

CHAPTER 3

INFRASTRUCTURE

As a result of sustained efforts the performance of the key infrastructure sectors improved further during the year. In the first nine months of 1982-83, coal production increased by 4.2 per cent, electricity generation by 7.2 per cent and revenue

earning railway traffic by 3.5 per cent. This was on top of the increase registered during 1981-82, coal production had increased by 9.6 per cent, power generation by 10.1 per cent and revenue earning railway traffic by 12.5 per cent.

TABLE 3.1

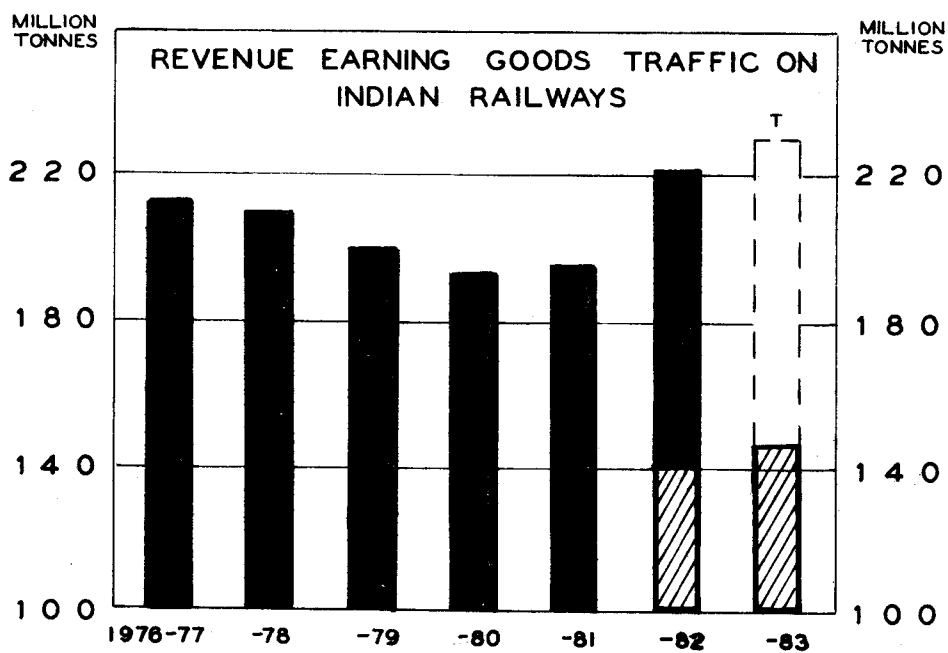
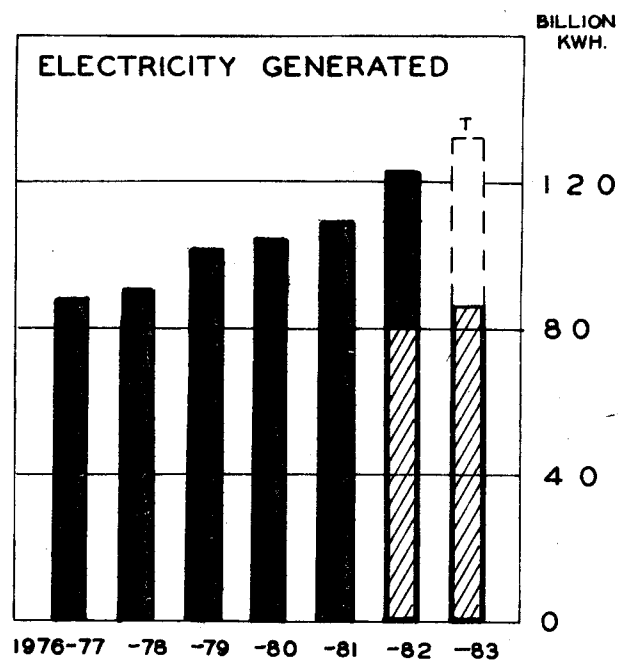
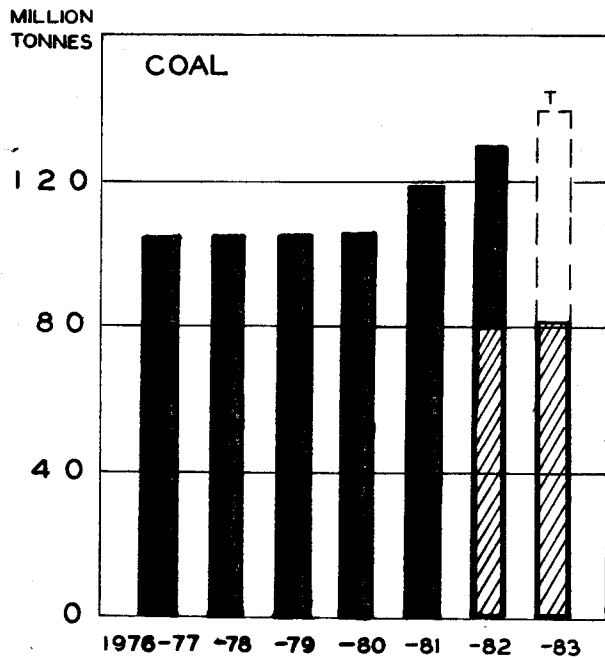
Latest Trends in the Performance of Infrastructure Sectors

Item	Unit	1979-80	1980-81	1981-82*	April—Dec.*		Percentage change		
					1981-82	1982-83	1980-81	1981-82	1982-83
								1979-80	1980-81
1	2	3	4	5	6	7	8	9	10
1. Coal Production	Mn. Tonnes	103.9	114.0	124.9	87.2	90.9	+9.7	+9.6	+4.2
2. Electricity Generated**	Bn. Kwh	104.6	110.8	122.0	91.9	98.5	+5.9	+10.1	+7.2
(i) Hydel	Bn. Kwh	45.5	46.5	49.6	38.0	38.3	+2.2	+6.7	+0.8
(ii) Thermal (incl. Nuclear)	Bn. Kwh	59.1	64.3	72.4	53.9	60.2	+8.8	+12.6	+11.7
3. Railways									
(i) Revenue Earning Tonnes Originating	Millions	193.1	195.9	221.2	160.7	166.4	+1.5	+12.9	+3.5
(ii) Average Daily Coal Loading on Railways (in terms of 4 wheelers)	Wagons/day	8832	8987	10207	9908	10742	+1.8	+13.6	+8.4
4. Cargo Handled at Major Ports	Lakh Tonnes	784.93	813.19	874.11	622.91	700.63	+3.6	+7.5	+12.5

*Provisional.

**Utilities only.

PERFORMANCE OF INFRASTRUCTURE SECTORS



T — TARGET

▨ — APR.—NOV.

MINISTRY OF FINANCE, ECONOMIC DIVISION.

Coal

3.2 After stagnating for three years, 1976-77 to 1979-80, coal production rose by 9.7 per cent in 1980-81 and by 9.6 per cent in 1981-82. During 1981-82, it had reached a level of 124.9 million

tonnes which was higher than the revised target of 124.0 million tonnes for the year. Coal production further increased by 4.2 per cent in the first nine months of 1982-83. The details of coal production are given in Table 3.2.

TABLE 3.2
Coal Production

Company	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	(Million tonnes)	
								1982-83 (April— December)	Percentage change in 1982-83 over 1981-82 (April— December)
1	2	3	4	5	6	7	8	9	10
E.C.L.	26.2	26.5	25.3	22.1	20.5	22.7	24.2	15.9	-5.9
B.C.C.L.	20.1	20.7	20.2	19.7	20.1	21.4	23.0	16.3	+4.5
C.C.L.	20.7	20.7	21.2	23.4	24.1	27.5	30.1	22.5	+8.2
W.C.L.	21.4	21.0	21.7	24.2	26.1	28.7	31.6	24.4	+8.9
N.E.C.	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.4	-20.0
Total COAL INDIA	89.0	89.5	89.0	90.0	91.4	100.9	109.6	79.5	+4.3
S.C.C.L.	7.4	8.3	8.9	9.0	9.4	10.1	12.1	8.9	+2.3
Others	3.3	3.3	3.1	2.9	3.1	3.0	3.2	2.5	+8.7
TOTAL	99.7	101.1	101.0	101.9	103.9	114.0	124.9	90.9	+4.2

3.3 The improved performance in the coal industry in the years 1980-81 and 1981-82 was shared by all the major coal producing companies. The increases in output achieved by the Bharat Coking Coal Ltd. (BCCL) and the Central Coalfields Ltd. (CCL) were particularly noteworthy. These two companies account for a large part of the coking coal used in the steel industry. The output of the BCCL in 1980-81 was higher than the previous peak level attained in 1976-77 and rose further to a new peak in 1981-82. The output of the CCL grew by 14.1 per cent in 1980-81 and by 9.5 per cent in 1981-82. During 1982-83, the uptrend in production of these two coal companies continued but at a slower rate. The growth in output of the BCCL during April—December, 1982 was 4.5 per cent as compared with 13.9 per cent in April—December 1981. In the CCL the growth in output was 8.2 per cent in the first nine months of 1982-83 as against 10.6 per cent in the corresponding period of 1981-82.

3.4 In April—December 1982, output of the Western Coalfields Ltd. (WCL) and the Singareni Collieries Co. Ltd. (SCCL) increased by 8.9 per cent and 2.3 per cent respectively. In the Eastern Coalfields Ltd. (ECL), there was a decline of 5.9 per cent in output during the first nine months of 1982-83. Although there was some improvement in output of these coalfields during the previous two years, the

level of output in 1981-82 was below the peak level of 26.5 million tonnes achieved during 1976-77. Chronic problems like those of acute labour continued to cause severe set-back to production in the ECL. In view of the important role of the ECL in providing blendable coal used for steel making and also to meet the steam coal requirements of industries it is necessary to further improve the performance of these mines.

3.5 The overall performance of the coal sector crucially depends on a synchronised availability of power and adequate despatches of coal from pit-heads. Availability of power from the DVC and the West Bengal and Bihar State Electricity Boards will have to be ensured.

3.6 The availability of railway wagons for transporting coal was much better during 1981-82. This was reflected in a significant improvement in the coal loading in terms of four wheeler wagons which increased by 13.6 per cent during 1981-82. As a result, the level of pit-head stocks was kept at a reasonable level. During the current year, although the availability of wagons was relatively adequate, the offtake of coal from the mines was sluggish. The level of stocks held at any point of time during the course of 1982-83 was about 16.0 per cent higher in comparison with the comparable stocks held in the previous year. The level of pit-head stocks of coal as at the end of December, 1982 at 19.7 million tonnes was higher than the level of 17.0 million tonnes a year ago.

3.7 The level of pit-head stocks has often been higher than warranted for maintaining smooth flow of coal to the users. This was mainly due to inadequate facilities at the collieries like rail sidings, coal handling plants and road transport facilities to evacuate the substantial quantities of coal produced at the collieries in recent months from pit-head to rail-head. It is necessary to accord high priority to investments in coal handling plants, facilities to transport coal to rail-heads and for quick unloading so that wagons could be released expeditiously.

3.8 Efforts have also been made to modernise the coal industry. Extensive modernisation schemes are under way in the two coking coal mines viz., the Bharat Coking Coal Ltd. and the Eastern Coalfields Ltd. Assistance from several countries like Poland is actively under consideration for improvement of underground mining technology. Polish assistance is being sought to develop the Satgram Coking Coal Mines, Butikei Ballihari Project of the BCCL mines for an output of 3 million tonnes of coking coal and development of the Madhubandh underground mines of Jharia. Schemes are under consideration for extensive development of Jharia coalfields with Russian assistance in open cast mining. A large scale mechanisation programme for the CCL mines has been drawn-up under a 20-year perspective. Orders for machines and equipment have already been placed to expedite the mechanisation programme in the next three years. This scheme would cover open cast projects, stepping up long-wall mining with shearers, improving production and productivity, deploying road headers in underground mines along with scrapers and side loaders, introducing new explosives and man riding haulage and introducing mobile crushers and belt conveyers.

3.9 Intensive coal exploration programmes have been initiated to locate deep seated coal reserves with deployment of 200 drills on an average as against 150 drills during the last two years. Five Blocks identified for this purpose are Mahal, Parbatpur (Jharia), Suraju Nagar, Tamla (Raniganj) and Pench (Madhya Pradesh)—the drilling targets are 3 lakh meters (1982-83), 3.5 lakh meters (1983-84) and 3.6 lakh meters (1984-85). In the Coal India Ltd., the percentage share of open cast mining in terms of coal output has risen to 42 per cent from 28 per cent in 1977-78.

3.10 Measures have also been taken to reach coal to the medium and small consumers. For this purpose the ECL intends to open four coal dumps within the colliery area : Mugma, Salanpur, Kunustorea and Kenda. Some recent achievements in terms of productivity and a notable improvement in labour relations of the BCCL deserve some comments. The Sudamdih mines of the BCCL crossed the target in 1981-82. Moonidih project of the BCCL, which produces the best coking coal in the country achieved production of 4000 tonnes per day, substantially higher than the maximum norm of 2000—2500

tonnes per day as assessed by the Indian School of Mines. Till recently these mines were constantly plagued by problems of industrial relations. Through judicious handling there was a improvement in the labour situation in 1981-82 which helped productivity.

3.11 In contrast, the ECL continues to be sick. The decline in the output of the ECL during the current year is attributed to lower productivity in comparison with other collieries due to lack of mechanisation and unsatisfactory labour relations. Workers in both underground and open cast mines of the Nimcha Colliery resorted to go-slow tactics followed by strike. The situation in Raniganj coal mines which produce the best quality coal in the country, is a matter of concern. Unfortunately, excessive mining affected the township which appears to be sinking. Polish expertise in stowing technique is being considered for arresting this phenomenon.

3.12 With the growing sophistication in coal mining, the competent managerial capability is also becoming an important input. There are several such institutions providing training in coal mining technology and coal management. However, it is necessary to take an integrated view of skill requirement in the growing coal sector and to attempt at training these skills for absorption at the appropriate time. Coal mines safety is another area where greater attention is needed in view of the continued expansion of the coal sector in the country. The hazards in coal mining, like fall of roof and sides, explosion of inflammable gas and coal dust, asphyxiation due to lack of oxygen and presence of noxious gases, under-ground fires, risks involved in transport of men and materials in confined places and in the large scale use of explosives etc., call for continuing check and control.

3.13 Coal production in the country has to increase because of the need to substitute coal for oil to the extent possible. To achieve this, large investments have been made in the sector. During the last three years 1980-81 to 1982-83 total investments have increased at the rate of 45 per cent, 54 per cent and 28 per cent respectively though there have been considerable delay in many projects. According to latest estimates, of the total of 133 projects both open-cast and underground, nearly 68 projects have been delayed, of these 35 have been delayed due to difficult geo-mining conditions in view of inadequate geological surveys and absence of feasibility studies before commencing these projects, 17 because of land acquisition problems, 7 on account of delay in supply of equipment by public undertakings, especially the MAMC and the HEC, and the remaining for miscellaneous reasons.

Power

3.14 Total power generation in 1981-82 at 122.0 billion Kwh. showed a substantial increase of 10.1 per cent over 1980-81. Power generation during 1981-82 reached the target of 122 billion Kwh.

set for the year. This improvement was to a large extent due to thermal (including nuclear) generation which increased by 12.6 per cent. This was almost

twice the growth rate of 6.7 per cent registered by hydel generation. Trends in power generation are shown in Table 3.3.

TABLE 3.3
Trends in Power Generation
(Percentage change)

Electricity Generated	1981-82				Full Year	1982-83		
	1980-81 Quarter		1981-82 Quarter			I	II	III
	I	II	III	IV		I	II	III
1	2	3	4	5	6	7	8	9
Hydel	+16.7	+2.4	+2.3	+7.7	+6.7	+7.4	+2.4	-7.0
Thermal (including nuclear)	+20.7	+17.3	+10.2	+5.0	+12.6	+5.2	+15.3	+15.2
Total	+19.2	+9.9	+6.8	+6.0	+10.1	+6.0	+9.3	+6.1

3.15 Although there was a significant improvement in the plant load factor (PLF) in 1982-83, the growth rate in power generation was lower than in the previous year. The deceleration in the growth rate was witnessed both in hydel and thermal (including nuclear) plants. Hydel generation has suffered due to inadequate rainfall. As regards thermal (including nuclear) generation, slower pace of additional capacity and the prolonged closure of two nuclear units in Rajasthan and Tarapur power stations has depressed the growth. Total power generation in the period April—December, 1982 was 7.2 per cent above that in the same period of 1981. This was contributed primarily by the expansion of 11.7 per cent in thermal (incl. nuclear) generation and of 0.8 per cent in hydel generation. Electricity generation target for the current year is 132.0 billion Kwh. implying an increase of 8.2 per cent over the achievement of 122.0 billion Kwh. in 1981-82. Considering the current trends, the target of power generation in 1982-83 is likely to be achieved.

3.16 Despite continuing increase in power generation in recent years, it has not been possible to eliminate the gap between requirement and supply since demand for power has also continued to grow. However, the demand-supply gap narrowed down from 12.7 per cent in 1980-81 to 10.8 per cent in 1981-82. In the first two quarters of 1982-83 the deficit in power supply was further narrowed to 8.8 per cent as against 10.7 per cent in the comparable period of last year. Though power generation increased, its availability fell short of requirements. Some states experienced acute power shortage during the current year. These include Punjab, Haryana, Rajasthan, Gujarat, Tamil Nadu, Karnataka and Kerala. The severe set-back to hydel generation in Tamil Nadu was on account of the failure of the monsoon in three successive years. The problem was aggravated by the outages in thermal units. In Kerala also the generation from hydel plants suffered considerably for the same reason and power cuts had to be resorted to; there was no

export of power from Kerala to the deficit state of Tamil Nadu.

3.17 There was improvement in capacity utilisation in the power generation sector in 1981-82. The average plant load factor of thermal (including nuclear) plants in 1981-82 was 46.5 per cent compared with 44.7 per cent in 1980-81. There was further improvement in the first nine months of 1982-83 when it averaged to 47.6 per cent which was higher than 45.9 per cent of the comparable period of 1981-82. Special efforts made to speed up stabilisation of new 200/210 MW units contributed significantly to the improvement in the overall plant load factor of the thermal plants.

3.18 Coal loading to thermal plants showed further improvement and were a factor in raising the PLF. In 1981-82, average daily loading of coal to thermal plants reached 4020 wagons which was 23.2 per cent higher than the level of 3262 wagons loaded in 1980-81. In the first nine months of 1982-83, there was further improvement of 14.7 per cent in the average coal loading to thermal plants (4452 wagons from 3881 wagons in the comparable period of 1981-82). As a result, stocks of coal held by thermal plants reached a level of 2.75 million tonnes on September 1, 1982 (as against 1.96 million tonnes of coal held as stocks a year ago). Action was also initiated to improve the quality of coal supplied to the thermal power units. Under a phased programme of setting up coal-handling plants by coal companies for grading and improving the quality of coal supplies to thermal power units 20 additional coal handling and screening plants are being set-up this year and 24 such plants during next two years.

3.19 Several short-term and long-term measures have been initiated with a view to further improving

the performance of the thermal units and to achieve better levels of plant load factor. These include quality control during manufacture of equipment, quality control during erection and commissioning, plant maintenance and creation of adequate stock of spare parts both for imported and indigenous equipment. A roving monitoring team visits thermal power stations to identify problems underlying poor performance and suggests measures like renovation for restoration of achievable capacity of individual plants. Adequate attention is also being paid to the aspect of imparting suitable training to the operating personnel so as to achieve better operation and maintenance of thermal units. Foreign expertise in selected areas is being sought e.g., marginal improvement in design which may lead to substantial improvement in power generation as for example the experiment taken up at Bhakra with Swiss assistance.

3.20 The major problem faced by the thermal power sector is the low utilisation of the newly added capacity. Nearly 8,500 MW of thermal capacity was added during the period 1976-77 to 1981-82. The average PLF of new capacity in 1981-82 was, however, only 41.7 per cent. An important reason for the deterioration in the PLF was the problem of stabilisation of the new installed capacity, particularly the stabilisation of 200/210 MW sets (which account for more than 50 per cent of new capacity). There was some improvement in 1981-82 when the average PLF of these sets rose to 42.2 per cent from 36.9 per cent in the previous year as a result of adoption of concrete steps such as constant monitoring of all newly erected 210 MW sets, by the Bharat Heavy Electricals Ltd. (BHEL) to identify problem areas which delayed commercial generation. The performance of five states (each with thermal capacity of more than 400 MW) was well below even the low average for the country as a whole. With some exceptions, almost all the plants located in these states fared badly. The performance in terms of PLF of these five states during the period 1976-77 to 1981-82 was as follows :

TABLE 3.4

Performance of Thermal Plants in Selected States

State	Thermal Capacity in MW (1981-82)	Average PLF (Per cent)	
		1976-77	1981-82
Bihar	765	50	35
Haryana	420	48	37
Punjab	440	40	41
U.P.	2714	63	41
West Bengal	1536	48	40
All India	19429	56	46

Source : Central Electricity Authority.

3.21 The problem of stabilisation also affects the super thermal power sets (STPS). For meeting the problems of the STPS a satellite is proposed to be set up in the central sector to improve communication and operation of the STPS involving heavy capital expenditure. A Centre linked to the satellite would function as a communication link with the STPS to transmit and receive information. However, there are several problems associated with the STPS besides problem of stabilisation. Additional costs have to be incurred to provide modern methods of communication including satellite communication, skilled manpower and modern management methods so as to obtain the potential economies of scale of large sets. Advance planning and constant review of the performance of medium and super size plants is necessary.

3.22 Schemes are under consideration to minimise the present high transmission losses. A national grid to facilitate inter-regional power supply from surplus to deficit states is envisaged. This involves the replacement of 220 KV transmission lines by 400 KV transmission lines and in selected sectors, where heavy loads are expected by 750 KV lines. This would go a long way in reducing transmission losses. National Thermal Power Corporation (NTPC) is expected to take up construction of 400 KV lines between Ramagundam-Mangur, Mangur-Vijaywada, Vijaywada-Red Hills, Chandrapur-Ramagundam and Waidhan-Singrauli besides setting up grid-sub stations and line bays at various places. Several other 400 KV lines associated with the STPS are also under consideration of the Corporation. These would need to be supplemented by many more extra high voltage lines by the different State Electricity Boards in order to make the whole scheme of national power grid a reality.

3.23 There have been slippages in the creation of power generation capacity. In the first two years and nine months of the Sixth Plan i.e., upto December, 1982 the actual addition to capacity has been of the order of 5940 MW—1844 MW in 1980-81, 2175 MW in 1981-82 and 1930 MW in the first nine months of 1982-83. As stated in the last year's Economic Survey major reasons behind slippages of power projects are the problems in acquisition of land, delay in the supply of equipment by the manufacturers, constraints in the availability of inputs like steel and cement and delays in the completion of works including civil works by concerned agencies. Detailed discussions have been held recently with the suppliers of major power equipment for ensuring timely delivery of plants and equipment in future.

Railways

3.24 Movement of revenue earning freight by the railways in 1981-82 at 221.2 million tonnes was higher than the revised target of 220 million tonnes. This was a remarkable achievement, particularly from the low level of 193 million tonnes in 1979-80. A target of 230 million tonnes has been fixed for 1982-83 which means an increase of 4.0 per cent over last

year. During the first nine months of 1982-83 the total tonnage of revenue earning traffic moved by the railways was 3.5 per cent higher than the traffic in

the comparable period of the previous year. On present indications, the target for 1982-83 is likely to be achieved.

TABLE 3.5
Recent Trends in Revenue Earning Goods Traffic Carried by Railways
(Percentage change)

Year	Tonnes Originating					Net Tonne Kilometers.				
	I Qr.	II Qr.	III Qr.	IV Qr.	Full year	I Qr.	II Qr.	III Qr.	IV Qr.	Full year
1	2	3	4	5	6	7	8	9	10	11
1980-81	-3.5	-1.9	+0.8	+7.7	+1.5	-1.2	-1.8	-0.3	+10.0	+2.1
1981-82	+15.4	+17.0	+14.0	+6.4	+12.5	+18.8	+14.2	+13.6	+1.9	+10.8
1982-83*	+6.7	+3.5	+1.0			+1.0	+3.5	+0.7		

*Provisional.

3.25 Commodities which caused lower growth in railway traffic during the current year compared with last year include iron ore for export, fertilisers, steel and raw materials for steel plants. This fall was largely made up by the significant improvement in the loadings of foodgrains, coal, cement and petroleum products. The decline in traffic of iron ore for export was due to world-wide recession in steel industry, that of fertilisers on account of lower off-take following uneven monsoons and that of steel due to sluggishness in output growth during the first half of 1982-83. Continued buoyancy in foodgrains loading reflected the emphasis on public distribution. Improvement in coal loading was due to the steady progress achieved in production and distribution of coal to important user industries like thermal power and cement.

3.26 The steady improvement in railway performance during the last about 2 years and nine months led to better availability of coal to the major user industries like thermal power and cement plants. Statistics of coal moved by the railways to power plants, cement plants and steel plants are presented in Table 3.6.

TABLE 3.6
Average Daily Loading of Coal in Four Wheeled Wagons

Period	Average daily loading of coal in four wheeled wagons to		
	Thermal Plants	Cement Plants	Steel Plants (including washeries)
1979-80	2869	452	2335
1980-81	3262	478	2307
1981-82	4020	608	2535
April—Dec. 1982-83	4452	645	2425
April—Dec. 1981-82 (percentage change)	3881	596	2473
April—Dec. 1982-83			
April—Dec. 1981-82	+14.7	+8.4	-2.0

There was a substantial increase in coal movement by rail in 1981-82 to three major users : power (23.2 per cent), cement (27.2 per cent) and steel plants (9.9 per cent). This was also reflected in the significant gains in output of these sectors during the year. During the year 1982-83, the improvement in the loading of coal for power generation and cement has continued. The loading of coking coal, however, was sluggish.

3.27 The remarkable performance of the railways in 1981-82 was the result of better utilisation of capacity and greater efficiency. Capacity utilisation exceeded the previous best results achieved in 1976-77 and 1977-78. Net tonne kilometres per wagon per day, which reflects overall performance in loading and mobility, registered steady improvement during the last two and a half years. On broad gauge, the net tonne kilometres per wagon per day increased from 986 in 1980-81 to 1,112 in 1981-82, which crossed the earlier best performance of 1045 in 1977-78. There was further improvement when net tonne kilometres reached the level of 1,226 during April—October, 1982. Wagon turnround time, an important indicator of efficiency of railway operations came down on broad gauge, from 15.2 days in 1980-81 to 13.3 days in 1981-82 and further to 13.0 days during April—October, 1982 (as against 13.8 days during April—October, 1981). Improvement in railway performance has largely resulted from managerial and operational innovations introduced towards the end of 1980. These innovations include segregation of the conventional wagons fleet from wagons fitted with roller bearing and centre buffer couplers, segregation of covered wagons fleet equipped with roller bearings and centre buffer couplers into jumbo rakes, integrated end to end running of trains, formation of fixed-train-consists to cater to specific streams of traffic, optimisation of trailing loads and rationalisation of loco hauls. The railways also resorted to loading in block rakes wherever feasible and this strategy has substantially contributed to the increase in total throughput of railways. The formation of fixed-train-consists with the special type of stock meant

for movement of steel products has lately become popular on the railways. It is important to maintain the wagon turnround time as low as possible to promote cost-effectiveness in railway operations.

3.28 An important factor which adversely affects the overall productivity and efficiency of the railways is the poor state of the rolling stock, track and other assets. Of the total stock of 75,860 kms of track, 38,327 coaches and 4 lakh wagons on 31st March, 1981 about 14,000 kms of track, 8,000 coaches and 65,000 wagons are due for replacement during the Sixth Plan period. A total of 14,500 wagons were discarded in 1980-81, 1981-82 and the first seven months of 1982-83. During the same period 794 steam locomotive were also discarded. This policy has contributed to the improvement in productivity of the railways as disabled and overaged rolling stock constituted a drag on the entire system. Similarly, overaged track need to be replaced urgently, because on the weak track inevitable speed restrictions constrain the smooth and speedy movement of railway traffic. Besides being a safety hazard, overaged rails, sleepers and fittings in poor conditions lead to rail fractures which upset train operations and result in decline in traffic handled by the system.

3.29 For improving productivity of the railways and simultaneously ensuring safety in its operations, it is necessary to upgrade the existing wagon stock and track and to expand the wagon fleet. Wagon acquisition programme envisaged during the Sixth Plan period has received a set-back in the current year due to a sharp decline in the output of wagons. During the first eight months of 1982-83, output of wagons was 18.0 per cent lower compared with the same period of the previous year. Against the target of 16,500 wagons for 1982-83, the production in the first eight months of the year was only 9,220 wagons. Apart from slower pace of wagon acquisition in comparison with the targets envisaged in the Sixth Plan, the railways also face problems of inadequate availability of spares for maintenance of the existing wagon stock in a healthy state. About 50,000 wagons are estimated to be out of commission for want of maintenance facilities. Steps have been initiated to create adequate workshop facilities so as to minimise the percentage of idle wagons. A new design of wagon (Box-N wagon) with better pay-load capacity in relation to tare-weight which promises significant improvement in the pay-load of trains is actively under consideration. Initially these wagons will be deployed to transport coal from Korea-Rewa coal-fields to the power houses in the Western Region. These wagons will be provided with mechanical unloading facilities which would help improving the productivity of wagons substantially. To facilitate mechanical unloading, tipplers would be installed at the major consuming ends like the steel plants, thermal plants and cement plants.

3.30 Important steps have been taken in the direction of modernisation of the railways. A scheme to computerise the entire railway operations on the pattern of the system followed by the Canadian and the British railways is under consideration. This involves computerisation of the total operation and processing

system. With better communication facilities, the implementation of this scheme is estimated to improve freight movement by at least 15 per cent with the existing stock. The railways have also made significant progress in the scheme of workshop modernisation. The work on five workshops, which has been taken up for modernisation will be completed by mid-1984. It is intended to cover 35 workshops under modernisation schemes in a phased manner. For the sake of rationalisation, each workshop will specialise in specified jobs. Modernised workshops would help to improve productivity of the railway assets by speeding up the pace of maintenance work undertaken in these workshops. These efforts are expected to result in a substantial reduction in the percentage of sick and idle wagons. A wheel and axle plant is being set up at Bangalore. The wheel unit will go into production this year and the axle unit early next year.

3.31 Considering the varied investment requirements of railways viz., for maintenance of existing rolling stock and other assets by means of modernisation of workshop facilities, telecommunication network, computerisation of freight movement, etc., and for the addition of fresh capacity, the plan allocation on the railways has been increased significantly in the recent years. The plan outlays on the railways was Rs. 762 crores in 1980-81. It was raised by 49 per cent to Rs. 1137.5 crores in 1981-82. In 1982-83 the allocation has been significantly higher at Rs. 1,327 crores, an increase of 16.7 per cent over 1981-82.

Shipping and Ports Facilities

3.32 Several steps were taken in the past two and a half years to augment the capacity at major ports in handling cargo and to reduce port congestion. As a result, there has been steady improvement in the volume of traffic handled at the major ports. It has increased by 3.6 per cent to 81.3 million tonnes in 1980-81 from 78.5 million tonnes in the previous year. A sharper growth rate of 7.5 per cent was registered in 1981-82 when the tonnage handled by major ports reached a level of 87.4 million tonnes. There was an increase of about one million tonnes in the cargo handled by the Indian flag vessels during 1981-82 to 24.5 million tonnes compared with the previous year. During April—December, 1982 the tonnage handled at major ports at 70.1 million tonnes was 12.5 per cent higher than 62.3 million tonnes handled in April—December, 1981. Based on this trend, 95 million tonnes are expected to be handled by ports during the full year (1982-83). With supporting investments in providing infrastructure facilities for modernisation and expansion of major ports during the Sixth Plan period, the capacity of the ports is expected to go up by about 30 million tonnes to 130 million tonnes by the end of the Sixth Plan period.

3.33 Measures already taken to augment ports capacities and for modernisation include construction of additional general cargo berths at the ports of Kandla, Mormugao, New Mangalore, Madras, Tuticorin, Visakhapatnam and Paradip; additional POI handling facilities at the ports of Cochin, Kandla and

Visakhapatnam; fertiliser handling facilities at the ports of Cochin and Paradip, container handling equipment for Bombay, Cochin and Madras ports including a full-fledged container terminal at Madras and a comprehensive scheme for improvement of dredging facilities in the Hooghly estuary costing Rs. 40.5 crores, etc. Among projects to expand port capacity an important one is the new major port project at Nhava Sheva which will cost Rs. 592 crores of which Rs. 300 crores are expected to be utilised during the current plan period. The first phase of this project envisages construction of eight berths, four for handling bulk cargo and four for handling containers. The project is expected to handle a total traffic of 7.6 million tonnes by 1985-86 and 11.7 million tonnes by 1991. The work on this project is likely to start by the third quarter of 1983 and the new port is likely to be commissioned by the end of 1986. With the commissioning of this port, the congestion at Bombay port is expected to be considerably relieved since containers and bulk cargo traffic will be diverted to the new port.

3.34 Containerised traffic has made rapid strides in world shipping in the recent years. Keeping with this trend, concerted steps have been taken to step up containerisation in Indian shipping. In 1981-82 ports handled 2 lakh containers as against 1 lakh containers handled during 1979-80. To cope with the increasing container traffic four major ports *viz.*, Bombay and Cochin on the West Coast and Haldia and Madras on the East Coast are being developed into container terminals for handling container vessels. For handling containers, 3 yard gantry cranes (trans-tainers) at Bombay port and 2 yard gantry cranes at Madras port have already been procured and installed. In addition, orders have been placed for import of four quay-side gantry cranes by the Bombay Port Trust and the Madras Port Trust.

3.35 Sustained efforts have been made to improve the operational performance of the ports. As a result, the average pre-berthing detention of all types of ships at the major ports has been reduced by 27 per cent during January—November, 1982 compared with the same period in 1981. During the same period the turn-round time of vessels at major ports declined by 21 per cent. The quantum of cargo handled per ship-berth day rose from 1,736 tonnes in 1981 to 2,158 tonnes in 1982 showing an increase of 25 per cent.

3.36 As mentioned in last year's Economic Survey, coastal shipping has assumed importance as a supplemental mode of internal transport due to its low energy consumption per unit of transport. Total coastal movement of coal from Haldia and Calcutta during April—November, 1982 amounted to 10.7 lakh tonnes as against 8.4 lakh tonnes moved in the comparable period of last year. This is meant primarily for consumers situated on the Southern Coast like the power house at Tuticorin, and a number of cement factories in the South. Apart from coal, there is scope for transporting economically commodities like cement and salt along the vast coastal lines of the country. For example, during April—November, 1982, 90,000 tonnes of salt was moved to the ports of Calcutta and

Haldia as against 25,000 tonnes moved in the same period of 1981. Efforts should continue to step up the coastal movement of the above commodities.

3.37 The present recession in the shipping industry started around the beginning of 1981 after the previous prolonged recession of 1974—78. A continuous fall in the availability of cargo along with a fall in the level of freight rates are the characteristics of the current recession and prospects of an immediate recovery in freight market for the ship owners are uncertain. The world sea borne trade, which increased from 3,491 million tonnes in 1978 to 3,755 million tonnes in 1979, again declined to 3,463 million tonnes in 1981. As against this, there has been a substantial rise in the world fleet, which went up from 632.7 million D.W.T. as on January 1, 1979 to 650.1 million D.W.T. as on November 1, 1982 resulting in an imbalance between supply and demand. It is the general policy of the Government to buy on FOB basis and sell on C&F basis to the extent possible so as to retain control over shipment and enable utilisation of Indian vessels. Foreign vessels are used only when suitable Indian vessels are not available. The total quantity of Government owned/controlled cargoes (liner and bulk combined) handled by chartering wing against FOB imports and C & F exports during 1981-82 was 175.1 lakh tonnes of which 87.0 lakh tonnes representing 49.7 per cent was allocated to Indian vessels. As regards bulk cargoes, the allocation to Indian vessels had a higher share of 55.4 per cent during January—November, 1982 in the total of 135.8 lakh tonnes handled by chartering wing. The current world-wide recession in shipping industry has provided a good opportunity to Indian Shipping Industry to increase its share in handling cargo particularly with countries with which India has considerable trade. In this connection, it will be necessary to expedite measures to improve efficiency and reduce costs in cargo handling at major ports by relieving port congestion and providing infrastructural facilities for modernisation as well as for mechanisation of cargo handling.

3.38 In summary, the three sectors, *viz.*, coal mining, electricity generation and railway transport the respective targets are likely to be achieved during this year. The performance of the ports facilities has also been notable. Although the growth rate in the year is likely to be lower than the previous year, an increase of 3.5 per cent to 7.2 per cent has been achieved till December, 1982. Further the slower growth in the infrastructure sectors has not seriously constrained the performance of the user industries. As developments in the infrastructure sectors have a vital bearing on the performance of the rest of the economy, it is necessary to sustain a reasonably high growth in these sectors. There is substantial scope for further improving their performance through better capacity utilisation and achieving higher levels of efficiency in operation. It is also necessary to eliminate delays in the implementation of projects and to expedite the completion of those which are in advanced stages so that the maximum benefits can be derived from large investments made in these sectors in the last few years.