	-5.7
(c) Despatches	"	231.03	242.60	175.43	176.78	5.0	0.8
2. Electricity generated							
(Utilities only)	Bn. kwh	301.07	323.53	237.86	257.87	7.5	8.4
(a) Hydel	"	69.83	70.37	55.12	64.86	0.8	17.7
(b) Thermal (incl.nuclear)	"	231.24	253.16	182.74	193.01	9.5	5.6
3. Petroleum							
(a) Crude oil production	Mn. tonnes	26.95	27.03	20.00	23.87	0.3	19.4
(b) Refinery throughput	"	53.48	54.30	40.41	42.42	1.5	5.0
<b>Transport and communications</b>							
1. Railway revenue-earning goods traffic	"	350.05	358.72	258.37	264.74	2.5	2.5
2. Cargo handled at major ports	"	166.58	179.26	130.12	141.00	7.6	8.4
3. Telecommunications- new telephone connections provided (DEls)	000Nos.	986.81	1229.00	416.00	754.00	24.5	81.3
<sup>1</sup> Provisional. <sup>2</sup> April-December							

of crude oil production was arrested and reversed due to creation of additional capacities. The year 1994-95 has started with a promising performance in infrastructural sectors and strong turnaround continued in the oil sector. During April-December 1994-95, electricity generation increased by 8.4 per cent, crude oil by 19.4 per cent and new telephone connections by 81.3 per cent over April-December, 1993-94 (Table 8.1). Six infrastructural industries viz. electricity, coal, steel, cement, crude oil and petroleum products with a combined weight of 28.8 per cent in the Index of Industrial Production (IIP) recorded a growth rate of 8.0 per cent in April-December, 1994 compared with 5.0 per cent in April-December, 1993.

### Coal

5. Coal is one of the primary sources of energy, accounting for about 67 per cent of total energy consumption in the country. Coal production at 246 million tonnes in 1993-94 represented a growth of 3.3 per cent over 1992-93. Non-coking coal production, contributing about 82 per cent to total coal output, increased by 4.2 per cent, whereas coking coal production marginally declined by 0.7 per cent. Coal production during April-December, 1994 increased by 3.2 per cent (Table 8.2), but it fell short of the target fixed for the period by one per cent. Although both the

underground and Open cast mines registered a growth of 3.2 per cent during April-December 1994 but the latter continued to account for the major share in coal production.

6. Coking coal production at 26 million tonnes during April-December, 1994 was 7.1 per cent less than that in April-December, 1993. Given the trends in the production of coking coal and its high ash content, it is unlikely that imports of coking coal will go down in the immediate future. Imports of coal had been consistently more than six million tonnes in the last three years and reached a level of 6.6 million tonnes in 1993-94.

7. Total despatches of coal in 1993-94 at 242.6 million tonnes increased by 5.0 per cent, but increased only marginally by 0.8 per cent in April-December 1994 as compared with April-December 1993. The total pit-head stocks of coal declined from 50.7 million tonnes as on March 31, 1994, to 36.5 million tonnes as on December 31, 1994. But these are still far above optimal stock levels, which would be equal to one month's production. To reduce the pithead coal stocks to a reasonable level, short term coal production needs to be planned keeping in view the availability of railway wagons for its transportation to consuming points.

8. One of the major constraints on the profitability

**TABLE 8.2**  
**Trends in the Coal Sector**

	1992-93	1993-94 <sup>1</sup>	April-December <sup>2</sup>		Change over previous year	
			1993	1994	1993-94	1994-95 <sup>3</sup>
1	2	3	4	5	6	7
	(Million tonnes)				(Per cent)	
1. Production						
(a) Opencast	163.38	169.60	115.61	119.27	3.8	3.2
(b) Underground	74.90	76.44	50.14	51.74	2.1	3.2
Total	238.26	246.04	165.75	171.01	3.3	3.2
2. Production (By coal grades)						
(a) Coking coal	45.36	45.06	28.06	26.08	-0.7	-7.1
(b) Non-coking coal	192.90	200.98	137.69	144.93	4.2	5.3
(c) Washed coal	12.16	12.22	8.63	8.43	0.5	-2.3
(d) Middlings	5.06	5.18	3.73	3.83	2.4	2.7
3. Pithead stocks (year-end)	51.30	50.69	38.73	36.52	-1.2	-5.7
4. Despatches	231.03	242.60	175.43	176.78	5.0	0.8
5. Lignite production <sup>3</sup>	13.31	14.15	10.45	10.53	6.3	0.8
6. Output per man-shift (OMS)						
(i) CIL	1.46	1.52	1.34	1.49	4.1	11.2
(ii) SCCL	1.04	1.05	0.98	0.97	1.0	-1.0
<sup>1</sup> Provisional <sup>2</sup> April-December <sup>3</sup> By NLC only						

of the coal sector is low productivity in underground mines. This has stagnated at an output per man shift (OMS) of 0.55 tonnes for the last two decades, despite massive investments made in mechanisation of underground mines. The underground mines employ 80 per cent of manpower, but contribute only 30 per cent of total output. Productivity levels can be improved through better utilisation of existing stocks of machinery and equipment, greater flexibility in manpower deployment and rationalisation of the work force.

9. Indian coal has high ash content and low calorific value. The ash content varies from 20 to 30 per cent and sometimes exceeds 40 per cent. The transportation of such a non beneficiated coal, carrying inert material over long distances, not only leads to wastage of transport capacity and energy, but also results in low efficiency of coal based thermal power plants and adds to air pollution through higher emission and ash disposal. Given our large coal reserves and high import prices of alternative fuel, it is imperative to assess the status of advanced coal utilisation techniques to minimise environmental damage.

10. In order to encourage private sector investment in the coal sector, the Coal Mines (Nationalisation) Act, 1973 was amended with effect from June 9, 1993 for operation of captive coal mines by companies engaged in the production of iron and steel, power

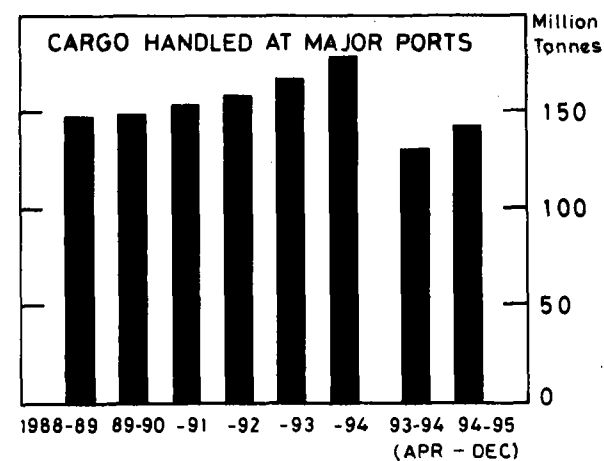
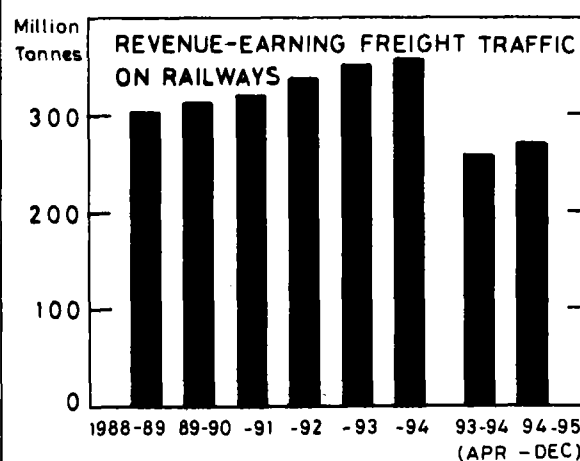
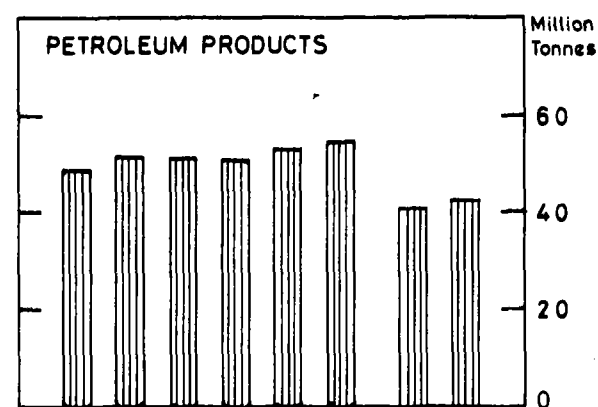
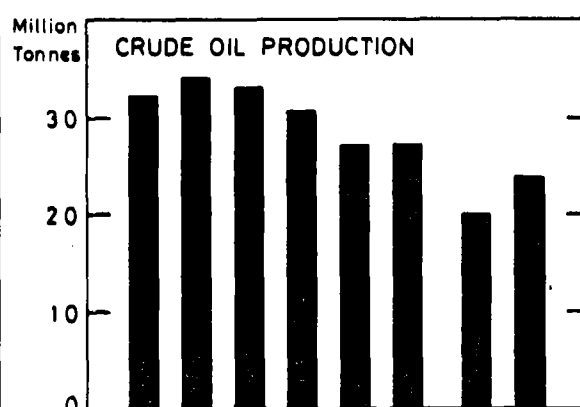
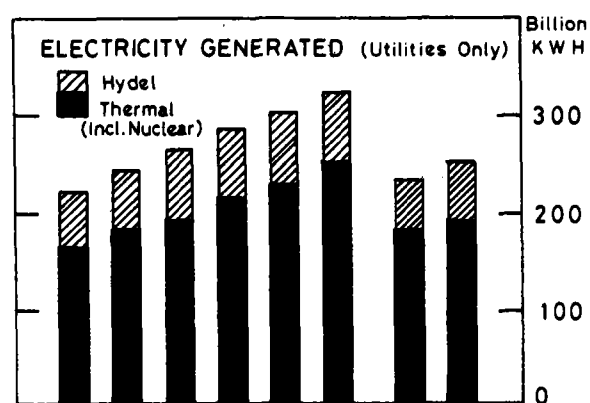
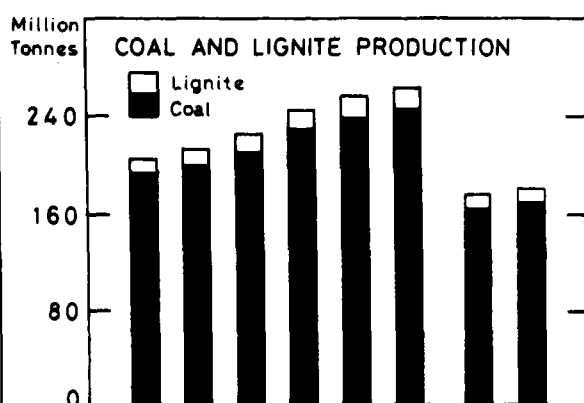
generation and washing of coal in the private sector. Imports of coking coal under Open General Licence (OGL) are being allowed and the import tariff has been slashed from 85 per cent to 35 per cent. Captive coal mining blocks have been identified for eleven power generating companies/Electricity Boards and for three companies in the iron and steel sector.

11. As on December 31, 1994, out of 71 projects under implementation in the coal sector, 22 projects are bedevilled by time and cost over-runs. On an average, the cost overrun per project is about Rs 77 crore and the time overrun per project is about 38 months. There is urgent need to improve project implementation in the coal sector.

12. The borrowings of Coal India Limited (CIL) from the Central Government as on March 31, 1994, were Rs 3814 crore. The public sector coal companies, however, have to generate internal resources to meet the planned increases in production. The cash and carry scheme implemented by CIL from October 1, 1992, enabled the company to slow down the growth of arrears, but the company is required to take steps to realise the large outstanding undisputed sales dues. Under the new policy of liberalised imports and funds repatriation, CIL is planning to invite foreign companies to form joint ventures in longwall mining projects. CIL may however find it difficult to attract foreign investors unless it improves its profitability.

Figure 8.1

# PERFORMANCE OF INFRASTRUCTURE SECTORS



## Power

13. Power generation in 1993-94 at 323.5 billion kwh recorded a growth of 7.5 per cent over 1992-93 and exceeded the target for the year by 2.2 per cent. While thermal and hydro generation went up by 10.4 per cent and 0.8 per cent respectively, nuclear generation declined by 20 per cent in comparison to the generation during the year 1992-93 (Table 8.3). The short-fall in nuclear generation was mainly due to reactor problems.

growth of 8.4 per cent which exceeded the target for the period by 1.3 per cent. While thermal and hydro generation went up by 6.0 per cent and 17.7 per cent respectively, nuclear generation declined by 11.4 per cent.

15. The Plant Load Factor (PLF) is an important indicator of operational efficiency of thermal power plants and every one per cent improvement in national average PLF makes available an additional 450 MW of installed generating capacity. The average PLF in

**TABLE 8.3**  
**Trends in the Power Sector (utilities only)**

	1992-93	1993-94 <sup>1</sup>	April-December		Change over previous year	
			1993	1994	1993-94	1994-95 <sup>2</sup>
1	2	3	4	5	6	7
			(Billion KWH)		(Per cent)	
1. Power generation	301.07	323.53	237.86	257.87	7.5	8.4
(i) Hydro-electric	69.83	70.37	55.12	64.86	0.8	17.7
(ii) Thermal	224.49	247.76	178.48	189.23	10.4	6.0
(iii) Nuclear	6.75	5.40	4.26	3.78	-20.0	-11.4
2. Plant load factor of thermal plants (per cent)	57.10	61.00	58.80	57.50	-	-
<sup>1</sup> Provisional.			<sup>2</sup> April-December			

14. Total generation of power in April-December, 1994 was 257.9 billion kwh, compared to 237.9 billion kwh during April-December, 1993, showing a

1993-94 and in April-December 1994 in the Central PSUs was appreciably higher than that achieved by the State Electricity Boards (SEBs) (Table 8.4). The low

**TABLE 8.4**  
**Thermal Plant Load Factor** (Per cent)

	1992-93	1993-94 <sup>1</sup>	April-December <sup>1</sup>		
			1993 (Actual)	1994 Target	1994 (Actual)
1	2	3	4	5	6
I. State Electricity Boards	54.1	56.6	54.1	54.8	52.7
Delhi (DESU)	54.0	49.0	47.6	62.0	51.2
Haryana	49.9	40.3	37.3	47.4	42.6
Rajasthan	77.0	81.1	76.6	78.1	73.6
Punjab	58.3	63.5	62.1	65.1	56.1
Uttar Pradesh	50.5	50.1	48.2	46.3	42.0
Gujarat	61.6	60.4	56.9	58.6	57.5
Maharashtra	59.7	64.1	61.7	59.8	59.3
Madhya Pradesh	52.5	56.0	50.6	52.1	52.9
Andhra Pradesh	65.0	68.7	64.8	68.6	65.7
Tamil Nadu	65.2	69.1	67.7	59.1	65.0
Karnataka	49.4	66.9	64.9	67.5	62.2
Bihar	25.2	24.4	23.9	28.6	20.5
Orissa	34.5	35.6	33.6	36.8	29.0
West Bengal	31.1	40.5	40.1	40.6	41.7
West Bengal Power Dev. Corporation	58.1	68.2	69.5	62.2	60.5
Durgapur Projects Limited.	28.7	26.3	27.1	28.4	24.6
Assam	24.3	19.9	17.1	28.9	25.3
II. Central Sector	62.7	69.8	67.7	66.1	65.8
National Thermal Power Corporation	68.8	76.9	74.8	70.9	72.5
Neyveli Lignite Corporation	56.4	55.5	52.8	65.7	55.9
Damodar Valley Corporation	32.3	42.3	40.7	39.9	37.6
III. Private Sector	58.8	57.0	58.7	56.5	65.4
All India	57.1	61.0	58.8	58.5	57.5
IV. Region					
Northern	62.0	64.0	61.8	61.7	56.5
Western	59.7	62.4	61.0	60.2	61.5
Southern	62.6	68.3	65.7	66.3	64.8
Eastern	39.8	44.8	44.1	42.3	43.2
North Eastern	24.3	19.9	17.1	28.9	25.3
<sup>1</sup> Provisional					

capacity utilisation of thermal power plants of the SEBs is largely due to deficiencies in management and operation, lack of proper maintenance and non-availability of coal of appropriate quality. There are wide inter state variations in the average PLF of thermal plants. The average PLF in the case of Eastern and North Eastern regions continued to be much lower than the all India average.

16. An action plan has been drawn up to improve the performance of the power sector in a phased manner, involving short term, medium term and long term measures, covering both physical and financial aspects of generation, transmission and distribution of power. Short term measures include overhauls and maintenance (O&M) of boilers and optimal operation of the regional grids, which will result in substantial improvement in the availability of stations and consequent increases in the Plant Load Factor (PLF). Significant improvements in the PLF of thermal power stations can be effected through medium term measures like proper maintenance planning. In the long term, the availability factor of the older thermal power plants can be improved by appropriate Renovation and Modernisation (R&M) programmes.

17. Thermal plants at present account for 76 per cent of total power generation and hydro electricity plants for 22 per cent, with the balance 2 per cent being generated by nuclear plants. The installed capacity of power generation as on March 31, 1994, was 76,713 MW. Actual additions to generating capacity during the first two years of the Eighth Plan had been 3537 MW (79 per cent of the target) and 4539 MW (102 per cent of the target). Against the target of 4819 MW set for 1994-95, the actual additions during April- December have been 1992 MW, which is 38.3 per cent less than the target fixed for the period (Table 8.5).

18. The critical problem area in the power sector continues to be the poor performance of SEBs, which generate and distribute power, set tariffs and collect revenues. Agriculture and industry continued to be the two most important categories of consumers in terms of their relative shares, with SEB electricity charges set at much below cost for the agricultural sector and above unit cost for the industrial sector (Table 8.6). Unit revenue realisation from the agricultural sector in none of the SEBs covers a reasonable fraction of the unit average cost for the SEB, leading to heavy financial losses. The commercial losses of the SEBs in

**TABLE 8.5**  
**Addition to Generating Capacity**

Sector	1992-93		1993-94 <sup>1</sup>		April-December 1994 <sup>1</sup>	
	Target	Actual	Target	Actual	Target	Actual
1	2	3	4	5	6	7
Thermal	3359	2944	3265	3742	2905	1938
Hydro	879	373	954	797	102	54
Nuclear	220	220	220	-	220	-
Total	4458	3537	4439	4539	3227	1992
<sup>1</sup> Provisional.						

**TABLE 8.6**  
**Consumer Categorywise Sale of Electricity and Average Tariff**

<b>Consumer</b>	<b>1992-93</b>		<b>1993-94</b>		<b>1994-95<sup>1</sup></b>	
	<b>Sale (per cent)</b>	<b>Tariff (paise/ kwh)</b>	<b>Sale (per cent)</b>	<b>Tariff (paise/ kwh)</b>	<b>Sale (per cent)</b>	<b>Tariff (paise/ kwh)</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Domestic	15.96	79.08	16.52	84.96	16.51	88.21
Commercial	4.54	167.36	4.66	134.30	4.75	190.52
Agriculture	29.85	15.59	28.44	20.09	27.55	21.70
Industrial	35.69	160.44	37.32	165.79	37.80	201.92
Rly. Traction	1.86	206.70	2.05	227.75	2.15	240.68
Outside state	1.68	77.83	1.48	77.93	1.40	80.75
Overall	10.42	105.52	9.53	120.71	9.84	129.76
<b>All Consumers</b>	<b>100.00</b>	<b>98.28</b>	<b>100.00</b>	<b>112.67</b>	<b>100.00</b>	<b>125.00</b>
<sup>1</sup> <i>Projections</i>						

**TABLE 8.7**  
**Financial Performance of the State Power Sector**

	1991-92	1992-93	1993-94 (Pre-Actual)	1994-95 (RE)	1995-96 (AF)
1	2	3	4	5	6
<b>(Rs. Crore)</b>					
<b>A. Gross Subsidy Involved</b>					
(i) On account of sale of Electricity to:					
(a) Agriculture	5938	7205	8888	10113	11178
(b) Domestic	1310	1919	2420	2983	3492
(c) Inter-State Sales	201	228	138	232	330
Total	7449	9350	11446	13308	15000
(ii) Subventions Received from State Governments	2045	1911	2088	1831	1693
(iii) Net Subsidy	5404	7439	9378	11477	13307
(iv) Surplus Generated by sale to other sectors	2173	3312	3502	5308	5941
(v) Uncovered Subsidy	3231	4127	5876	6169	7386
<b>B. Commercial Losses<sup>1</sup></b>	4117	4358	4995	6332	7130
<b>C. Revenue Mobilisation</b>					
(i) Rate of Return (ROR) <sup>2</sup>	-12.7	-11.8	-12.2	-13.5	-13.6
(ii) Additional Revenue Mobilisable from Achieving					
(a) 3 per cent ROR	4959	5482	6221	7737	8715
(b) From Introducing 50 paise/unit from Agriculture/Irrigation	2176	2159	2223	2017	1927

RE : Revised Estimate, AF : Actuals from Progress Report

<sup>1</sup> Commercial losses are different from operational losses. The latter are not shown in this table.

<sup>2</sup> in per cent

absolute terms have increased from about Rs.4100 crore in 1991-92 to about Rs.6300 crore in 1994-95 (RE) and is projected to increase further to about Rs.7100 crore in 1995-96. The hidden subsidy for agriculture and domestic sectors has increased from Rs.7439 crore in 1992-93 to Rs.11,477 crore in 1994-95 (RE) and is projected to further go up to Rs.13,307 crore in 1995-96 (Table 8.7). Introduction of the proposed national minimum agricultural tariff of 50 paise/kwh, even if implemented, will still leave uncovered a substantial proportion of the subsidy provided to the sector.

19. Apart from extensive cross-subsidies involved in the prevailing power tariff structures, the SEBs have continued to suffer from sub-optimal capacity utilisation of thermal generation units and high transmission and distribution (T&D) losses. These T&D losses have remained between 21 and 23 per cent, as against an international average of less than 10 per cent. These are due to sparsely distributed loads over a large area, particularly in the rural sector, under-investment in the transmission system, inadequate billing and substantial pilferage of power. Losses can be brought down through system improvement schemes which are being undertaken by SEBs.

20. Restoration of financial health of SEBs and improvement in their operational performance remain the most crucial issues today in the power sector. In terms of Section 59 of the Electricity (Supply) Act, 1948, SEBs are required to earn a minimum rate of return of 3 per cent on their net fixed assets in service, after providing for depreciation and interest charges. However during 1993-94 the revised estimates on rate of return (ROR) reveals that even with Subsidy seven SEBs had negative ROR. A minimum 3 per cent return on net fixed assets with a minimum agricultural tariff of 50 paise per unit, may provide a working framework for fixing tariffs and achieving conservation of power. Some of the states have already fixed a minimum tariff of 50 paise per unit for the agricultural sector, but most of them are applying the rate only for metered supply. Strict measures should be taken to reduce unmetered demands and the theft of electricity.

21. The Government has decided to set up a National Power Tariff Board at the Centre and Regional Power Tariff Boards in Delhi, Bombay, Calcutta and Shillong. The main functions of the National Power Tariff Board will be to evolve broad principles and guidelines to ensure uniform approach by all regional boards in the matter of fixation of tariffs, and to work out tariff for

inter-state and inter-regional exchange of power. The Regional Power Tariff Boards will evolve the specific principles based on financial and economic factors, and make recommendations to the state governments concerned, for fixation of tariffs for the power supplied by SEBs and power utilities to different sectors.

22. The net budgetary support to the Central PSUs under the Ministry of Power as compared to the approved plan outlay has come down from 52 per cent in 1985-86 to about 9 per cent in 1994-95. The proposed net budgetary support for 1994-95 is Rs.640 crore. Because of the decline in budgetary support from year to year, the central PSUs have to mobilise resources through internal and extra budgetary resources (IEBR). During 1993-94, the PSUs were able to mobilise resources amounting to Rs.2787 crore, as against the

approved allocation of Rs.4061 crore under IEBR. During 1994-95, the CPSUs are required to mobilise Rs.4276 crore through IEBR, against which the actual realisation till September, 1994 has been of the order of Rs.1511 crore.

23. A review of the existing external assistance portfolio reveals that the total undisbursed balance of external assistance in the power sector by the end of March 1994 stood at Rs.18,316 crore. However, by the end of November 1994, the cancellations of IBRD loans to various power projects have been estimated to be Rs.165 crore. For all power projects, against the estimate of Rs.3004 crore, the actual utilisation during the year 1993-94 was Rs.2970 crore, i.e., about 99 per cent of the target.

24. In the context of paucity of resources with

### Box 8.1

#### Government of India's Counter Guarantees for Independent Power Projects

- The Government of India has decided to extend counter-guarantees to the eight fast-track Independent Power Projects (IPPs).

##### Eligibility Criteria:

- Counter-guarantees are to be preceded by an in-depth appraisal of the project proposal by Government of India.
- The Ministry of Power would accord techno-economic clearance and certify that the Project is essential and consistent with grid management, the cost per MW of generating capacity is reasonable and the tariff and other parameters comply with notified Government of India guidelines.
- The SEB signs a Power Purchase Agreement (PPA) with the developer. The cost per unit is fixed, and clearly indicated in the PPA, with adjustments being allowed only to the extent of known and agreed variations.
- The SEB agrees to open an irrevocable revolving Letter of Credit for its payment liabilities of one month to the private power company; and to maintain an Escrow account to which revenues equivalent to one month's billing of the private company will be credited.
- The SEB signs and successfully implements the Operational and Financial Action Plan (OFAP) with the Power Finance Corporation (PFC).
- The management of SEB and State finances is prudent in the opinion of Government of India, Ministry of Finance, and the SEB achieves a minimum rate of return of 3 per cent in the preceding year.

##### Terms and Conditions:

- The Government of India would be a secondary guarantor, with the respective State Governments being the primary guarantors.
- The Government of India's guarantee would cover capacity and energy payment obligations of the SEBs upto a predetermined annual limit.
- In the event of termination of the Power Purchase Agreement (PPA), the Independent Power Project (IPP) would be covered against foreign debt obligations upto an amount not exceeding the foreign equity.
- Counter-guarantees shall be accompanied by Agreements with the respective State Governments to achieve the agreed performance parameters that would be backed by financial penalties in the event of default.
- The guarantee limits would be constrained by the annual central transfers of plan assistance and taxes to the respective States and such transfers would be pledged against payment defaults by the SEB or the State Government.
- The duration of the guarantee shall be normally limited to a period of 10 years from the date of entry into commercial service, after which the IPP must rely on alternative security arrangements.



Central/State PSUs and SEBs and to bridge the gap between the rapidly growing demand for electricity and supply, a policy to encourage greater investments by private enterprises in the power sector, with the objective of mobilising additional resources for capacity addition in power generation and distribution, had been formulated in 1991 and is currently under implementation. The response to the new power policy has been overwhelming. So far, 138 new proposals for capacity addition by private enterprises of 58,745 MW, with an approximate investment of more than Rs 2,19,927 crore, have been received. 41 are from foreign investors including NRIs, and joint venture proposals. Out of these, 13 proposals have already been cleared by the Government from the foreign investment angle.

25. To make the policy more attractive, the tariff notification has been amended twice, offering an assortment of additional incentives to investors, such as protection up to 16 per cent on foreign equity from foreign exchange fluctuations, clarity on incentives to be earned for performance beyond 68.5 per cent PLF, liberalised rates of depreciation and allowing flexibility in tariff structures subject to certain conditions. To boost private investment in hydroelectric projects, the Government is reviewing the hydro tariff guidelines and is expected to issue revised guidelines soon. To bring about private investment in the renovation, modernisation and uprating of old power plants, the Government is working on a package which is expected to be announced shortly.

26. However, lack of access to the final market for electricity, the poor finances of SEBs, their weak track record for meeting payment obligations and non-availability of their or state government's credit rating in

international financial markets, are some of the major obstacles in attracting private investment into this sector. Therefore, most promoters have been asking for Government of India Counter Guarantees for SEB's payment obligations. The Government of India has recently approved the extension of counter guarantees for SEB's payment obligations in respect of eight Independent Power Projects (IPP) with total generating capacity of 5000 MW subject to certain terms and conditions (Box 8.1). But only two have been finalised so far.

### Petroleum Oil and Lubricants

27. The production of crude oil during 1993-94 at 27.03 million tonnes was 0.5 per cent lower than the target, but marginally higher than the production of 26.95 million tonnes achieved during 1992-93. With this increase in production, the declining trend that started in 1990-91 has been arrested. Oil and Natural Gas Corporation Limited (ONGC) produced 90 per cent of total crude oil in 1993-94, while the rest was produced by Oil India Limited (OIL). Against the annual target of 32.28 million tonnes of crude oil production for the year 1994-95 the production of crude oil during April-December 1994 at 23.9 million tonnes was 19.4 per cent higher than the output produced during April-December 1993 (Table 8.8).

28. The total refinery crude throughput during 1993-94 was 54.3 million tonnes, compared to 53.5 million tonnes achieved in 1992-93. The average capacity utilisation of the 13 refineries was 102 per cent in 1993-94, compared to 101 per cent of 12 refineries in 1992-93. The total refinery crude throughput during April-December 1994 at 42.4 million tonnes was 6.1 per cent higher than the target of 40.0 million tonnes.

**TABLE 8.8**  
**Trends in the Petroleum Sector**

	1992-93	1993-94 <sup>1</sup>	April-December <sup>1</sup>		Change over previous year	
			1993	1994	1993-94	1994-95 <sup>2</sup>
1	2	3	4	5	6	7
	(Million tonnes)		(Per cent)			
1. Crude oil production	26.95	27.03	20.00	23.87	0.3	19.4
(i) Onshore	11.20	11.65	8.67	9.02	4.0	4.0
(a) ONGC	8.68	8.84	6.56	6.83	1.8	4.1
(b) OIL	2.52	2.81	2.11	2.19	11.5	3.8
(ii) Offshore (ONGC)	16.75	15.38	11.33	14.85	-2.3	31.1
2. Refinery throughput	53.48	54.30	40.41	42.42	1.5	5.0
3. Production of petroleum products	50.36	51.08	37.91	39.62	1.4	4.5
	(Billion cubic meters)					
4. Natural gas production <sup>3</sup>	18.06	18.34	12.15	13.05	1.6	7.4

<sup>1</sup>Provisional.

<sup>2</sup>April-December.

<sup>3</sup>April-November.

29. The production of natural gas in 1993-94 at 18.3 billion cubic meters (BCM) was higher by 1.6 per cent than 1992-93. The utilisation of natural gas during 1993-94 was 16.3 BCM, compared to 16.1 BCM in 1992-93. The production of natural gas during April-November 1994 at 13.05 BCM was 7.4 per cent higher than that in April-November 1993.

30. Natural gas is likely to play a major role in bridging the gap between demand and supply of liquid hydrocarbons in the future. At present, natural gas is being used mainly as feedstock for core sector industries like power and fertiliser. During 1993-94, about 10 per cent of the total production of natural gas was flared. Both ONGC and OIL have initiated a number of schemes including the Gas Flaring Reduction Project to reduce flaring to the barest minimum.

31. The government approved an outlay of Rs. 26,552 crore for the Eighth Plan in the petroleum sector. Actual expenditure in the first two years was Rs 15,571 crore. During 1994-95, the anticipated expenditure is Rs 11,537 crore. Therefore, the total expenditure by the end of the third year of the Plan will be 102 per cent of the plan outlay. This highlights the resource requirements in this sector and the need for ongoing liberalisation measures for private sector participation.

32. A number of significant reforms have been implemented in the oil and gas sector. The Government has already restructured ONGC into a corporation and has undertaken disinvestment of 2 per cent of its equity. Action is under way for a further dilution of ONGC's equity by 18 per cent through offer of shares in domestic and international markets. The Government is offering exploration blocks on the round-the-year bidding basis to enable companies to choose their timing for taking part in the bidding rounds. The Government has invited eight rounds of bidding for exploration of oil and gas by the end of December 1994. The Government has awarded contracts for eleven blocks till the Fifth Round of bidding. The Sixth, Seventh and Eighth Round bids are currently under evaluation. The Government has offered discovered medium and small-sized oil and gas fields for development to private companies for accelerating production. Under the first offer, contracts for 5 medium-sized and 13 small-sized fields have been awarded. The second offer for discovered fields has elicited 54 bids for development of 7 medium and 14 small-sized fields. To upgrade geological data on sedimentary basins, the Government has invited bids from companies to carry out speculative surveys. So far two rounds of speculative surveys have been announced. The Government is encouraging acquisition of exploration and development acreages abroad by national oil companies. Oil and Natural Gas Videsh Limited (a wholly owned

subsidiary of ONGC) has a venture in offshore Vietnam, where gas discoveries have been made. The Government has also approved a proposal of ONGC Videsh Limited to take a participating interest in a venture in Egypt, currently held by a consortium led by British Gas, UK.

33. The refining capacity in the country was 53.25 million metric tonnes per annum (MMTPA) at the end of 1993-94, which has increased to 53.4 MMTPA by December, 1994. Considering the proposed expansion of existing refineries and based on the Letters of Intent issued till now to various parties, the refining capacity is expected to increase to 135 MMTPA for meeting the estimated demand of 102 MMTPA of petroleum products by 2001-02. To meet the consumption levels, the Government has approved proposals to set up three new refineries with total capacity of 12 MMTPA in the public sector. The Government has also decided, in principle, to set up three new grassroots refineries, each with a capacity of 6 MMTPA. In addition, the Government has granted Letters of Intent for setting up 7 refineries in the private sector, envisaging a capacity expansion of 47 MMTPA.

34. During 1993-94, the consumption of petroleum products was 60.8 million tonnes, showing a growth of 3.2 per cent over the previous year. The consumption of Liquefied Petroleum Gas (LPG), Motor Spirit (MS) and High Speed Diesel (HSD) showed substantially higher growth rates. During April-December 1994, the consumption of petroleum products grew by 8.1 per cent over April-December 1993 (Table 8.9). Due to the downward trend in crude oil production since 1990-91 and near stagnation in production in 1993-94 over 1992-93, the dependence on imports has increased. The gross imports of crude oil and petroleum products during 1993-94 at 42.9 million tonnes was 5.8 per cent higher than in 1992-93. The value of POL imports during 1993-94 was Rs. 17,730 crore, as against Rs 17,045 crore during the previous year. The gross imports of POL during April-December 1994 were 30.7 million tonnes, valued at Rs 13,181 crore, as against the import of 31.8 million tonnes costing Rs 13,459 crore during April-December 1993.

35. To improve the supply conditions and to reduce the fiscal burden owing to sale of subsidised petroleum products, the Government has set up a Parallel Marketing System (PMS) for Liquefied Petroleum Gas (LPG), Superior Kerosene Oil (SKO) and Low Sulphur Heavy Stock (LSHS) since February 1993. Under this system, private parties are allowed to import and market LPG/SKO/LSHS through their own distribution networks at market determined prices. The Government announced a reduction in import duties on LPG in January 1994 from 85 per cent to 25 per cent to facilitate

**TABLE 8.9**  
**Consumption of Petroleum Products<sup>1</sup>**

				April-December <sup>2</sup>		Change over previous year	
		1992-93	1993-94 <sup>2</sup>	1993	1994	1993-94	1994-95 <sup>2</sup>
1	2	3	4	5	6	7	
		(Million tonnes)			(Per cent)		
1.	Light distillates	10.31	10.57	7.77	NA	2.5	NA
	of which						
	(a) Naphtha	3.38	3.19	2.39	2.50	-5.6	4.6
	(b) LPG	2.87	3.11	2.24	2.48	8.4	10.7
	(c) Petrol	3.60	3.83	2.86	3.07	6.4	7.3
2.	Middle distillates	36.15	38.15	28.06	NA	5.5	NA
	of which						
	(a) Kerosene	8.48	8.70	6.43	6.65	2.6	3.4
	(b) Diesel oil	24.29	25.88	19.05	20.86	6.5	9.5
3.	Heavy ends	12.44	12.09	8.82	NA	-2.8	NA
	of which						
	(a) Fuel oil	9.27	9.19	6.74	7.32	-0.9	8.6
Total		58.90	60.81	44.65	48.28	3.2	8.1
<sup>1</sup> Excluding Refinery Boiler Fuel (RBF). <sup>2</sup> Provisional. <sup>3</sup> April-December.      NA - Not available							

the operations of the PMS. This duty was further modified to 15 per cent, with a 10 per cent countervailing duty in the budget for 1994-95. The private sector has also been allowed to invest in the development of infrastructure for petroleum marketing. Safeguards have been incorporated into the system to prevent diversion of the LPG and SKO marketed by public sector companies into PMS.

36. In order to make policies in the energy sector environmentally benign, a number of steps have been taken. The Government has formulated a plan for phasing out lead from petrol for metropolitan cities. The supply of low lead (i.e., 0.15 gm/litre (maximum)) motor spirit (MS) to the four major metros has commenced from June 1994. A number of steps have also been taken for promoting the conservation of petroleum products. These include improving energy efficiency of refineries, increasing fuel efficiency in the transport sector, introduction of compressed natural gas as fuel in the road transport sector, upgradation of lubricants, replacement of inefficient boilers and furnaces and promotion of fuel efficient equipment and practices in the industrial sector, rectification of irrigation pump-sets in the agriculture sector, development and promotion of fuel efficient kerosene and LPG stoves and hurricane lanterns in the domestic sector, and launching of multimedia awareness campaigns and imparting of education and training to various target groups of oil users. As a result of the various measures taken, a saving of petroleum products of about Rs. 1174 crore was achieved during 1993-94.

### Renewable Energy Sources

37. Major programmes launched for the development and utilisation of new and renewable sources of energy

include programmes for the development of biogas, biomass, improved chullahs, solar photovoltaics, solar thermal, wind power, micro hydel and energy from urban/municipal and industrial wastes. These programmes have been revamped, with greater emphasis laid on market development and commercialisation. A three fold strategy is being pursued for the promotion of renewable sources of energy. This includes providing budgetary resources of the Government for demonstration projects; extending institutional finance from Indian Renewable Energy Development Agency (IREDA) and other financial institutions to commercially viable projects; promoting private investments through fiscal incentives such as tax holidays; depreciation allowance; exemption from excise duty and central sales tax; custom duty concessions and remunerative prices for the power provided for the grid, in addition to providing facilities of wheeling and banking of power.

38. Until the end of March 1994, a capacity of about 115 MW through wind power generation had been established, including private sector projects. During the year 1994-95, 159 MW of wind power generation capacity is expected to be installed through private sector investments. The package of incentives for wind power generation included 100 per cent accelerated depreciation; loans from IREDA at an annual interest rate of 12.5 per cent; tax holiday for any block of five years; exemption from excise duty and exemption/reduced rate for custom duty on imports of wind turbines.

39. A capacity of 110.4 MW of small hydro power projects has been commissioned up to March 1994. The measures announced to promote setting up of small hydro power projects include financing up to 75 per

cent of the project cost by IREDA at an interest rate of 12.5 per cent; buy back arrangements with SEBs and permission to the private sector to set up these projects on build, own and operate (BOO) basis.

40. Over 19.9 lakh biogas plants had been set up in the country till the end of March 1994, under the National Project on Biogas Development (NPBD). The target for 1994-95 has been fixed at 2.00 lakh plants, of which over 74,058 plants have already been installed up to December 1994. Under the National Programme on Bagasse Based Cogeneration Programme launched in 1993-94, the biomass available in the form of bagasse in sugar mills is proposed to be used to generate surplus power.

41. Under the commercialisation approach adopted from the year 1993-94, the subsidy on solar water heating systems and solar cookers has been replaced by fiscal incentives. Programmes for Solar Photovoltaic Pumps and Solar Photovoltaic Lanterns have been taken up during 1993-94. A Solar Thermal Power project, the first of its kind in the country, has also been taken up for implementation in Jodhpur, Rajasthan. Opening up of the market, especially for solar photovoltaics, has resulted in greater competition, modernisation and cost reductions.

42. The Indian Renewable Energy Development Agency Limited (IREDA), which was set up in 1987 has expanded, its activities substantially, with support from the World Bank and the Global Environment Fund (GEF). The project titled "India Renewable Resources Development Project" has been initiated, consisting of 3 projects on Windfarm Development, Photovoltaic Market Development and Small Hydro Power Development, involving World Bank/GEF assistance to the tune of US \$ 195 million. IREDA has also organised several entrepreneur development programmes to attract entrepreneurs and project developers. Till the end of December 1994, IREDA had sanctioned 390 renewable energy projects for about Rs.349.45 crore, for manufacture and installation of New and Renewable Sources of Energy (NRSE) systems and devices.

43. Policy measures have been announced to encourage direct foreign investments and collaborations. NRIs have shown interest and are in the process of taking up projects such as wind farms, solar plants in the states of Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh and Kerala, totalling an aggregate of 450 MW.

### Telecommunications

44. India has a network of over 19,293 exchanges with a capacity of 105 lakh lines and 88 lakh working connections as on December 31, 1994. The network is

growing at a rate of 22 per cent per annum. A switching capacity of 18.3 lakh lines was added during 1993-94, 54 per cent more than 1992-93. About 24 per cent of the total capacity was added in Delhi, Bombay, Calcutta and Madras.

45. The annual growth rate of providing new telephone connections has been increasing steadily from 9.8 per cent in 1988-89 to 17 per cent in 1992-93. During 1993-94, it recorded a growth of 18.3 per cent. The number of new telephone connections provided in 1993-94 was 12.3 lakhs. The number of people waiting for new connections as on March 31, 1994 was 25 lakhs, 12.3 per cent lower than the number in the previous year. The Department of Telecommunications (DOT) has taken up the challenge of providing public telephones in all villages. During 1993-94, 33,001 villages were provided with telephone facilities. This was 9.7 per cent more than that achieved in 1992-93.

46. During 1993-94, 137.5 lakh conductor kilometres (LCKMS) of cables were laid, 28 per cent more than in 1992-93. Cables laid in the four main metros alone accounted for 29.1 per cent of the total.

47. The Eighth Plan outlay approved for the DOT (including MTNL) is Rs. 23,946 crore. In the first two years of the Plan, 1992-93 and 1993-94, the total plan expenditure incurred on developmental schemes was Rs. 10,367 crore, 67.2 per cent of which was financed through internal resources and 31.7 per cent was through market borrowings (telecom bonds). There was a small amount of budgetary support representing 1.1 per cent of the total investment during these two years. In the remaining three years of the Plan, it is estimated that total investments envisaged will increase the plan expenditure to Rs. 34,000 crore. Of this, 75 per cent will be financed through internal resources.

48. The National Telecom Policy (NTP) was announced in May 1994. The most important feature of the policy is the introduction of competition in basic telecom services. Competition is expected to improve accessibility and render better quality service at an affordable price. The major features of the NTP are : target for telephone on demand by the end of the Eighth Plan; phone connection in every village by 1997; installation of one Public Call Office (PCO) per 500 persons in urban areas by 1997; all value-added services available internationally to be operational in India by 1997 and the country emerging as a major manufacturing base and a major exporter of telecom equipment. (BOX 8.2).

49. The guidelines for private sector entry in basic telecom services have been announced. Companies providing basic telephone services will have to maintain a balance in their coverage between urban and rural

### Box 8.2 Reforms in Telecommunications

- Customer premises equipment industry opened to the private sector in 1984.
- Value-added services (VAS) opened to the private sector in 1992. These services include Cellular Mobile Phones, Radio Paging, Electronic Mail, Voice Mail, Audiotex Services, Videotex Services, Data Services using VSATs, and Video Conferencing.
- The National Telecom Policy (NTP) 1994 opened up basic telecom services to competition. Private initiative will be used to complement DOT efforts to raise additional resources through increased internal generation and adopting innovative means like leasing, deferred payments, Build Operate Transfer (BOT), Build Transfer Operate (BTO) etc.
- Foreign equity participation upto 49 per cent is permitted in case of a joint venture company formed between an Indian company and foreign company for providing basic telecom services.
- Licences to private sector for entry into basic telecom services will be on a circle basis, only one licensee in addition to DOT being allowed to operate in each circle. The period of licence will normally be 15 years. However, failure to provide prescribed level/quality of service to customers and to meet obligations would make a licensee liable for penal action.
- Provision of telecommunications with the widest permissible range of services to meet customer demand and access to basic telecommunication services to all at affordable and reasonable prices.
- The Government has decided to set up the Telecom Regulatory Authority India, an autonomous body, to separate the regulatory function from policy formulation and operational functions. Its terms of reference are: standard setting, price regulation, ensuring technical compatibility among different service providers, fixation of access charges, protection of consumer interest, resolution of disputes between service providers and ensuring compliance of time frames for making available local and DOT long distance circuits between service providers.

areas. They will have to operate under agreed tariff and revenue sharing arrangements. In case a joint venture company between an Indian and foreign company is formed for providing basic telecom services, not more than 49 per cent foreign equity is permissible.

50. In the area of value-added services, which has

been opened to the private sector, franchises for Bombay, Calcutta, Delhi and Madras for the provision of cellular mobile phones have already been finalised. Radio paging services have been introduced in Bombay and Delhi by MTNL. Tenders to franchise radio paging service in 27 other cities were invited from private operators and 15 bidders were issued letters of intent. Six other value-added services have been identified for awarding franchises to private companies. These are Electronic Mail, Voice Mail, Audiotex, 64 kbps data service using VSAT, Videotex and Video Conferencing. Proposals for these services are being received and evaluated on a continuous basis.

51. The government has decided to establish the Telecom Regulatory Authority of India (TRAI) to ensure fair competition and to protect and promote the interests of consumers. The establishment of TRAI will also facilitate the entry of the private sector.

### Posts

52. India has the largest network of Post Offices in the world. By the end of March 1994, the national postal network had over 1.5 lakh post offices. The long term objective is to locate a post office within 3 kms of every village. During 1993-94, a total of 637 additional extra-departmental branch post offices and 116 departmental sub-post offices were sanctioned. The Department now seeks to accelerate this effort by providing basic postal facilities on a contractual basis by utilising the existing infrastructure of Panchayats in these areas. The Panchayat Dak Sewa Scheme, formulated in this regard, has the twin advantage of reducing dependence on budgetary resources for expanding postal facilities to needy areas and generating employment opportunities in such areas.

53. Taking note of the rapid changes in information and communication technology, the Department of Posts has given a new thrust to its programme of modernisation for providing new value added services to customers. During 1994-95, Metro Channel Service linking the six metros, the Rajdhani Channel linking Delhi with most of State Capitals, and a Business Channel with exclusive treatment to pin-coded business mail have been introduced. The Department has also introduced a Green Channel, which gives priority to local mail. An integrated mail processing plant was set up in Bombay in April 1993. Another is in the process of being set up in Madras and such plants at Delhi, Bangalore and other major centres are under consideration.

54. Money order services provide a socially useful means of cash transfer. In order to speed up money order transmission, a project for the use of satellite

56. Post Office Savings Banks (POSB) operate through the wide network of post offices, of which 89 per cent are located in rural areas. The total outstanding balance at the end of 1993-94 in various savings schemes was Rs. 67,293 crore. Operations of POSB are now being computerised by the Postal Department. A new scheme called the Mahila Samridhi Yojana was introduced in October 1993 in order to empower adult rural women financially. As on March 31, 1994,

57. The country's postal service has come to be viewed essentially as a social service. Consequently, rigid norms of commercial viability have not been followed and the system is now operating on a deficit. In 1993-94, the Department incurred a deficit of Rs.207 crore. Establishment expenses account for 80 per cent of the total expenditure. Redeployment and rationalisation of manpower are being undertaken to contain establishment expenses.

## Railways

59. The Indian Railways consist of an extensive network spread over 62,462 kms-comprising Broad Gauge (36,824 kms), Meter Gauge (20,653 kms) and Narrow Gauge (3,985 kms). Electrified networks with 11,793 kms. account for 18.8 per cent of the total Route Kilometerage. The thrust areas identified for the Eighth

	1992-93	1993-94 <sup>1</sup>	April-December <sup>2</sup>		Change over previous year	
			1993	1994	1993-94	1994-95 <sup>3</sup>
1	2	3	4	5	6	7
						(Per cent)
1. Total revenue earning freight traffic (million tonnes)	350.05	358.72	258.37	264.74	2.5	2.5
(i) Coal	157.73	167.00	121.39	125.08	5.9	3.0
(ii) Raw Materials for steel plants (excl.coal)	32.97	33.40	23.81	26.56	1.3	11.5
(iii) Pig Iron & finished steel from steel plants	12.03	12.08	8.77	8.66	0.4	-1.3
(iv) Iron ore for export	10.47	10.46	7.73	7.26	-0.1	-6.1
(v) Cement	30.38	32.54	22.70	22.99	7.1	1.3
(vi) Foodgrains	27.30	26.68	18.78	14.49	-2.3	-22.8
(vii) Fertilizers	18.94	19.50	14.18	15.55	3.0	9.7
(viii) POL	26.41	25.95	18.95	20.54	-1.7	8.4
(ix) Balance (other goods)	33.82	31.11	22.06	23.61	-8.0	7.0
2. Net tonne kilometers (billion)	252.39	252.41	183.97	182.74	0.0	-0.7
3. Net tonne kilometers per wagon per day (broad gauge)	1457.00	1506.00	1442.00	1505.00	3.4	4.4
4. Passenger traffic originating (million) <sup>3</sup>	3749.37	3708.04	1776.49	1921.15	-1.1	8.1
5. Passenger kilometers (billion) <sup>3</sup>	300.10	296.24	147.21	156.84	-1.3	6.5
<sup>1</sup> Provisional	<sup>2</sup> April-December	<sup>3</sup> April-September				

Plan period include replacement and renewal of overaged assets; augmentation of terminal and rolling stock capacities; gauge conversion and electrification. Indian Railways completed gauge conversion of 1,351 kms. in 1992-93 and 1,619 kms. in 1993-94 and have set a target of 1,600 kms. for 1994-95.

60. During 1993-94, the revenue earning freight traffic moved by the railways was 359 million tonnes. This was 2.5 per cent higher than the performance in 1992-93. The freight traffic carried during April-December 1994-95 at 264.7 million tonnes, increased by 2.5 per cent over April-December, 1993. The growth has mainly been in coal, raw materials for steel plants, fertilisers, cement, POL, etc. However, there is a major shortfall in foodgrains, pig iron and finished steel from steel plants and iron ore for exports (Table 8.10).

61. Existing modal shares between rail and road do not conform to optimal shares as judged by least economic cost. The railways have devised a new marketing strategy following economic reforms, to attract freight traffic now going by road which is more energy intensive and less environment friendly. The main thrust areas of the new marketing scheme are given in Box 8.3.

62. The railways employ about 16 lakh workers, the largest number for any undertaking in the country. A comprehensive plan for human resource development is required to upgrade skills, retrain workers and achieve higher productivity. Railways should build integrated automatic operation control systems for better utilisation of tracks, tractions, terminals and trains.

### Box 8.3

#### Features of Railway's New Marketing Strategy

- The Container Corporation of India (CONCOR), a public sector undertaking, will provide door to door services for domestic users, transportation in bulk for small customers and international transport in International Standards Organisation (ISO) containers.
- Introduce trains connecting Tughlakabad with Bombay, Jawaharlal Nehru and Madras ports for the movement of export containers on schedule time.
- Leasing out brake van space to customers, so that they can have an assured transportation between fixed points by mail express trains.
- Introduce a long distance express parcel service between Bombay and Delhi.
- Simplification of rules in key areas like free acceptance of indents, supply of wagons, single window booking systems and faxing of invoices to the destination.

Signalling and telecommunication systems can also be revamped with the application of powerful, well distributed computer systems with networking capabilities. While staff productivity in terms of number of traffic units per employee, asset productivity in terms of net tonne kms. per wagon day, wagon turnaround time, loco utilisation etc. have improved over the years, there is still scope for further improvements.

63. The budgetary support to the Railways declined continuously from 75 per cent of the Railways Plan outlay in the Fifth Plan to 40 per cent of outlay in the Seventh Plan and 20 per cent of the outlay in the Eighth Plan. During the first three years of the Eighth Plan, the budgetary support to Railways has, however, remained around 18 per cent of its annual outlay. The declining budgetary support accompanied with shortfall in revenues has adversely affected the Railway's plan for acquisition of locomotives, coaches and wagons. A need is therefore felt to reprioritise the ongoing projects of line expansion, renewals, gauge conversion and electrification of key routes.

64. The alternative source for financing the Railways plans, namely market borrowings, have also become uncertain and expensive. The Railways, therefore, have been forced to rely more on internal generation, which is estimated to be around 66 per cent in 1994-95.

### Civil Aviation

65. Civil Aviation has three functional sub sectors: operational, infrastructural and regulatory-cum-developmental. On the operational side, Indian Airlines Limited, Vayudoot (which functions as a separate identifiable division of Indian Airlines Limited) and private air lines (Scheduled and Non-Scheduled) provide domestic air services. Air India Limited and Indian Airlines Limited are domestic airlines which provide international air services. Pawan Hans Limited provides helicopter support services, primarily to the petroleum sector. Infrastructural facilities are provided by the International Airports Authority of India (IAAI) and the National Airports Authority (NAA). These two authorities are being merged to form a single authority viz. Airports Authority of India as a result of the enactment of the Airports Authority of India Act, 1994. The regulatory and developmental functions are looked after by the Ministry of Civil Aviation and the offices of the Directorate General of Civil Aviation.

66. The Air Corporation Act, 1953, was repealed on March 1, 1994, ending the monopoly of Indian Airlines, Air India and Vayudoot over scheduled air transport services. Six private operators, who were hitherto operating as air taxis, have since been granted scheduled airlines status.



67. The competitive environment on domestic services has been, in effect, existent since April, 1993. By March 1994, 19 aircraft in the 120 plus category, belonging to private air taxis, were in operation. The natural consequence of creating a competitive environment in this sector was that, by March 1994, 25 per cent of the market was being catered to by private air taxis. The number of passengers carried by air taxi operators has increased from 15,000 in 1990 to 4.1 lakh in 1992, 29.2 lakh in 1993 and is expected to cross 35 lakh during 1994. Thus, Indian Airlines, on the one hand, had to share the market on its profitable trunk routes. On the other hand it faced the threat of loss of critically skilled personnel to private operators who offered much higher emoluments. This affected its ability to optimally deploy its existing aircraft capacity. Indian Airlines has also geared itself since June, 1993 to the challenging task of adapting itself to a competitive environment. Several measures have been taken, mainly centred on making the organisation adopt a marketing approach to decision making and considerably improve the quality of its product. It has improved its passenger facilities both on board and on the ground, on time performance, flight safety measures and has also increased employee participation to provide better services.

68. Since the total domestic market did not grow substantially in 1993-94, and the existing market had to be shared with private operators, Indian Airlines continued to face financial difficulties during the year. This was further accentuated by a fare structure which did not fully compensate the cost of inputs, and substantial increases in depreciation and financing charges due to new additions to the aircraft fleet. During 1994-95, the domestic market is expected to grow at rate of about 12 to 14 per cent, but the cost structure being faced by the industry is still very high and marginal revenues continue to be less than long run marginal costs. The domestic price of Aviation Turbine Fuel (ATF), which accounts for about 35 per cent of the total expenditure, is about two and half times higher than international prices. The Government has therefore permitted direct import of ATF under the Special Import Licence Scheme during 1994-95. Indian Airlines has finalised contracts for imports of ATF under this scheme and other domestic airlines are also intending to do so.

69. The revenue and expenditure of Indian Airlines during April-February, 1993-94, increased by 13.3 per cent and 13.2 per cent respectively. The net loss during this period was Rs.235 crore, as compared to Rs.179 crore during April- February, 1992-93. The loss during April-November 1994 is estimated to be Rs.195.05 crore. In order to ensure dispersal of air services to all parts of the country, the guidelines

framed for domestic scheduled operators provide for a certain minimum percentage of operations to be provided on routes categorized as Category II & III - the Non trunk routes. As a result of this, while total aircraft capacity with the private operators has not increased significantly, competitive services are now being provided on 36 routes, as compared to about 20 routes in 1993-94. A regulatory framework for domestic air services has been set up to ensure orderly growth of air transport services, keeping in view the limitations of airport infrastructure, the need to cater to growth of traffic and to increase services to hitherto unserved areas.

70. The net profit of Air India Limited at about Rs 200 crore in 1993-94 was 40 per cent lower than in 1992-93. During April-September, 1994, the net profit of Air India Limited is estimated to be Rs.55 crore. However, this has been partially wiped out by the estimated net loss of Rs 26.66 crore suffered by Air India Ltd. due to cancellation of flights to the Middle-East from September 28, 1994 to October 25, 1994, due to a ban imposed by the Gulf countries on aircraft operating in and out of India on account of an outbreak of plague in certain parts of India. Air India's overall load factor of 57.3 per cent is low compared to other international airlines. Its share of international traffic originating from India has come down from 42 per cent in 1981 to 35 per cent in 1991 and 20 per cent in 1993. With a view to improving its standing, Air India Limited is expanding its capacity by acquiring state of the art aircraft and also obtaining aircraft on wet lease.

71. Pawan Hans Limited (PHL) basically provides helicopter support services to the oil sector (ONGC). The total flying hours during 1993-94 was 18,127, compared to about 17,000 during 1992-93. The revenue earnings and net profits during 1993-94 were Rs. 127.7 crore and Rs. 23.3 crore respectively, compared to Rs. 123.6 crore and Rs.27.5 crore respectively in 1992-93. The flying hours during April-September, 1994 were 9260 and revenue and net profit were Rs. 65.5 crore and Rs. 17.8 crore respectively.

72. International Airports Authority of India (IAAI) manages, operates and develops the five international airports at Bombay, Calcutta, Delhi, Madras and Thiruvanthapuram. Net profit of IAAI at Rs. 50.2 crore in 1993-94 was higher by 9.8 per cent of the net profit of Rs.45.7 crore during 1992-93. During 1993-94, expenditure grew by 14.9 per cent, whereas revenue increased by 18 per cent. Passenger and Cargo traffic at 209.7 lakh and 4.4 lakh tonnes during 1993-94 were higher by 11.5 per cent and 11.2 per cent respectively than in 1992-93. IAAI has declared a dividend of Rs. 14.7 crore (24 per cent) for 1993-94, as against Rs.14 crore (23 per cent) for 1992-93.



73. During April-September 1994, the revenue and expenditure of IAAI increased by 28.6 per cent and 22.4 per cent respectively, thus accruing the net profit of Rs 57.7 crore which was 48.2 per cent higher than in April-September, 1993. The number of passengers and cargo handled by it during the period have increased by 11.9 per cent and 15.1 per cent respectively. IAAI has undertaken construction of terminal complexes at various international airports and improvement and upgradation of runways and terminal buildings. The new domestic terminal at Calcutta is commenced in January 1995. The international terminal (Phase III) at Bombay is coming up on schedule.

74. The net profit of National Airports Authority (NAA) at 53.4 crore in 1993-94 was 216.5 per cent higher than in 1992-93. During April - September, 1994, the revenue increased by 65.5 per cent and expenditure by 23.9 per cent, resulting in profit of Rs. 59.7 crore, which is higher by 427.8 per cent than the profit during April-September, 1993.

75. A number of projects like modernisation of air traffic services at Bombay and Delhi airports, installation of airport surveillance radar at Ahmedabad, Guwahati, Hyderabad and Thiruvananthapuram, development of 12 model airports for upgradation of facilities and improvement in the quality of services at airports have been taken up. Investments in airports of the North Eastern region are not economical. Yet, a large number of works have been taken up there. Sixty per cent of investment on projects which have the prior approval of the NEC, is borne by the North Eastern Council.

76. The airport infrastructure demands heavy investments, large expenditure on servicing, replacements and renewals. Keeping in view resource constraints, domestic and foreign investors including NRIs, have been invited to participate in the development of new international airports and the expansion of infrastructural support at some other domestic airports. IAAI has also decided to privatise the ground handling at Delhi and Bombay in a bid to decongest airports and increase the craft turnaround time.

### Road and Road Transport

77. The total road network in the country increased from 16.9 lakh kms in 1985 to 20.4 lakh kms at the end of 1990-91. Half of this is made up of unsurfaced roads. The National Highways network of 34,058 Km at the end of 1993-94 constitutes less than two per cent of the total road network, but carries nearly 40 per cent of total road traffic.

78. It is estimated that road traffic, which accounts for 80 per cent of passenger traffic and 60 per cent of

goods traffic, will account for 87 and 65 per cent respectively by the year 2000. To meet a traffic expansion of such magnitude, the National Highway network must be greatly improved. A large section has inadequate road pavement thickness. Other deficiencies are inadequate capacity, poor riding quality, weak and distressed bridges/culverts, congested city sections, too many railway level crossings, lack of wayside amenities and weak road safety measures. About 20 per cent of National Highways need widening from single to double lanes and about 70 per cent of two lane roads have to be strengthened, and selected corridors on national highways need conversion into Expressways. This is clearly an enormous task and entails commitment for massive investment and organisational resources.

79. In the past, Roads have generally been financed from budgetary sources and constructed by Public Works Departments. As the budgetary allocation is not adequate to meet the challenges stated above, the National Highways Act has been amended to enable the levy of a fee on selected sections of National Highways. The Amendment of the National Highways Act to allow the private sector to construct and charge a fee will permit the private sector to participate in construction, maintenance and operation of roads on Build, Operate and Transfer (BOT) basis. Several reforms/measures taken by the Government to attract private sector participation are summarised in Box 8.4.

#### Box 8.4 Reforms in Road Sector

- Pathkar abolished by all State Governments and octroi by many of them to reduce overall transit time and to help free flow of traffic on roads;
- The Motor Vehicle Act, 1988 amended, which has come into force with effect from November 14, 1994 with a view to simplify procedures and to give more powers to the State Government in the matter of granting driving licences and permits for motor vehicles. This amendment in the Act will also remove ceilings on the number of stage carriage permits that can be held by an individual or a company.
- Road sector declared an industry to facilitate borrowing on easy terms and to permit floating of bonds.
- MRTD provisions relaxed to enable large firms to enter the highway sector.
- National Highways Act amended to enable levy of a fee on national highways, bridges and tunnels.
- Customs duties on construction equipment reduced and procedures streamlined.

80. During 1994-95, the Government invited proposals from the private sector, including foreign companies, for 17 projects with a total investment of about Rs.850 crore. These include 9 bridges and 8 bypasses on national highways. While 27 Indian Companies registered their interest in some of these projects, only five projects could be processed until January 1995, and Letters of Intent were issued to the selected enterprises to enable them to proceed with the data collection and firming up of the working arrangements etc. However the final decision for awarding the works will be taken in terms of the provisions of the Act and the policy of the Government as and when decided.

81. Additional budgetary support is being obtained for the improvement of National Highways through loan assistance from international agencies such as the World Bank, Asian Development Bank and Overseas Economic Cooperation of Japan. However, the tardy implementation of the first National Highway Project through State Governments as agents of the Ministry of Surface Transport, has already forced the World Bank to reduce the quantum of foreign assistance by \$ 96 million. The Government of India has, therefore, decided to activate the National Highways Authority, which will have an independent and autonomous status and will be entrusted with externally aided projects with a view to accelerate their pace of implementation.

82. The State Road Transport Undertakings operate a fleet of nearly 1.1 lakh buses employing 8.9 lakh workers. The undertakings, with a few exceptions, face serious financial constraints due to various factors such as the social commitment to operate even on uneconomic routes, absence of cost-based fare structures, overmanning, poor management and widespread inefficiencies.

83. The population, and consequently, the travel demand has been increasing at a geometric progression in Urban Areas. In many cities, the vehicle population has reached alarming proportions in relation to road network available. Given the high density of population and scarcity of land, it is almost impossible in many cities to increase the road capacity substantially and, therefore, it is not possible to accommodate the growing vehicle population and travel demand. This has prompted the working out of alternative ways of meeting the increasing transport demand given the constraints of land and capital, and the need to control energy consumption, pollution and accidents. In consultation with the Government of the National Capital Territory of Delhi, a project to introduce a High Speed Tram System has been identified. This can be undertaken with the assistance of the private participation. The High Speed Trams will operate on elevated tracks. Subsequently, this project could be extended to other

metropolitan cities in consultation with the respective State Governments.

### Shipping

84. Indian vessels carried about 34 per cent of the total seaborne cargo during 1993-94. The share of Indian vessels in POL was 60.6 per cent in 1993-94, in bulk carriers 20 per cent, and in liner traffic 8.8 per cent. Long term targets for Indian shares in bulk carrier and liner traffic are 50 and 40 per cent respectively. The fleet strength at the end of December, 1994 was 438 vessels of 6.3 million Gross Registered tonnage (GRT), against 443 vessels of 6.27 million GRT in December, 1993. Overseas trade during 1993-94 was 136.97 million tonnes against 122.3 million tonnes during 1992-93. Anticipating a spurt in exports to South America in the future, some shipping lines are planning to expand their services to this Sector.

85. The Shipping Corporation of India (SCI) showed a better financial performance during 1993-94. Its gross tonnage as on December 31, 1994 was 3.08 million GRT (about 50 per cent of the total fleet), against 3.04 million GRT on December 31, 1993. SCI's gross internal resources rose to Rs.286 crore in 1993-94, as against Rs.263 crore in 1992-93. Its net profit after tax at Rs.168 crore in 1993-94 registered an increase of 17 per cent over 1992-93. During April-September 1994, the profit after tax has been provisionally estimated at Rs.54.6 crore.

86. The Government has recently approved a scheme which envisages voluntary cargo support of the shippers to Indian shipping lines, up to 40 per cent of the value of liner cargo transacted in the foreign trade in a phased manner. To reap the benefits of the scheme, SCI has beefed up its customer service cell to attend to the requirements of shippers on a priority basis.

87. Steps have been initiated by the Government to frame guidelines for Indian shipping companies as per the International Safety Management (ISM) code, which was adopted by the International Maritime Organisation (IMO) in November 1993. Under the ISM code, which will be applicable to passenger ships and tankers by July 1998 and for other vessels by July 2002, shipping companies are required to provide special training to on shore staff and crew on board.

### Ports

88. There are eleven major ports and 139 operable minor ports located along the 5560 km long coastline of the country. During 1993-94, the total cargo handled at major ports was 179.3 million tonnes, registering a growth of 7.6 per cent over 1992-93. This compares well with about 5 per cent growth achieved

**TABLE 8.11**  
**Trends in Traffic at Major Ports**

			April-December		Change over previous year	
	1992-93	1993-94 <sup>1</sup>	1993	1994	1993-94	1994-95 <sup>2</sup>
1	2	3	4	5	6	7
	(Million tonnes)				(Per cent)	
1. POL	73.61	76.92	56.90	60.13	4.5	5.7
2. Iron Ore	29.83	34.13	24.31	22.72	14.4	-6.5
3. Fertiliser & raw materials	7.38	7.44	5.47	6.13	0.8	12.1
4. Foodgrains	2.32	1.47	1.20	0.45	-36.6	-62.5
5. Coal	24.48	26.74	19.45	21.82	9.2	12.2
6. Vegetable oil	0.25	0.37	0.27	0.48	48.0	77.8
7. Other liquids	3.99	3.60	2.24	3.59	-9.8	60.3
8. Containerised cargo	9.01	12.25	8.82	10.95	36.0	24.1
9. Others	15.71	16.34	11.46	14.73	4.0	28.5
<b>Total</b>	<b>166.58</b>	<b>179.26</b>	<b>130.12</b>	<b>141.00</b>	<b>7.6</b>	<b>8.4</b>
<sup>1</sup> Provisional. <sup>2</sup> April-December.						

during the second half of the 1980s. During April-December 1994, major ports handled 141 million tonnes of cargo. This was 8.4 per cent higher than the performance achieved in April-December, 1993. (Table 8.11). Major increases in traffic were observed in respect of fertilisers and raw materials (12.1 per cent) coal (12.2 per cent) vegetable oil (77.8 per cent), other liquids (60.3 per cent) and containerised cargo (24.1 per cent). The composition of traffic has undergone significant changes in recent years. There is therefore a need for a review and restructuring of port capacities accordingly.

89. Port productivity has improved in recent years and there have been significant improvements in the average ship turnaround time and in output per ship berth day. In contrast to port productivity, labour and equipment productivity levels are still low due to surplus labour in ports, outdated equipment and operational constraints. Despite resistance from labour federations to proposals for rationalisation of the work force, Voluntary Retirement Scheme, (VRS) have been successfully offered to shed excess manpower. Till November 30, 1994, around 9375 employees have availed of the VRS.

90. In most Indian ports, annual traffic volumes are close to capacity limits. In order to attract private investments along with modern technology, the process of privatisation of port facilities has already started with the announcement of the new economic policy. In the next few years, private participation is likely to come in for construction, operation and maintenance of container terminals, cargo handling terminals, dredging to

maintain and improve drafts, creating warehousing and storage facilities and for providing ship repairs and transportation within ports etc.

91. The increased privatisation of ports, however, implies a gradual change in the role of port authorities and change of attitudes towards modernisation and mechanisation. Ports are governed presently by the Indian Ports Act, 1908, and The Major Port Trusts Act, 1963. These Acts have enough flexibility to allow privatisation of port activities. However, greater delegation of both administrative and financial powers to the ports have to be seriously considered, if private participation is to be encouraged and sustained.

### Environmental Issues

92. Environment protection and ecological balance are essential to ensure that development is sustainable in the long run. The establishment of a diversified industrial structure, based on a combination of heavy, medium and small scale industries and growing urban and rural population in the country, have produced resultant pressures on air, water and land resources. These pressures are largely reflected in the increased incidence of air and water pollution.

93. The present pattern of industrial activity has involved use of hazardous substances and generation of solid waste. The storage, dumping and treatment of solid waste such as fly-ash, phosphogypsum and blast furnace slag are emerging as a major problem in industrial areas. The problem of regulating toxic flammable and explosive chemicals in the wake of growth of chemical and petrochemicals industries is also formidable. Most industries discharge waste water into

rivers and water courses without adequate treatment. Industrial effluents are not easily biodegradable and are often beyond the natural assimilation capacity of rivers, with the result that water bodies remain polluted, affecting the health of the population. According to a survey undertaken by the Central Pollution Control Board (CPCB) in 241 Class II cities spread over 17 States, about 90 per cent of the water supplied is polluted. The problem of inadequate sanitation is also acute, as data for 1988 indicate that 54 per cent of the urban population and 97 per cent of the rural population did not have the benefit of sanitation services.

94. A major part of industrial pollution is in the form of suspended particulates. In a majority of air monitoring stations, the concentration of these particulate matter are observed to exceed the standard ranges recommended by World Health Organisation (WHO). Industries and automobiles plying on roads emit thousands of tonnes of pollutants every day in the air. Compared to several European countries and the USA, the vehicular density in India is still relatively low. But even this modest, but growing vehicular population in cities has added considerably to air pollution. Pollutants, emitted from vehicles prove to be more lethal as they are closer to the public and high rise buildings in cities affect their dispersal. Apart from the concentration of vehicles in urban areas, other factors contributing to air pollution are use of outdated engines, overaged vehicles, congested traffic, poor road conditions and poor quality of fuel.

95. Coal based thermal plants pollute the atmosphere through gaseous emissions of sulphur dioxide, nitrogen oxide etc, causing acid rain which damages soil, vegetation and aquatic life of the region and also produces a tremendous amount of social waste, fly-ash and bottom ash. Besides, the mining industry has been the greatest polluter of air and water of the surrounding region. Apart from actual mining operations, mining rejects and dumps damage fields and property in the area. Excavation contaminates groundwater aquifers. The transportation of iron ore from mine sites to ports and railway stations generates layers of dust everywhere in the air, in homes, in pots and pans.

96. Noise pollution has also been on the increase, especially in big cities. Traffic noise and aircraft noise in large cities pose a threat to human health and hearing and cause both physical and mental stress. High population growth has driven communities, particularly in metropolitan cities to expand towards airports, showing lack of proper land use planning. There is a need for strengthening measures for controlling noise pollution of vehicles and regulating the ad hoc extension of habitations towards airports.

97. Increasing population, along with widespread poverty, has generated pressure on our natural resources and led to a degradation of the environment. Of the 329 million hectares (m.ha) of total land area in the country, it is estimated that about 174 m.ha is degraded; this consists of agricultural as well as non agricultural lands, and forests. The forest resources are threatened due to overgrazing and other forms of over exploitation, both for commercial and household needs, encroachments, unsustainable practices like unscientific cultivation and developmental activities. It is estimated that total fuel-wood removal from forests exceeds 235 million cubic metres, as against a sustainable level of production of only 48 million cubic metres. In large parts of forests, natural regeneration is inadequate due to excessive grazing of livestock, whose population is estimated at around 450 million. The over exploitation and loss of habitat constitute a threat to the rich biological diversity available in the country. India possesses the widest variety of biomass and over 75,000 species of fauna and 45,000 species of flora. Many of these are, however, endangered. Among the large animals, 79 species of mammals, as well as 44 of birds, 15 of reptiles and 3 of amphibians are threatened. Nearly 1500 plant species are considered endangered.

98. The fragile ecosystems of the country also face pressures. Coral reefs, which are very productive marine ecosystems, are adversely affected by their indiscriminate exploitation for production of lime, recreational use and ornamental trade. An area of 6700 Sq. Km. under mangroves is under biotic pressure due to fishing, land use changes in land-sea interface, and pollution of water caused by oil spillage from ships and coastal refineries and discharge of domestic sewerage and industrial effluents. The country's unique wetlands, covering an area of 1.45 million hectares, are facing problems of weed infestation, siltation pressures of agriculture and encroachment, chemical and organic pollution, conversion to industrial sites, urbanisation and habitation. Out of the 85 wetlands of international importance in the country, 45 per cent are subject to moderate or high threats. Similarly, the fragile environs of island ecosystems have been subjected to pressures of various forms, including migration of people from the mainland.

99. To contain the degradation of the environment, the ongoing initiatives of the Government include preventive as well as promotive measures. The strategy followed to halt environmental degradation has been conservation of natural resources, prevention and control of pollution, prior environmental impact assessment of industrial and other projects, regeneration of degraded forests with peoples' participation and environmental awareness campaigns.

100. With a view to approach the goal of pollution abatement, environmental quality emission and effluent standards for air and water respectively have been promulgated. Seventeen highly polluting industries have been identified for special monitoring and enforcement efforts, and a substantial majority of the identified units have duly installed the requisite pollution control equipment. Area specific pollution problems have been targeted by designating 24 critically polluted industrial areas in different parts of the country for special attention and epidemiological studies. Mass emission standards for vehicles and standards for noise pollution have also been formulated and notified. The objective of ushering in clean technologies for waste minimisation and environmentally safe production is being attended to, under the ongoing World Bank assisted Industrial Pollution Control Project. An "Ecomark" scheme is in operation to certify products of industries which fulfil prescribed pollution control standards and achieve high environment friendliness in production, packaging and waste disposal. An important thrust towards abatement of river pollution has been the Ganga Action Plan to clean up the river Ganga. Fiscal incentives are also provided by the Government to encourage installation of appropriate pollution control equipment.

101. The forest conservation strategy has evolved, from dependence on strict regulation of access to and exploitation of forest areas, to incorporating a range of instruments and approaches tailored to specific local situations. The National Forest Policy explicitly recognised the multiple use nature of forests, the rights of local populations, including the inadvisability of protecting forest resources without their active participation, and the role that forests play in the survival strategies of the poor. The task of regenerating the degraded forest areas and lands adjoining forest areas and other protected and ecologically fragile areas and implementation of eco-development programmes is being undertaken by the National Afforestation and Eco-Development Board.

102. Major schemes in the Wildlife sector concentrate on conservation, protection and development of wildlife and its habitat. The main strategy for conservation of bio-diversity is protection of viable habitats in representative ecosystems. A wide network of 75 National Parks, 421 Wildlife Sanctuaries, 21 Project Tiger areas and 8 Biosphere reserves have contributed greatly towards conservation of these species.

### Outlook

103. The new development strategy attaches a high priority to the development of efficient infrastructure

services so that the existing bottlenecks in transport, power, telecommunications and other infrastructure areas do not inhibit overall economic growth and export dynamism. Inadequate and poor quality of existing services, technological change, financial pressures on public entities and the needs of the external sector are providing the impetus for change. The basic issue is how we can expand private participation in infrastructure development so as to improve efficiency and reduce demand on public finances. However, the scope of privatisation should also encompass other factors such as allocative efficiency, employment generation, and conservation of scarce resources. Deregulation and privatisation also need to be supplemented by the establishment of suitable regulatory frameworks for ensuring fair competition among different operators and protecting consumer interests, needs of vulnerable and weaker sections, public safety, internal and external security and environmental protection.

104. The process of opening up infrastructure to private investments has already started in almost all infrastructure sectors, notable examples being civil aviation, roads, ports, power, petroleum and telecommunications. Even in sectors still reserved for the public sector, such as railways and coal, the Government is allowing private participation, including foreign investment. The pace and scope for competitive supply of infrastructure services, however, varies greatly across sectors, within sectors and between technologies. The special features of infrastructure sectors such as externalities in consumption, constraints on cost recovery, distributive equity and the importance of spillover effects, etc. determine the extent of marketability. The success of the present transitional phase of transformation also depends on the sustained commitment of the Government to private sector participation with more and more openness and transparency of policies and regulations. The move from a State monopoly to a competitive environment can be effectively managed through various measures such as guaranteeing the compliance commitment of contracts, deregulating prices, wherever necessary, and implementing commercial principles in the operation of public entities providing infrastructure services.

105. For the foreseeable future, public sector enterprises (PSEs) will continue to shoulder the major responsibility of providing critical infrastructural services in the economy. In the present competitive environment, it is imperative for PSEs to take necessary steps to improve their performance. Many public enterprises are burdened with operating inefficiencies and lack of maintenance, resulting in under-utilisation of capacities and decline in output. Moreover, a few PSEs

are saddled with surplus workforce on the one hand and its inefficient use on the other, thereby adding to the cost. It is expected that these PSEs will make the best use of the National Renewal Fund to redeploy, to the extent possible, surplus manpower, so as to bring down cost and to improve productivity. Many PSEs also face the problem of low recovery of user costs and, therefore, poor financial performance. A re-

munerative price to ensure cost recovery, and to generate adequate investible resources for expansion and modernisation, should now be the basic policy for infrastructure development. In addition, PSEs need to formulate their long-term corporate plans to include strategic alliances with private domestic or foreign partners. This will improve their financial position and also provide them access to latest technology.