

## CHAPTER 3

### INFRASTRUCTURE

3.1 The past two years have seen the emergence of the energy and transport infrastructure as a serious constraint on overall economic performance. This became dramatically evident in 1979-80 when there was a shortage of diesel, the production of coal and power increased only marginally, and the movement of freight by the railways actually declined. As noted in last year's Economic Survey, poor performance in the infrastructure created a near crisis situation. Lack of power and coal led to a decline in output in key sectors such as steel, cement and non-ferrous metals. The resulting shortages of basic material inputs were further aggravated by transport difficulties. These factors contributed to 2.1 per cent decline in production of manufactures in 1979-80.

3.2 Measures to improve the performance of the infrastructure received urgent attention during 1980-81, but not surprisingly, it took time to achieve a turn-around. Infrastructural difficulties continued through the first half of the current year but there was distinct improvement in the second half. It is clear that infrastructural problems are not only due to simple deficiencies in management which can be overcome in a relatively short period. There are deeper problems which have been building over time and which can only be resolved over an extended time-frame. The resolution of these problems must be given high priority if the economy is to achieve rapid growth in the Sixth Plan. The Government have already taken steps to harness expert advice for the evaluation of the performance of the crucial public sector enterprises.

#### Performance of Infrastructure in 1980-81

3.3 Improvement of the infrastructure was recognised as a critical requirement for economic revival in 1980-81, and accordingly, Government initiated effective administrative arrangements to oversee performance in this sector soon after entering office in January 1980. A Special Coordination Cell was also established to identify problem areas requiring action on a priority basis, and to coordinate efforts at overcoming critical bottlenecks.

3.4 The need for coordination and the establishment of clear priorities stem from the close inter-relationship of the infrastructure sectors. For example, in 1979-80 lack of coal was often cited as the reason for poor performance of thermal power stations. However, coal production was itself adversely affected by power shortage in the Eastern region. Even when coal was available, lack of railway wagons in some areas handicapped its delivery to power stations. The coordination machinery established at the Centre was designed to mitigate bottlenecks of this type by identifying necessary linkages, and determining priorities so as to achieve optimal performance in the short-

run. The existence of longer term constraints naturally set limits to what could be achieved in the short-run.

#### Power

3.5 The supply of adequate power was given top priority. The acute drought of 1979 left most of the reservoirs severely depleted by early 1980. It was, therefore, inevitable that hydro-electric generation would perform very poorly up to at least July 1980, when replenishment of reservoirs could be expected following the monsoon. At the same time the agricultural load had increased. In this situation, total electricity generation in the first half of 1980-81 depended crucially upon the ability to achieve a sharp increase in generation from the thermal sector.

3.6 The thermal power sector suffers from a number of problems which have progressively lowered its operational efficiency over the past several years. Utilisation of installed thermal capacity has declined steadily from 55.3 per cent in 1976-77 to 45.4 per cent in 1979-80. This deterioration reflects the existence of deep-seated problems ranging from organisational and operational deficiencies of the State Electricity Boards, poor maintenance procedures leading to frequent outages, problems related to quality of equipment and supply of spares and indifferent quality of coal. These problems are obviously not easily amenable to short term correction, but have to be progressively remedied. One of the important problems facing thermal power stations, which could be remedied in the short term was the adequate supply of coal. During the calendar year 1979 there were considerable difficulties regarding the movement of coal to power houses. This made it difficult for thermal plants to meet the increased requirement for power generation in the face of the decline in hydel production. Problems of coal availability were partly due to production problems of the coal sector, but partly also due to the inability of the railways to provide the requisite number of wagons for coal loading at points where coal was available. Hence many power houses had very low stocks of coal.

3.7 Efforts were therefore directed at ensuring an adequate supply of coal to power houses. Wagon loadings for power houses increased substantially from 2860 per day in December 1979 to 3323 per day in February 1980. Thereafter they declined slightly but the average for March to June 1980 was 3244 per day which was considerably higher than the average of 2776 per day for the same period in 1979. In addition to rail movement, other means of transporting coal, including coastal shipping, were also pressed into service. As a result, total supply of coal to power houses improved during the critical lean months of

April—June 1980, and there was also an increase in coal stocks with power houses. Along with measures to improve the supply of coal, steps were also taken to identify specific problems affecting individual thermal plants. Special teams of experts visited a number of plants with a view to identifying the critical elements contributing to malfunctioning and indicating corrective action.

3.8 These efforts helped to produce a modest increase in thermal generation. Thermal generation in the first quarter of 1980-81 was 6 per cent above the level in the first quarter of 1979-80. However, this could only partially offset the much lower hydro-electric generation, which declined by 18.8 per cent in April—June 1980, than in the same period in 1979. Total power generation in the first quarter of 1980-81 was 5 per cent below that in the previous year.

3.9 The power situation eased considerably after July 1980, when the filling up of reservoirs enabled greater utilisation of hydro-electric capacity. Total electricity generation in August 1980 showed positive growth over the same month in 1979 and the performance improved further in subsequent months. The renewed availability of hydro-electricity and the relatively low demand for power from agriculture, because of good monsoon, permitted taking up of the extensive maintenance operations due on thermal sets in the second quarter of 1980-81. Scheduled maintenance on many sets had been postponed during 1979 and early 1980 in order to ensure maximal operation of the thermal capacity. Because of these maintenance operations, thermal generation during July—September 1980 was actually lower than in the previous year, but it picked up again in October. In November and December, thermal generation was 21 per cent above the level achieved in these months in the previous year.

3.10 Total electricity generation in the period April—December 1980-81 was 3.8 per cent above

that in the same period of 1979-80. The improvement noticed since October is expected to continue, and the thermal plants might perform better because of extensive maintenance operations having been completed in recent months. Therefore, the power performance in the second half of the year will be much better than in the first half of 1980-81. For the year as a whole, total power generated may be 6 per cent above the level in 1979-80. This compares with a growth rate of only 2.1 per cent in the previous year.

### Coal

3.11 The performance of the coal sector during 1980-81 also shows an improvement over the past several years. Production of coal (including lignite) had been stagnant at about 105-106 million tonnes since 1976-77. By contrast, coal production (including lignite) in the first nine months of 1980-81 was 8.7 per cent higher than in the same period of 1979-80. It is likely that production of coal (including lignite) for the year as a whole will be about 115 million tonnes, which though below the target of 118.6 million tonnes, shows a noticeable improvement over last year's figure of 106.9 million tonnes.

3.12 The improvement is largely due to the substantial increases recorded by Western Coalfields Ltd. (WCL) and Central Coalfields Ltd. (CCL). These companies are engaged in exploiting relatively new mines and they do not suffer from serious power constraints. As shown in Table 3.1 they have consistently shown expanding output levels even in the past few years, and their production in 1980-81 was expected to show a more substantial increase than in the past reflecting the opening up of new mines. Eastern Coalfields Ltd. (ECL), which experienced consistently declining production levels for the past several years because of power shortages and labour troubles in West Bengal, has also shown an improvement in the first nine months of 1980-81, with production increasing by 5.5 per cent.

TABLE 3.1  
Coal Production\*

						(Million Tonnes)	
	1975-76	1976-77	1977-78	1978-79	1979-80	April— Dec. 1980-81	Percentage increase in 1980-81 over 1979-80 (April- Dec.)
ECL	26.2	26.5	25.3	22.1	20.5	15.4	5.5
BCCL	20.1	20.7	20.2	19.7	20.1	13.7	0.3
CCL	20.7	20.7	21.2	23.4	24.1	18.7	15.8
WCL	21.4	21.0	21.7	24.2	26.1	20.4	8.3
NEC	0.6	0.6	0.6	0.6	0.6	0.4	1.4
Total CIL	89.0	89.5	89.0	90.0	91.4	68.6	7.9
SCCL	7.4	8.3	8.9	9.0	9.4	7.6	6.3
Others	3.3	3.3	3.1	2.9	3.1	2.0	-12.0
Total	99.7	101.1	101.0	101.9	103.9	78.2	7.0

\*Excluding lignite.

3.13 The performance of Bharat Coking Coal Ltd. needs improvement. This company suffers from chronic power shortages and also from the severe law and order problems which affect the coal mining regions of Bihar. The first nine months of 1980-81 saw a nominal increase in production of only 0.3 per cent, from the level in the same period of 1979-80. There was an improvement in the power situation in the middle of the current year because of better generation from DVC and also the import of power from other grids into the DVC system. These improvements may be reflected in somewhat better performance in the rest of the year. Nevertheless production of coking coal is likely to fall considerably below target. The shortfalls in coking coal production had necessitated coking coal imports of about 1.2 million tonnes in 1979-80. For 1980-81 imports of about 1.5 million tonnes have been approved by the Government.

3.14 In view of the acuteness of the power shortage and the prevailing transportation bottlenecks, it was necessary to accord high priority to supply of coal to thermal generation in the pre-monsoon months. With the onset of the monsoon and the improvement in feedstock and raw material position, the transportation of coal to other priority sectors of the industry like steel, cement and fertilisers was also stepped up. As a result of the coordinated effort, the movement of products like cement and fertilisers also improved significantly. The road transport was also used extensively to move coal. However, the pithead stocks of coal as on 1st of January 1981 at 13.8 million tonnes were about 3.4 million tonnes higher than the stocks as on 1st January 1980. As the movement of coal by railways gets stepped up in the last quarter of 1980-81, it should be possible to move a larger volume of coal.

### Railways

3.15 The performance of the railways continued to present serious problems in 1980-81. The railways had achieved a peak level of originating revenue earning freight amounting to 212.6 million tonnes in 1976-77. Thereafter there has been a continuous decline in freight loading each year and in 1979-80 it had dropped to only 193 million tonnes. It proved extremely difficult to arrest this pattern of decline in 1980-81. Revenue earning freight in terms of originating tonnage in each of the first seven months of 1980-81 was lower than the level in the corresponding months of 1979-80. Railway operations in these months continued to suffer due to the chronic problems of the past few years such as shortages of wagons, over-stretched line capacity in many sectors, and industrial relations problems, especially in the Eastern region.

3.16 Efforts at improving railway performance met with some success in November and December when freight tonnage showed an increase of 2.5 per cent and 6.6 per cent respectively over the level achieved during these months in the previous year. The turnaround witnessed in November has been sustained in subsequent months. Despite the total tonnage moved in the period April to December being 1.4 per cent below the previous year, with the improvement in performance from November onwards the total freight

tonnage moved in 1980-81 will be higher than the level reached in 1979-80.

3.17 Coal is the largest single item carried by the railways and accounted for about 62 million tonnes out of the total originating traffic of 193 million tonnes carried in 1979-80. The deteriorating performance of the railways in past few years was reflected in a substantial decline in coal movement by rail. From 69 million tonnes in 1977-78 it declined to about 62 million tonnes in 1979-80. There was a marginal decline in 1980-81 of 1.0 per cent in the first nine months compared to the same period of 1979-80, which is likely to be made up in the remaining months.

3.18 The power shortage and raw materials constraints in the first seven months led to production capacity in major sectors like steel and cement being under-utilised. Coal movement to steel and cement plants declined during April to December, 1980.

TABLE 3.2

*Average daily loading of coal in four wheeler wagons\**

April to December	Average daily loading of coal in four wheeler wagons to:		
	Power Plants	Steel Plants	Cement Plants
1979-80	2763	1510	484
1980-81	3066	1450	446
Percentage variation	+11.0	-4.0	-7.6

\*Figures are averages for the 9 months.

3.19 This decline is because in the context of limitations on total coal loading, special efforts were made to meet the priority requirement of thermal power stations in the pre-monsoon months. Movement to priority industries like steel and cement was increased from August onwards synchronising with the improved power generation. From October 1980 onwards, overall coal loading went up and coal loading to these key sectors recorded substantial increases compared to the levels in the earlier months. In the months of November and December, coal loadings to these industries was further stepped up.

### Shipping and Ports facilities

3.20 Cargo handled by major ports has gone up from 480 lakh tonnes in April—November 1979 to 510 lakh tonnes in April—November 1980 i.e., by 6 per cent. Port congestion was brought down and the number of vessels waiting for clearance in various ports came down in 1980 compared with 1979. Though the ports have been able to meet this stress currently, in the long-term it is necessary to augment port handling and unloading facilities. These should be designed to take account of the recent trends of containerisation which will require integrated planning and development of facilities for sea and land modes of transportation.

3.21 Coastal shipping was organised almost from the scratch and during January to December of 1980 about 8 lakh tonnes of coal and 2 lakh tonnes of salt were carried to the Southern and Western regions. Coastal shipping, as a supplemental mode of transportation, can afford relief and additional traffic facilities. It will be necessary to provide assured cargoes and a freight policy which could make the operation of coastal shipping economic so that long-term requisites like organisation of suitable colliers and ships can be planned.

### Long run Problems of Infrastructure

3.22 The experience of the past year shows that there are strict limits to what can be achieved through purely short term measures to improve infrastructure performance. These sectors are clearly suffering from deep-seated problems which have accumulated over the past few years and require sustained remedial action over a longer period. Since the growth of the economy in the Sixth Plan depends crucially on a sufficient expansion in infrastructure it is essential to identify the problems affecting each sector and to tackle them in a planned manner. The task is urgent because it is through major expansion in coal, power and railways that the economy can make an effective adjustment in the area of energy and reduce its dependence on imported oil.

3.23 The magnitude of the task can be seen from the ambitious medium term targets set for 1984-85 in the Sixth Plan and comparing them with the performance actually achieved since 1976-77.

TABLE 3.3  
Plan Targets

	Actuals		Target 1984-85
	1976-77	1979-80	
Power Generation*(bn. kwh.)	88.3	104.7	184.8
Coal@ (million tonnes)	101.0	103.9	165.0
Railway revenue earning freight (originating in million tonnes)	212.6	193.1	306.5

\*Utilities only.

@Excluding lignite.

3.24 Expansion of this order will clearly require large investments in each sector and the Sixth Plan would attempt to meet these investment requirements. It is also essential to recognise that there are other problems affecting the operational efficiency of capital use in each sector. Successful infrastructure performance in the medium term calls for a conjoint attempt at raising investment levels and tackling these other problems.

### Problems in the Power Sector

3.25 The major problem appears to be in the thermal sector, where despite substantial additions to capacity in recent years, generation has failed to keep pace. The utilisation of capacity has declined from a peak of 55.3 per cent achieved in 1976-77 to 45.4 per cent in 1979-80. The Rajadhyaksha Commit-

tee has estimated that it should be possible to achieve a 58 per cent utilisation level under normal conditions of operation. This implies that thermal generation in 1979-80 could have been 30 per cent higher with the same level of capacity, if the utilisation of capacity had come up to expectations. This would have meant that total generation of power would have been 18 per cent higher, more than wiping out the estimated power deficit of 16 per cent in 1979-80. Power is a highly capital intensive sector and an ambitious investment programme is envisaged in the coming years. The economy can ill afford to keep adding to capacity and yet ignore the deterioration in capacity utilisation. It is essential to reverse this trend over the Sixth Plan period in order to reap the full benefit of the existing capacity and the ambitious expansion programme envisaged.

3.26 The overall rate of utilisation of capacity may vary for a number of reasons, some of which do not necessarily reflect operational inefficiency. For example, capacity may remain unutilised because of shutdowns for scheduled maintenance or because of low generation due to lack of demand. In order to identify the degree of operational inefficiency in the power sector it is necessary to distinguish between these reasons for underutilisation of full capacity, and other reasons such as, for example, unscheduled plant shutdowns because of forced outages or partial unavailability, i.e. less than full load generation due to breakdowns of some part of the equipment, lack of coal etc. The components of the overall rate of utilisation of capacity are shown in Table 3.4. They show that between 1976-77 and 1979-80 there was an alarming decline in plant availability from 77 per cent to 69 per cent. This was mainly due to forced outages. Partial unavailability also increased from 14.5 per cent to 17.5 per cent. These two indices point to a clear deterioration in operational efficiency.

TABLE 3.4  
Performance indicators of thermal power generation

	Percentages					
	Planned outages	Forced outages	Plant availability	Partial unavailability	Lack of demand	Capacity utilisation
1976-77	9.8	13.2	77.0	14.5	7.3	55.3
1977-78	13.4	14.2	72.4	14.3	5.4	52.7
1978-79	14.3	14.7	71.0	16.2	5.3	49.5
1979-80	12.3	18.8	68.9	17.5	6.0	45.4

Source : Raadhyaksha Committee Report.

3.27 The reasons for this deterioration can be broadly classified into the following: problems of organisation and management, problems of equipment and equipment supplies, problems of labour discipline and skills and finally problems of coal availability and quality. Because these problems are mutually reinforcing, it is difficult to quantify the extent to which one set is more or less important. Management shortcomings are reflected in inadequate preventive maintenance and frequent failure to follow schedules of maintenance of major items of equip-

ment such as boilers, turbines and generators eventually resulting in unplanned outages. Lack of industrial discipline and also inadequate training of labour skills aggravate these conditions. There are also some complaints relating to the quality of equipment supplied, especially the accessory equipment and instrumentation, the latter being particularly important for monitoring plant operation. Inadequate availability of spares adds to the period of time taken for repairs and maintenance. Finally, complaints about the quality of coal have risen significantly in recent years. The ash content has been increasing and the coal supplied also contained abrasives. Since the thermal plants equipment is designed for better or different specifications, the steady deterioration/variation in coal quality has contributed significantly to lowering their performance.

3.28 It is essential to act on several fronts if a substantial improvement in the operational efficiency of thermal plants is to be achieved. As far as organisation and management are concerned, there is an overwhelming need to strengthen and professionalise the State Electricity Boards, which are responsible for running the bulk of the plants. The tenure of office of the Chairman and Members must be sufficiently long to permit effective management and leadership. The thermal sector is expanding at a rapid rate and increasing in technological complexity. Until very recently the thermal sector consisted predominantly of sets in the 60 MW—110 MW range. Today there are a very large number of 200 MW sets and more and more 500 MW sets are to be installed. There are major increases in technological complexity and effective operation of the thermal sector, therefore, calls for the highest standards of technical and industrial management.

3.29 Not only must the organisational structure be modernised and management professionalised, a major effort is needed to upgrade technical skills of personnel at various levels in the power sector. Particular effort is needed to set up highly skilled specialised maintenance teams to improve standards of performance in this crucial area. In this context, the Rajadhyaksha Committee on Power has noted that maintenance engineering is a multi-disciplinary area requiring a combination of theoretical knowledge and specialised practical training. The Central Electricity Authority has established four training institutes, but their output in terms of personnel needs to be raised.

3.30 Another area requiring further attention is the quality of equipment supplied to power plants. Some of the sets installed in the past few years have presented problems and taken time to stabilise. These deficiencies are identified and efforts are afoot to remedy the situation through a better inter-phase between users and producers, rigid quality control, better after-sale service, provision of adequate spares, and infusion of technology where necessary. Domestic producers must give priority in their production planning to the production of spares and components needed to ensure effective functioning of existing thermal units besides according due importance to the timely completion of plant for new projects.

3.31 Finally, it must be recognised that the problems caused by the poor quality of coal are not short-term problems. The bulk of our coal reserves are of inferior quality and power sector planning must be based on an acceptance of this fact. It is possible to improve the quality of coal by washing, but this is a costly process and it is not clear to what extent the economics of beneficiation will justify the investments required. However, a number of steps can be taken to mitigate the adverse effects of poor coal quality. The problem of variability of coal quality can be tackled by blending of coal at the collieries to ensure that coal supplied to each power station is of more or less uniform quality. Mechanical shale separating units, manual picking of shale and boulders and crushing of coal to the correct size before despatch to power plants will all help to ensure trouble free operation. Parallel with efforts at improving coal quality and ensuring uniformity it is also necessary to design and manufacture power equipment which is suited to the quality of coal available. As far as possible linkages of coal should be established on a long-term basis. Limiting the number of the specific collieries to ensure consistency in quality of coal could also help.

3.32 With the setting up of large thermal plants, the mode of quick and easy handling of coal at both loading and unloading points assumes significance. It will be necessary to evolve suitable type of wagons which can be quickly unloaded at destinations and help ensure quicker turnaround of rakes, and close circuit operations.

#### Coal Production Constraints

3.33 The coal sector has experienced considerable difficulties in the past few years with production remaining more or less stagnant between 1976-77 and 1979-80. Vigorous action will, therefore, be necessary to achieve a turnaround sufficient to raise production from 104 million tonnes in 1979-80 to 165 million tonnes by 1984-85 as envisaged in the Plan. In the short run the major factors which could contribute to a rapid increase in coal production are plentiful availability of power, improved industrial relations especially in the Eastern region, and an improvement in the law and order situation in the Dhanbad coal mining areas. According to the estimates made by Coal India, power shortage, labour trouble and absenteeism were responsible for a loss of about 13 million tonnes of coal in 1979-80. There is obviously considerable scope for expanding production in the next year by minimising such losses. Assured availability of power from the supplying grids together with some captive generation will help enormously. However, the medium term targets call for a much greater expansion of production and achievement of these targets depends upon some critical elements. In this context, the optimal utilisation of the mining machinery and equipment and additional shifts should prove to be of immense utility.

3.34 Perhaps the most important element in achieving the high production targets is the extent to which high productivity mechanical techniques of

mechanised mining can be introduced. The traditional board and pillar method of mining limits the recovery of coal to around 50 per cent and results in low productivity. It is also not suitable for the exploitation of more difficult seams at greater depths. Only a major shift to more mechanised techniques such as long wall mining for underground mines, and open cast mining where feasible, can ensure rapid growth of coal production.

3.35 These shifts involve a major transformation in the technological base of coal mining in the country with important implications. The new techniques are much more capital intensive and therefore costly. They have a high import content, at least in the initial stages. It is essential that the required plant and machinery should be installed in accordance with planned schedules as delays will be reflected in shortfalls in the coal production targets with wide-ranging consequences for industrial growth. It is also essential to make realistic assessment about the capacity of domestic producers to supply the equipment needed within the desired time-frame and correspondingly to be flexible on imports.

3.36 The new techniques also require a much higher degree of industrial discipline and also labour skills from the work force. The traditional mining technology absorbs a large number of relatively unskilled workers many of whom return to agricultural employment in the peak agricultural season. Absenteeism is, therefore, a common problem. The new technology will call for a relatively smaller and more highly skilled work force. It will be necessary to provide for adequate training of personnel to keep pace of increased mechanisation in the coal mines.

3.37 One of the major constraints on rapid expansion of coal output is the difficulty and delays associated with land acquisition. Local residents demand employment in the coal mines, much beyond the labour requirements of the new mines. The resulting agitations contribute to making a difficult law and order situation. These problems must be speedily resolved, with due attention to the legitimate demands of those displaced by the acquisition of land for coal mining. In this matter the active cooperation of the State authorities concerned is absolutely essential.

3.38 The State authorities' active interest and participation is also required in enforcing law and order and ensuring conditions congenial for the smooth and optimal production operations. This will require socio-economic betterment programmes as well as affective enforcement machinery.

#### Problems in Railway Freight Movement

3.39 The ability of the railways to carry a substantially expanded volume of freight in the coming years will be crucial for medium term economic performance. The requirements of coal movement alone are formidable given the expanded coal production targets. Failure to meet this ambitious target will mean disruption of supplies and continued infrastructural bottlenecks. To the extent that bulk

commodities are diverted to roads, this will involve very high economic costs since prices of petroleum products will continue to rise, and this tendency needs to be checked.

3.40 The static and inadequate performance of the railways in the past several years is the combined effect of a number of factors. There has been a structural shift in the pattern of traffic generated. Whereas in earlier years the railways catered to bulk commodities such as food imported into the major ports, and distributed into the hinterland areas, a new traffic pattern has emerged calling for a different configuration of line capacity. There is extensive movement of foodgrains from the surplus areas in the north to other parts of the country over very long leads. The leads went up from 940 kms. in 1976-77 to 1300 kms. in 1979-80. There has been a large increase in the transport requirements of coal to power plants. Finally because of congestion in the major ports, many bulk imports e.g. fertiliser and cement are landed at minor ports and have to be transported over much longer distances.

3.41 At a time when the demand for rail transport has been expanding, with changing traffic configurations, the railways have suffered from a prolonged period of under-investment during the last decade. This among other things resulted in postponement of replacement of wagons, track etc. and progressive build up of heavy arrears of replacement, which after a certain time interval, has started causing serious maintenance and operational problems. In this respect the problems of railways are substantially different from those of the other sectors where fairly large investments have been made in the past to permit expansion of capacity. By contrast, the existing capital stock of the railways is inadequate in total quantity and much of it is worn out and in need of replacement. Track renewals have not been carried out to the extent necessary, and there is inadequacy of line capacity in many sectors.

3.42 There is a similar problem as far as rolling stock is concerned. The stock of wagons has not increased at a rapid rate for the past several years as shown below. If the perspective plan targets are to be attained it will be necessary to achieve a much higher rate of growth in future.

TABLE 3.5

*Indices of wagons owned (1960-61 = 100)*

(In terms of four wheelers)

	Broad Gauge	Metre Gauge	Average lead in kms.
1970-71	160.1	119.1	115.5
1975-76	175.8	113.8	118.4
1976-77	179.3	114.9	116.9
1977-78	183.0	117.2	122.3
1978-79	184.8	117.6	123.5

Apart from the inadequacy of the total stock, a very large part of the stock is overdue for periodic overhaul. Facilities for maintenance and repair have also not increased at a sufficient rate. Out of 49 workshops for periodic maintenance in the country only 5 were set up in the last twenty five years. The others are over 50 to 80 years old with overaged machinery and equipment. At present levels of productivity, it is not possible to meet the annual requirements for wagon overhaul and the arrears are projected at an annual rate of about 33,000 wagon units. In addition there is an existing backlog of 75,000 wagon units due for repairs above the normal level at any time. There is need, therefore, for modernising these workshops and also to augment the repair and maintenance facilities at suitable zonal locations.

3.43 Improved railway performance in the coming years is, therefore, critically dependent upon achieving a very substantial step up in investment and modernisation in this sector. The rate at which this can be done will be inevitably constrained by the overall availability of resources. It is essential, therefore, to maximise the effectiveness with which resources earmarked for expansion and modernisation for the railways are utilised.

3.44 In addition to stepping up investment it is also necessary to achieve a significant improvement in industrial relations. There is clear evidence that despite the longer term disadvantages arising from

inadequate investment in the past, the railways were able to achieve much higher levels of efficiency only a few years ago. The decline in freight movement between 1976-77 when total loadings were 213 million tonnes and 1979-80 when loading dropped to 193 million tonnes, cannot be attributed entirely to the age of capital stock and neglect of investment. There has been a significant decline in industrial discipline with persistent agitations and go-slows affecting work and productivity, especially in the Eastern region. Unless there is a marked improvement in these areas it will prove extremely difficult to achieve the targets for rail movement.

3.45 A major issue in the coming years will be the relative emphasis to be given to freight movements as opposed to passenger traffic. In the past, passenger traffic has received priority. For example, during the period 1976-77 to 1979-80 when freight movement actually declined, passenger traffic continued to rise. With limitations on overall line capacity and traction, there is a clear trade-off in the projected levels of passenger traffic and freight traffic to be carried by the railways. In fact, the increasing use of high-speed passenger trains necessarily ties up a large volume of slow moving freight traffic. Consideration should be given in future to contain the growth of passenger traffic where it can help to meet the requirements of freight transport. Among others, pricing policy should also help to achieve this objective.