CHAPTER 8.3

TRANSPORT

8.3.1 An efficient transport system is a pre-requisite for sustained economic development. It is not only the key infrastructural input for the growth process but also plays a significant role in promoting national integration, which is particularly important in a large country like India. In a liberalised set-up, an efficient transport network becomes all the more important in order to increase productivity and enhancing the competitive efficiency of the economy in the world market. The transport system also plays an important role of promoting the development of the backward regions and integrating them with the mainstream economy by opening them to trade and investment.

8.3.2 Worldwide, transport growth has been consistently higher than the economic growth due to specialisation, sourcing of material on a wider scale, the use of just-in-time strategies, increase and dispersal of retail and wholesale activities etc. Prices of transport services have also been falling as a result of increased productivity due to competition among suppliers of transport services as well as pressure from users. The transport system in India has not been able to keep pace with these developments and considerable effort is required to correct the shortcomings.

8.3.3 India's transport system comprises a number of distinct modes and services. These include railways, roads, road transport, ports, inland water transport, coastal shipping, airports and airlines. The sector has expanded manifold in the first fifty years of planned development, both in terms of spread and capacity (see annexure 8.3.1). Along with the increase in quantity, there have been several developments of qualitative nature, such as emergence of a multi-modal system in the form of container transport, marked reduction in arrears of obsolete assets, improvement in the self- financing capacity of the sector and the establish-ment of new centres of excellence for manpower development. Impressive as this progress is, the country's transport system is far from adequate both in terms of spread and capacity and suffers from a large number of deficiencies and bottlenecks. The quality and productivity of the transport network and resources also needs improvement.

8.3.4 Considering the inadequacies and imbalances in the transport system, the Ninth Plan envisaged a comprehensive package to address various transport sector issues. It emphasised the need for improving the capacity and quality of the transportation system through technological upgradation and removing distortions in the inter-modal mix by evolving a rational tariff and invest-ment policy. It also laid stress on improvement of the self-financing capacity of this sector and on the need for ensuring an improved transport system to provide speedy, efficient, safe and economical carriage of goods and people. While the achieve-ment of objectives and targets set for some sub-sectors, particularly roads and ports, have been encouraging, the progress in the case of others has not been as good. This is particularly true of railways where shortfalls in achievement of physical and financial targets as well as policy objectives are anticipated. The Tenth Plan has to address these shortcomings and also reinforce the achievements. It also has to provide a framework for the long-term development of the transport sector and focus on inter-modal complementarities and competitive-ness.

8.3.5 While capacity shortages on both the main road and rail links continue to be a serious constraint to overall growth, even the existing infrastructure is inefficiently utilised. This is because over the years, a large number of distortions have appeared in the

transport sector because of a deliberate policy or lack of it. Another reason for this state of affairs is inadequate maintenance of the existing assets. The condition is pervasive across various modes of transport. The productivity of freight trains is constrained by the condition of tracks and rolling stock. The net tonne km. per route km. for rail is 4.21 million km in India whereas it is 23.4 million km. in China. Though the Indian road network appears very large, only about half of the roads are paved and only 20 per cent of paved roads are estimated to be in good condition. The average productivity of a truck is 200 km. a day against a potential of 350-400 km. that could be possible through reduction of road congestion. Although, various productivity indices in the ports sector have been looking up including reduction in the waiting period for the ships, increase in the turn time etc., there is still scope for further improvement. The delay in the installation of modern instrument landing or traffic control facilities have constrained the capacity of our major international airports while inadequate draft in our waterways limit the use of inland water transport.

Transport and Energy

8.3.6 Some of the demand for transportation is due to administrative policies that are often at variance with the pattern of demand that would emanate from the market economy. Presently coal and POL together constitute around 55 per cent of total rail traffic. The movement of coal by railways is mainly for power generation. This is the result of the insistence by State Electricity Boards on locating power plants within the geographical boundaries of the State regardless of the distance from the source of fuel supply. The problem was redressed to some extent by the creation of the National Thermal Power Corporation. It may diminish further with the onset of reforms in the energy sector, the emergence of strong grid to transfer power from one location to another, development of mechanism that will permit the trading of power across State boundaries etc. As a result, in the near future, there may be change in the pattern of setting up of power plants. This would create an opportunity for the transportation sector, particularly for the railways to move towards more high value cargo traffic such as container traffic.

Transport and Environment

8.3.7 Creating transport infrastructure and operating transport services have major implications for the environment. With rapid economic growth, increase in population and increasing integration of the economy, the demand for transport services is rising at a fast pace. This is, however, leading to the use of scarce land and contributing to the atmospheric pollution in a big way. Sound pollution, road congestion, etc., are other environmental hazards due to transport. Water transport, in addition, leads to pollution of sea and coastal waters and also endangers marine life. While steps are necessary to minimise the environmental impact of transport infrastructure and services in general, priority attention needs to be given to the road transport sector, particularly in large cities, where the adverse impact on the environment is maximum.

8.3.8 All major projects, including those in the transport sector require environmental clearance before they are taken up. In large cities like Delhi, initiatives have been taken to enforce Bharat Stage II norms for vehicular emission. Stricter norms conforming to Euro III-IV are also under consideration. However, what is required is a nation-wide policy on the use of clean fuel and phasing out of old vehicles. There is also need to improve the quality and efficiency of the public transport system in order to reduce dependence on private vehicles. In the larger national interest, it is also important that rail transport, which is a cleaner and more fuel-efficient system vis-a-vis road transport is accorded higher priority.

Safety

8.3.9 Safety of operation is an area of concern in all modes of transport. Though the accident rates have come down over the years, the number of fatalities remains high. In the road sector, the sheer magnitude and severity of road accidents require immediate attention. The number of fatalities has increased to over 70,000 per annum. India's share

in the world vehicle population is only 4.3 per cent whereas its share in fatality is 13 per cent. The severity of accidents in India is evident from the fact that on an average 1 person gets killed in 5 accidents, whereas in developed countries a fatality occurs in 10 to 85 accidents. The total estimated social cost on account of accidents in the country is estimated at Rs. 55,000 crore per year. A multi-pronged attack, encompassing engineering, education and enforcement of regulatory provisions, is required to tackle the problem. In addition, there is a need to prepare a realistic National Road Safety Policy to bring down the number of accidents within a fixed time frame.

8.3.10 In the railway sector, the incidence of train accident per million train kms, which is the universally accepted safety index, dropped from 5.5 in 1960-61 to 0.65 in 1999-2000. Nevertheless, the frequency of rail accident has been an area of concern. To a large extent, train accidents could be attributed to obsolete railway equipment. As a result, a Special Railway Safety Fund with a corpus of Rs.17,000 crore has been approved to meet the requirement of track renewal rehabilitation of bridges, replacing overaged rolling stock. In order to minimise accidents due to oversight /negligence of staff, there is need for more automation of railway signalling and monitoring of train movement.

8.3.11 There is also high incidence of accidents in the Inland Water Transport (IWT) sector which caters mainly to passenger traffic. The IWT however, is in the unorganised sector and there is absence of proper data on such accidents. In the civil aviation sector, the stress on safety would mean better equipment for scanning passengers and luggage. The Government accords a very high priority to security of civilian aircraft.

Structural Changes in the Economy

8.3.12 The Indian economy is going through structural changes. The share of value added by the primary sector is consistently declining whereas the share of non-primary sector has been increasing as indicated in table 8.3.1.

Table 8.3.1

Sectoral composition of Gross Domestic Product
(Percentage distribution at 1993-94 price)

Proportion in total (%)

GDP at factor cost at 1993-94 prices

S.No.	Sector	1993-94	1996-97	1990-00 QE	2000-01 RE
1.	Agriculture, forestry & fishing	31.0	28.5	25.2	24.0
2.	Mining and Quarrying	2.6	2.4	2.3	2.3
3.	Manufacturing	16.1	18.2	17.1	17.1
4.	Electricity, gas & water supply	2.4	2.4	2.5	2.4
5.	Construction	5.2	4.8	5.1	5.1
6.	Trade, hotel& restaurant	12.7	14.0	14.6	14.6
7.	Transport, storage & communication	6.5	7.0	7.3	7.7
8	Financing, ins., real estate & bus servs.	11.5	11.3	12.7	13.2
9.	Community, social & pers. Servs.	12.0	11.4	13.2	13.5
10.	**TOTAL**	**100**	**100**	**100.0**	**100.0**

8.3.13 The demand for transport is influenced by these structural changes. For example, a decline in the share of agriculture and an increase in the share of manufacturing may lead to an increase in demand for transport. Slower growth in population, however, may reduce demand for transport, which may partly be offset by the fact that the share of mobile population (ages 15-60) is likely to increase. Taking all factors into account, it is expected that traffic elasticity with respect to GDP will continue to decline in line with the past trends but will still be around 1. This growth in transport demand has to be met by expanding domestic supply as transport infrastructure is non-tradable. Investment in transport must, therefore, reflect the need to make up for existing capacity shortages and also to allow for growth in demand.

Data Base

8.3.14 It is necessary to develop an adequate transport database comprising traffic flows and cost, which must be systematically collected and updated. In spite of recommendations of various committees, such data is not collected regularly. The efforts made in the past related only to collection of inter - regional traffic flows, and the growing intra-regional traffic has not been studied. The cost data is limited to a few commodities and does not take into account perspective technological improvement. The study of the past traffic flows also did not consider the impact of urbanisation. It is essential that data on traffic flows and cost should be collected regularly, preferably under the aegis of Planning Commission. These studies would not only be useful in formulating a transport policy but also in planning and implementing projects, both by the public and private sector.

Transport and Budgetary Allocation

8.3.15 Budgetary resources for the transport sector are likely to be limited, especially when fiscal prudence is the overriding consideration. However, within the budgetary constraints, transport infrastructure development needs to be treated as a high priority area for continued resource allocation. Despite these efforts, the total resource requirement would greatly exceed the capacity of the budget to meet the costs of maintenance and expansion. Internal generation of resources through rational pricing and user charges is, therefore, essential for the successful development of transport infrastructure. Increasing participation of the private sector would also be necessary to augment the resource base and increase competitive efficiency. In view of the resource constraint, it is also necessary to give priority in public investments to projects that sustain agricultural and industrial growth and support the country's foreign trade. Further, for the purpose of policy planning, the transport system must be viewed as an integrated structure in which various modes complement each other, have an appropriate interface and. where possible, provide healthy competition to each other. This competition must be conducted within a framework in which each mode is able to operate on a level playing field so that its comparative advantages and economic efficiencies are properly reflected in costs to the users.

Technological Upgradation

8.3.16 Despite impressive expansion over the years, the entire Indian transport network is characterised by many deficiencies and a major exercise in expansion of capacity and modernisation is necessary. This will have to be accompanied by technological upgradation in many critical areas. The need for new technology acquires greater urgency because the transport sector in India has been suffering from slow technological development for a long time. This has led to a situation of high cost, low energy efficiency, higher pollution and slow movement of passenger and freight traffic. The magnitude of the task of capacity augmentation and replacement of overaged assets offers an opportunity for technological upgradation in each of the transport sub-sectors.

Regulatory Frameworks

8.3.17 The basis of the market economy argument is that an optimum allocation of resources will take place if the prices are allowed to reflect the real economic cost, and consumers of intermediate and final products make their choices on the basis of these prices. This presumes that the market must

be competitive and all costs pass through the market. These conditions do not prevail in the transport sector anywhere in the world, much less in India. There are a number of factors which contribute to market failure in the transport sector. Some of the transport services and infrastructure are more in the nature of public goods. The economies of scale, an element of sunk cost, need for coordination and presence of externalities, all stand in the way of effective functioning of the market. The presence of externalities leads to over-production or under-production of transport, depending on whether the externalities are negative or positive. Therefore, there is need to take regulatory measures to correct distortions in the transport sector.

8.3.18 The broad policy thrust of the Tenth Plan towards the transport sector has to be on the following:

- Meeting the transport demand generated by higher growth of gross domestic product (GDP).
- Ensuring transport growth in a manner that all regions of the country participate in the process of economic development and is paid special attention to integrating remote regions such as the North-East into the economic mainstream.
- Capacity augmentation, quality and productivity improvements through technology up-gradation and modernisation.
- Emphasis on higher maintenance standards so as to reduce need for frequent reconstruction of capacity.
- Higher generation of internal resources and increased private sector participation in providing transport services.
- Increase in overall economic efficiency by bringing in competition into the provision and maintenance of transport infrastructure and services wherever possible.
- Higher emphasis on safety, energy efficiency, environmental conservation and social impact.
- Developing an optimal inter-modal mix, where each mode operates efficiently and according to its comparative advantage, and complements services provided by other modes of transport.

RAILWAYS

8.3.19 The Indian Railways, with a capital base of about Rs. 55,000 crore, is the principal mode of transportation for carrying bulk freight and long distance passenger traffic. Given India's continental size, geography, resource endowment and diver-sity, the Railways play a key role in not only meeting the transport needs of the country, but also in binding together dispersed areas, thus, promoting national integration. It also plays a key role during war and emergencies when huge quantities of material and men are required to be moved across the country at short notice. In spite of these inherent advantages, the Railways, which is the sole high capacity transport mode capable of meeting the long-term transport needs of the country, has not maintained its market share.

REVIEW OF NINTH PLAN

8.3.20 During the Ninth Plan, the financing pattern of the Railways shows a greater reliance on the gross budgetary support. While the Ninth Plan had emphasised the need for financing the Railway Plan mainly through internal resources, the actual mobilisation of internal resources dropped from Rs. 3,452 crore in 1997-98 to Rs. 2,463 crore in 2001-02. (Table 8.3.2)

8.3.21 The market borrowings of Indian Railways began in 1987-88, when it was strapped for funds for its annual plans. At present, market borrowing is done through three different sources viz. (i) leasing of rolling stock through the Indian Railway Finance Corporation (IRFC); (ii) leasing of wagons under the Own Your Wagon Scheme (OYWS) and (iii) private participation in execution of projects through Build Operate Lease Transfer/ Build Operate Transfer (BOLT/BOT). The nature and extent of borrowing during the Ninth Plan is given in Table 8.3.3.

Table 8.3.2

Resource Mobilisation for the Ninth Five Year Plan

(Rs. crore)

Year	Internal Resources		Market borrowings through IRFC, OYWS & BOLT		Capital from General Exchequer		Total
1997-98	3452	42%	2795	34%	1992	24%	8239
1998-99	3455	39%	3217	36%	2185	25%	8857
1999-2000	3550	39%	2919	32%	2588	29%	9057
2000-01	2901	31%	2897	31%	3597	38%	9395
2001-02 (RE)	2463	23%	2753	25%	5641	52%	10857
Total (Provisional)	15821	34%	14581	31%	16003	35%	46405

Table 8.3.3

Total Borrowings During the Ninth Five Year Plan

(Rs.Crore)

Year	Borrowing Through							
	IRFC		OYWS		BOLT/BOT		Total	
	Amount	%age	Amount	%age	Amount	%age	Amount	%age of total outlay
1997-98	2236	27%	236	12%	323	16%	2795	34%
1998-99	2941	33%	193	2%	83	1%	3217	36%
1999-00	2785	31%	134	1%	0	0%	2919	32%
2000-01	2818	30%	79	1%	0	0%	2897	31%
2001-02(RE)	2743	25%	10	0%	0	0%	2753	25%

8.3.22 During the Ninth Plan period, the sum total of budgetary support provided in the various annual plans exceeded the total budgetary support. However, generation of internal resources and borrowing plan fell short of the targets. (Table 8.3.4)

Physical Targets and Achievements

8.3.23 Table 8.3.5 indicates Ninth Plan targets and achievements.

8.3.24 The Indian Railways exceeded the Ninth Plan projection of passengers in terms of passenger km. There is a shortfall in originating freight to the extent of 36 million tonnes (mt) in the terminal year of Ninth Plan due to the recessionary trends in the economy.

Productivity

8.3.25 The Indian Railways has had a healthy tradition of sustained improvement in the utilisation of assets. Table-8.3.6 shows wagon utilisation registered a continuous improvement from 1996-97 to 1999-2000. It increased from 1,840 net tonne km. (NTKM) per wagon per day in the last year of the Eighth Plan to 2,027 NTKM per wagon per day in 1999-2000, i.e., an increase of about 10 percent. The wagon turn-round also improved from 8.5 days in 1996-97 to 7.7 days

Table 8.3.4
Outlay and Expenditure of the Railways during the Ninth Five Year Plan

(Rs.Crore)

Year	GBS	Borrowing	IR	Total
1997-98 B.E	1831	3050	3419	8300
Actual	1992	2795	3452	8239
1998-99 B.E	2200	2900	4400	9500
Actual	2185	3217	3455	8857
1999-00 B.E.	2540	3000	4160	9700
Actual	2588	2919	3550	9057
2000-01 B.E.	3840	3668	3492	11000
Actual	3597	2897	2901	9395
2001-02 B.E	3840	4000	3250	11090
R.E.	5641	2753	2463	10857
TOTAL OUTLAY	14251	16618	18721	49590
Likely Exp. During Ninth Plan	16003 (35%)	14581 (31%)	15821 (34%)	46405

Table 8.3.5
Ninth Five Year Plan Growth in Freight and Passenger Traffic

Traffic Category	Unit	Ninth Plan	
		Target	Achievement
Originating Freight	Million Tonnes	525	489
Freight Net Tonne kms.	Billion	353	323
Originating Passengers	Million	4782	5000
Passenger km.	Billion	399	473

in 1999-2000. Track utilisation improved from 6.45 NTKM to 6.85 NTKM (6.2 per cent). The improvement in track utilisation in terms of passenger km. was even higher (16 per cent) .

8.3.26 In terms of manpower productivity, the performance levels in 1999-2000 are significantly better than in 1996-97. The manpower productivity in passenger km. improved by more than 17 per cent and in terms of net tonne km. by almost 6 per cent over this period.

OBJECTIVES FOR THE TENTH PLAN

8.3.27 There is a need for a strategic shift in the objectives of the Railways so that it can regain some of the market it has lost over the past few decades to other competing modes of transport. In the light of massive investment taking place in the highway and pipeline sectors, the Railways must reorient their objectives in order to cope with a more competitive market. Indian Railways will have to become a more user-friendly and market-savvy

Table 8.3.6
Ninth Five Year Plan Productivity Indicators of Railways

Sl. No.	Item	1996-97	1997-98	1998-99	1999-2000	% increase/ decrease
1.	**Net tonne km. per wagon per day (B.G.)**	1840	1894	1904	2027	(+)10.16
2.	**Wagon turn-round (in days)(B.G.)**	8.5	8.1	19.0	7.7	(+)9.41
3.	**Net tonne km. per route km. (million)**	6.45	6.52	6.32	6.85	(+)6.20
4.	Passenger km. per route km.(million)	7.73	8.04	8.40	8.98	(+)16.17
5.	Engine km. per day per engine in use for freight (B.G.)					
	(i) **Diesel**	403	400	396	393	(–)2.48
	(ii) **Electric**	401	422	444	442	(+)10.22
6.	Engine km. per day per engine in use for passenger (BG)					
	(i) **Diesel**	569	544	552	569	No increase or decrease
	(ii) **Electric**	533	550	550	551	(+)3.38
7.	Manpower Productivity					
	(i) Net tonne km. per employee (million)	0.18	0.18	0.18	0.19	(+)5.56
	(ii) Passenger km. per employee (million)	0.23	0.24	0.26	0.27	(+)17.39

organisation, which responds quickly to customer needs.

8.3.28 The thrust has to be on modernisation and technological upgradation of the Railway system, particularly along the Golden Quadrangle and its diagonals. With a view to augmenting its capacity and improving the safety and reliability of railway services, the Indian Railways need to run primarily on commercial lines. While it could continue to play its social and developmental role, it should be suitably compensated for such services. At the same time, Railways needs to shed those activities which are not connected to the core business of passenger and freight.

POLICY ISSUES

8.3.29 It is now well-acknowledged that the Railways policy framework has some inherent weaknesses that prevent its healthy growth. As a result of these policy distortions, the Railways are not able to meet the increasing competition from the road sector.

8.3.30 These policy distortions are reflected in the deteriorating financial position of the Railways. The share of internal resources in the total Plan has been declining and Indian Railways today is on the verge of financial crisis. For the first time in 17 years, in 2000-01 and 2001-02, Indian Railways was unable to pay dividend on its past investment to the Government. In 2000-01, a sum of Rs. 1,823 crore as dividend was deferred and in 2001-02, Rs. 1,000 crore was deferred. The Mid-Term Appraisal of the Ninth Plan had spelt out the need for stringent corrective measures. The necessity of correcting the prevailing policy structure is felt to a much greater extent now. Several policy reforms are

essential so as to introduce greater financial discipline in the functioning of the Railways.

Rationalisation Of Rail Tariff

8.3.31 The most important policy distortion is the skewed tariff policy which overcharges freight movement in order to subsidise ordinary passenger traffic. Freight rates increased by around 12 per cent in 1997-98, 4 per cent in 1999-2000 and further by 5 per cent in 2000-01. The passenger fares have hardly increased during the Ninth Plan period. As a result, the cross subsidisation has actually increased with the total subsidy on Second Class fares and suburban passenger fares increasing to almost Rs. 3,800 crore.

8.3.32 In the Tenth Plan, a major exercise to rebalance the rail tariff would be undertaken. Such an exercise would include marked improvement in the fare-freight ratio, readjustment of the relativity index in different classes of travel and reduction in cross subsidy within the freight segment.

Increased Share In Freight Traffic

8.3.33 One of the contributing factors for the decline in the financial fortunes of Indian Railways is the loss of freight market share. Freight has been the key earner for Railways. The Railways cannot afford to continue the historical rate of growth of 3-4 per cent in freight traffic movement and needs to pursue a high growth rate. Otherwise, not only will the Indian Railways get marginalised but this would also lead to an economic slowdown due to infrastructural bottlenecks.

8.3.34 In order to increase its market share, the Railways has to improve the quality of its services. Door to door service through the process of containerisation with necessary road links as a part of service would provide a major boost in this regard. Reducing the time taken in delivery of goods through introduction of faster freight trains and steps towards making freight service 'user friendly' would help in increasing the share of Railways in freight traffic.

Technological Upgradation

8.3.35 Upgrading technology in all spheres of activities needs greater attention so as to improve reliability, reduce maintenance cost and increase customer satisfaction. Technological improvements are, therefore, envisaged in tracks, wagons, coaches, Electric Multiple Units (EMUs) and locomotives. Tracks would be improved to cater to higher axle load and speeds together with better methods to detect rail defects. Wagons with improved axle loads, speeds and payload-to-tare ratio would be introduced. The cost of maintenance of coaches and EMUs is to be reduced by introducing stainless steel coaches. For greater comfort, air-springs are to be used in EMUs. Higher horse power (HP) locos and three-phase technology in already introduced locomotives would be continued.

8.3.36 The application of information technology (IT) to various activities of Railways also deserve special attention. In the passenger segment, the Railways has taken a number of initiatives in this respect. The massive passenger reservation system managed by CRIS - an organisation of the Indian Railways, is the world's largest reservation system

Box 8.3.1
Opportunity to Regain Freight Traffic

Indian Railways has experienced continuous decline in its position vis-a-vis the road transport system. To some extent, this could be explained by the fact that as the economy progresses, the share of low-volume high-value commodities increases and that of high-volume low-value commodities decreases which puts the Railways in a disadvantageous position. But considering India's continental size, geography and resource endowment, the Railways should continue to play a lead role in the transport sector. At present, Railways carry only 65 per cent of the long distance bulk traffic. By increasing the share to 80-85 per cent and through an accelerated programme of containerisation, it could substantially step up its share in non-bulk traffic. The failure of Railways to increase the market share is, therefore, not due to lack of opportunities.

Box 8.3.2
Technological Improvements

The Railways must concentrate on reducing the speed differentials between freight and passenger services by raising speeds of freight cars to 100 km/hr. This will help improve traffic throughput in the system. It is also necessary to improve freight car designs to secure higher payload-to-tare ratio for freight and to improve speed. Locomotive technology is being improved through the adoption of state-of-the-art locos as well as upgrading the existing fleet through retro-fitment. This process must be accelerated. Mechanisation of track maintenance is another area which should receive higher priority. Introduction of modern signalling and telecom facilities should get a fillip as this would help in augmenting track capacity.

that connects about 2500 terminals in different cities to facilitate reservation of passenger seats and issue of tickets. However, the use of IT in the freight segment has not been very satisfactory. The Indian Railways have completed the first phase of the computerised Freight Operation Information System to enable online tracking of cargo. The second phase of the project covering Terminal Management System, when completed, would improve the quality of services substantially. It is, therefore, necessary that the computerisation of the freight system is given the highest priority. The increased use of IT by Indian Railways would lead to optimal utilisation of the existing infrastructure, rolling stock and man-power and, in the process, not only increase revenue from freight traffic but also effect substantial reduction in operational cost. Application of IT to various activities of Railways would also improve the image of the Indian Railways.

Investment Strategy

8.3.37 At present, the investment strategy of Indian Railways suffers from several weaknesses. The main flaw is that the investment in the projects is not properly linked to the augmentation of capacity and improvement in quality of service. The Expert Group on Indian Railways (Rakesh Mohan Committee) has submitted its report to the Ministry of Railways which is studying the recommendations.

8.3.38 The Railways has a large number of ongoing projects, which require huge funds for completion. The requirement of funds for completing these projects under various categories is indicated in Table 8.3.7.

Table 8.3.7

Throw forward Position of Railway Projects as on 01st April, 2002

(Rs. crore)

Type of Projects	Number of Projects Total	Estimated Throw-forward
New lines	83	21305
Gauge conversion	70	10467
Doubling	92	3930
Electrification	23	932
Metropolitan transport projects	18	1295
Total	**286**	**37929**

8.3.39 The Ninth Plan and the Mid-Term Appraisal of the Ninth Plan stressed the need for prioritisation of these projects. However, no head-way could be made in this direction. The available resources continue to be spread thinly over a large number of projects. It is high time that a greater commercial orientation is given in allocating funds for the completion of projects.

8.3.40 In the Tenth Plan, a detailed exercise aimed at screening and prioritising of projects would be taken up keeping in view the viability of these projects, their contribution towards augmenting capacity of the system, operational considerations and availability of resources.

8.3.41 In the new investment strategy, the emphasis would be on capacity augmentation and improvement of the quality of services. The Golden Quadrangle and its diagonals, which comprise 25 per cent of the total broad gauge route km. carry more than 65 per cent of the total freight traffic and more than 55 per cent of the total passenger throughput, would be given priority. The capacity augmentation of the system and improvement in quality of services would be carried out through technological upgradation and modernisation. While augmenting capacity in various sections, route-wise study based on origin and destination survey would be carried out. This would help in selecting the projects on the basis of expected returns.

8.3.42 An important requirement for carrying traffic is the availability of adequate terminal facilities, both for coaching as well as freight traffic for quicker release of rolling stock. Development and modifications in terminal facilities are required to cater to improved design of rolling stock, both freight and coaching. During the Tenth Plan, major thrust will have to be given on terminal facilities.

8.3.43 As a step towards strengthening the Railway system, the Prime Minister on 15th August 2002 has announced National Rail Vikas Yojana through a "non budgetary investment initiative". The salient features of the Yojana are as under :

A. Capacity bottlenecks in the critical sections of the railway network will be removed at an investment of Rs. 15,000 crore over the next five years i.e., Tenth Plan period. These projects would include :

   (i) Strengtehening of the Golden Quadrilateral and its Diagonals to enable the Railways to run more long-distance mail/express trains and freight trains at a higher speed of 100 kmph, at a cost of Rs. 8,000 crore;

   (ii) Strengthening of rail connectivity to ports and development of multimodal corridors to hinterland, at a cost of Rs. 3,000 crore;

B. Construction of four mega bridges - two over River Ganga, one over River Brahmaputra, and one over the River Kosi, at a cost of Rs. 3,500 crore.

C. Accelerated completion of last mile and other important projects, at a cost of Rs. 763 crore.

Reduction in Operating Cost

8.3.44 In future, the major part of resources for the development of Railways would have to come from internal generation.This would mean improve-ment in the financial health and self-financing capability of the Indian Railways, which is largely a matter of revenue generation and reduction in cost. While it may be necessary to effect reduction in various components of operating cost, the most important factor requiring attention is the staff cost.

Box 8.3.3

Unsustainable Staff Cost

The ordinary working expenditure of Indian Railways has gone up from Rs. 12,000 crore in 1994-95 to over Rs. 30,000 crore in 2001-02. The pension charges has registered a 3.5-fold increase during the same period. While expenditure on staff wages and salaries experienced a 2.6-fold increase, the total expenditure on pension, staff wages and salaries constitute about 53 per cent of the total ordinary working expenses. One of the reasons for this high percentage is the fact that the Railways carry excess manpower to the extent of 25 per cent . A reduction of 2-3 per cent per annum in the overall strength should be targeted in the Tenth Plan.

Organisational Restructuring

8.3.45 In the last 25 years, a number of major railways in the world have gone through the process of restructuring. The approach followed by various railways was not uniform but the process governing restructuring and goals were similar. The main objective of change was to regain the loss of market share and improving the financial viability of railways.

8.3.46 The Approach Paper to the Tenth Five-Year Plan suggested that the need for setting up a Railway Tariff Regulatory Authority for tariff fixation on technical and commercial considerations may be considered. It emphasised that the non-core sector and peripheral activities such as manufact-uring units may be spun off as individual corpo-rations. These could remain in the public sector for the time being but should operate as other public sector units do, using commercial accounting principles. Restructuring of core activities of Indian Railways appears desirable in order to improve efficiency and to help meet the objectives of the organisation.

8.3.47 The Expert Group on Railways considered the issue relating to restructuring. The Group recommended that the Indian Railways should function on commercial lines and its management may be given a degree of autonomy considered desirable and available to any other commercial organisation. It suggested that the Railways should be compensated for meeting obligations that are purely social and developmental in nature. The Group felt that the Railways may be corporatised, to enable it to work as an independent commercial organisation.

8.3.48 The Group further recommended that the Central Government continue to formulate policy and an Indian Railways Regulatory Authority be set up to regulate the activities of the Indian Railways as a monopoly supplier of Railway services, particularly, related to tariff settings.

8.3.49 The present system of accounting follo-wed by Indian Railways is not transparent. While this system has worked well for the internal manage-ment of the Railways, it is not well understood in the business world outside the Railways. The Expert Group on Railways has suggested that the accounts of the Railways should be in accordance with the standard business procedures. It is important that the accounts of the Indian Railways are recast. This could be under taken irrespective of any form of governance of the Indian Railways.

Participative Project Funding

8.3.50 Private sector participation in various projects of Railways has not been forthcoming. The Railways had initiated the OYWS and BOLT so as to mobilise private sector funds. The response to these two schemes has been somewhat lukewarm. During the Tenth Plan various options for private/public partnerships in Railway projects would be explored.

8.3.51 The Railways has evolved a policy for a public-private partnership and a few schemes are already functioning. Port connectivities have been planned through this model. This envisages equal participation by the Railways, project beneficiaries and the financial institutions. The old BOLT scheme has been replaced by new BOT scheme which envisages private participation by a consortium of construction contractors and financiers.

8.3.52 Various models of participation by State Governments in railway projects are available. Some States have contributed two-thirds of project cost while some are on a 50:50 sharing basis with Railways. In a few cases, Special Purpose Vehicles (SPVs) have been formed for specific execution. This cost-sharing model needs to be further pursued in the Tenth Plan.

Railway Safety

8.3.53 Railway safety is important because it concerns human lives. Besides, poor safety record reduces the reliability of assets which imparts a poor image of the Railways in the market for transport services.

8.3.54 Since the Indian Railways is a labour-intensive organisation, proper training and motivation of its labour force would also contribute to improving railway safety. More than 65 per cent of railway acci-dents are attributed to failure of the railway staff. While the staff is disciplined and dedicated, it lacks adequate training. However, there is scope for improving the same and extending it to areas not yet fully covered. The Railways also have a very extensive training infrastructure. The other causes of accidents include failure of equipment, such as, rolling stock, tracks, etc., and sabotage.

8.3.55 Recognising the significance of improving railway safety, a non-lapsable Special Railway Safety Fund worth Rs.17,000 crore has been created. It is expected that this fund would help in clearing the arrears of track renewal and replace-ment of overaged railway assets over a period of six years from 2001 to 2007. The work to be covered includes renewal and replacement of tracks, bridges, rolling stock and signalling gear including communication and safety enhancement works.

Rationalisation of Power Tariff

8.3.56 The abnormally high tariff on power charged by state electricity boards (SEBs) has put an extra burden on the Railways. In the long run, in the interest of energy and environmental policy, tariff for electric traction needs to be streamlined to bring about uniformity and rationalisation in the tariffs charged by different SEBs in order to ensure that resources are optimally utilised and Railways retain their comparative advantage. The Railways have now initiated measures for the direct purchase of power from the producers at a considerably lower tariff.

8.3.57 In view of the high electricity tariff being charged by the State Governments, the Railways are exploring the possibility of setting up dedicated captive thermal power plants to meet their needs and to reduce expenditure on electric traction energy bills.

Physical Targets

Freight

8.3.58 The freight traffic projections for the termi-nal year of the Plan has been based on the demand projection and the users' forecast. The freight traffic is expected to increase at the rate of 5 per cent per annum. The projections in terms of originating freight traffic and freight tonne kms. are given in Table 8.3.8.

Table 8.3.8

Tenth Five Year Plan Projection for Freight Traffic

Freight Traffic	2001-02	2006-07
Originating Freight (Million Tonnes)	489	624
Freight Tonne Km. (Billion Tonnes)	323	396

8.3.59 In order to carry additional freight traffic, a number of steps would be taken. These include introduction of high speed rolling stock, elimination of differential speed between passenger and freight trains, introduction of higher axle load at selected routes, improvement in connectivity to ports and asset reliability, improvement in terminal operations, etc.

Passenger Traffic

8.3.60 Passenger traffic is expected to increase at the rate of 5.7 per cent in the Tenth Plan. Table-8.3.9 indicates traffic projections for the passenger traffic.

Table 8.3.9

Tenth Five Year Plan Projection for Passenger Traffic

Passenger Traffic	2001-02	2006-07
Originating Passengers (Million)	5000	5885
Passenger km. (Billion)	473	625

In order to meet the additional traffic demand, the mail and express trains would be augmented to run with 24 coaches. This will also necessitate augmenting terminal facilities, particularly in metropolitan cities and other major stations.

Tenth Plan Programmes

Rolling Assets

8.3.61 The requirement of rolling assets during the Tenth Plan will depend upon the volume of traffic and the efficiency with which they are utilised. In addition, significant improvement will be achieved by reducing the frequency of scheduled mainte-nance and improving reliability of assets on line. This should be possible, especially in view of transfer of technology that has been initiated in the Ninth Plan with respect to high horse-power electric and diesel locomotives as well as coaches. During the Tenth Plan, upgrading of technology is envisaged in EMUs coaching stock and introduction of high speed and higher axle load wagons.

8.3.62 Based on projected traffic and improvement in utilisation, requirement of rolling stock in the Tenth Plan is given in Table 8.3.10.

Table 8.3.10

Tenth Five Year Plan Requirement for Rolling Stock

(Numbers)

Item	Plan for Procurement
Wagons (Nos. in FWUS) (excluding deptt.)	65,000
Electric locos (Nos.)	343
Diesel locos (Nos.)	444
BG Conventional coaches (VUS)	9160
EMUs (VUS)	1965

The stress will be on procurement of high horsepower, state-of-the-art electric and diesel locos.

8.3.63 Technological upgradation and modernisation of rolling assets are proposed during the Tenth Plan period. This would cover introduction of more track-friendly bogies that require less maintenance. Reducing the speed differential between freight and passenger trains is also planned. It is proposed that all new acquisitions should be of high speed freight stock (fit to run at 100 kmph) to eliminate the speed differential between freight and passenger trains and introduce rolling stock fit to run at 120 kmph over selected routes. This would enhance the capacity with minimal inputs.

8.3.64 Apart from acquisition of rolling stock through market borrowings, the possibility of private sector participation through innovative leasing schemes would be explored.

FIXED INFRASTRUCTURE

Track

8.3.65 The total arrears of track renewal at the beginning of the Tenth Plan and including those arising during the Tenth Plan would be 34,990 km. (Table 8.3.11).

Table 8.3.11

Arrears in Track Renewals : Physical

Track	Total track length (km)	Arrears of renewal at the beginning of Tenth Plan (km)	Arisings during the Tenth Plan period (km.)	Total due for renewal (km.)
Broad gauge	61000	11200	8800	20000
BG, yard and sides		2750	3280	6030
Metre gauge	15,000	6870	950	7820
Narrow gauge	3,600	640	500	1140
Total	79,600	21990	13000	34990

8.3.66 While taking up the programme of renewal, the tracks would be upgraded particularly on Golden Quadrangle routes so as to facilitate the running of freight trains at 100 km. per hour.

Bridges

8.3.67 It is planned to clear all arrears of rebuilding/rehabilitation of distressed bridges as well as meet additional requirements that may arise during the Tenth Plan period. It is also planned to rebuild/strengthen old bridges with maximum risk of failure which were identified and recommended for replacement/strengthening by a Technical Committee of Railway Board on Bridge Rehabilitation in March 1989.

Signalling and Telecommunication

8.3.68 Under this programme, the arrears of replacement of signalling gear at all stations on important routes would be liquidated. It is also proposed to provide track circuiting so as to cover all high density routes.

New Lines

8.3.69 Given the large portfolio of ongoing projects, emphasis in the Tenth Plan would be to accord priority to projects that are in an advanced stage of completion. The new lines which are likely to be completed during the Tenth Five Year Plan include: Banspani-Daitari; Hubli-Ankola; Jammu-Udhampur; Udhampur-Katra; Qazigund-Baramulla; and Kolayat-Phalodi.

8.3.70 Indian Railways is taking up construction of new lines under cost-sharing arrangement and through the SPV route in association with the State Governments.

8.3.71 As against 662 km. of new lines completed in the Ninth Plan, a total of 1310 km. of new lines are expected to be completed during the Tenth Plan period which will give connectivity to some mineral rich areas, ports and strategic areas.

Gauge Conversion

8.3.72 The thrust would be on completing the works that provide connectivity to ports/industry and those projects which enhance the capacity of saturated sections and remove bottlenecks in the movement of traffic. A total of 2365 km. of gauge conversion is planned during the Tenth Plan period as against 2103 km. converted to broad gauge during the Ninth Plan period.

Doubling

8.3.73 In order to augment the capacity, particularly on the Golden Quadrangle, it will be necessary to takeup projects relating to multi-plexing of selected sections. In the Tenth Plan, it is proposed to complete the work on 1500 km. under this head.

Metropolitan Transport Projects

8.3.74 There are a number of Metropolitan projects in progress in various States. The cost sharing arrangements are already agreed to by some State Governments. This will be a necessary condition for all the new projects in view of the negative return on most of the Metropolitan projects.

Terminal Facilities

8.3.75 An important requirement for carrying the traffic is adequate terminal facilities, both for coaching as well as freight traffic. Development and modifications in terminal facilities are also required to cater to improved design of rolling stock. During the Tenth Plan, major thrust will have to be given on terminal facilities. The scheme-wise break up of the Tenth Plan outlay for Ministry of Railways is given in the Appendix.

Path Ahead

- Rebalance tariff to make Indian Railways competitive, market sensitive and a user-friendly organization.
- Augment capacity through technological upgradation and modernisation.
- Re-orient investment strategy, focusing on projects that aim at improving capacity in high-density corridors.
- Spin off non-core activities as separate entities.
- Constitute a Railway Regulatory Authority to de-politicise fixation of rail tariffs and also regulate railway activities.
- Determine and identify the social and commercial roles of Indian Railways.
- Alter accounting practices of Indian Railways into company format.
- Re-structure the core business activities of Indian Railways on sound commercial lines.

ROADS

8.3.76 Roads are the key to the development of an economy. A good road network constitutes the basic infrastructure that propels the development process through connectivity and opening up the backward regions to trade and investment. Roads also play a key role in inter-modal transport development, establishing links with airports, railway stations and ports. In addition, they have an important role in promoting national integration, which is particularly important in a large country like India.

8.3.77 The country's road network can broadly be divided into three categories viz. (a) National Highways including the National Highway Development Project stretches (b) State Highways and Major District Roads and (c) rural roads. The National Highways, running across the length and breadth of the country, have a length of 58,112 km. Though they comprise only 1.7 per cent of the road network, they carry about 40 per cent of the road-based traffic.

8.3.78 State Highways (SHs) and Major District Roads (MDRs) constitute the secondary system of road transportation in the country. The State Highways provide linkages with the National Highways, district headquarters, important towns, tourist centres and minor ports. Their total length is about 1,24,300 km. Major District Roads run within the district, connecting areas of production with markets, rural areas to the district headquarters and to State Highways/National Highways. It is assessed that the secondary system carries about 40 per cent of the total road traffic and comprises 12 per cent of the total road length. By acting as the link between the rural and urban areas, the State Highways and Major District Roads contribute significantly to the development of the rural economy and industrial growth of the country.

8.3.79 The last link in the chain is rural roads. Rural connectivity is a key component of rural

development and contributes significantly to generating higher agricultural incomes and productive employment opportunities besides promoting access to economic and social services. Studies show that rural roads have a significant impact on poverty reduction.

8.3.80 However, despite their importance to the national economy, the road network in India is grossly inadequate in various respects. The existing network is inadequate and is unable to handle high traffic density at many places and has poor riding quality. The main reason for these shortcomings is the inadequacy of funds for maintenance and improving the quality of the road network. Efforts are now underway to address these issues and improvement in the road network has been accorded a very high priority in development planning in the country.

8.3.81 To bridge the resource gap and to instil competitive efficiency, efforts are being made to associate the private sector with road projects. However, the initial response has not been very encouraging and it is felt that more innovative methods are needed to ensure greater participation of the private sector. Simultaneously, it is also necessary to prioritise road projects according to resource availability so that resources are not spread thinly among large number of projects leading to unwarranted delays.

Review of the Ninth Plan

National Highways

8.3.82 In absolute terms, there has been considerable growth in the National Highways network since Independence. Table 8.3.12 provides a snapshot of various achievements over the years.

8.3.83 The achievements relating to four-laning, two-laning, strengthening of roads during the Ninth Plan period have been satisfactory, keeping in view the availability of funds. There have, however, been some shortfalls in construction of bypasses and bridges primarily due to the time-consuming process of land acquisition and shifting of utilities in the case of bypasses. Construction and design problems have also been noted, especially for major bridges. A large number of deficiencies, however, remain in the network in terms of inadequate capacity, insufficient pavement thickness, weak, narrow and distressed bridges/culverts, rail overbridges (ROBs) etc. Table 8.3.13 provides an overview of targets and achievements during the Ninth Plan period.

8.3.84 The National Highway network, however, is under considerable pressure. Out of the total length of 58,112 km., about 25,000 km is under severe strain due to high volume of traffic. One of the main factors responsible for this is the upgradation of large segments of State Highways to

Table 8.3.12

Achievements on National Highways

Period	Total Length* (km)	Widening to two lanes (km)	Widening to four lanes (km)	Strengthening of pavement (km)	Major Bridges (Nos)
1947-1969	24,000	14,000 **	Nil	Nil	169
1969-1990	33,612	16,000	267	9,000	302
1990-2001 (August 2001)	58,112	3,457	1,276	7,000	87
Total		33,457	1,543	16,000	558

* Length at the end of the period.

** Includes a length of 6,000 km which were already two lane at the time of declaration as National Highways

Table 8.3.13

Targets/Achievements during Ninth Plan

S. No.	Scheme	Unit	Ninth Plan Target (1997-2002)	Ninth Plan Achievements (1997-2002)
	Normal NH works			
1	Widening to two lanes	Km	1791	1955
2	Widening to four lanes	Km	944	797
3	Strengthening weak 2 lanes	Km	3042	3511
4	Bypasses	No.	59	30
5	Major Bridges / Minor Bridges including ROBs	No.	633	442

National Highways during the Ninth Plan. Available resources are, therefore, spread too thinly, resulting in poor maintenance and riding quality of the National Highway network. Annexure 8.3.2 provides details of increase in the National Highway network since Independence.

8.3.85 The cost of removing all deficiencies in National Highways at current prices is estimated at Rs.1,64,345 crore. The break-up among various constituent parts is given in Table 8.3.14. This staggering resource requirement necessitates the prioritisation of projects on the basis of traffic density,

Table 8.3.14

Total estimated cost of removing deficiencies on National Highways

(At current prices)

S.No.	Category	Length to be covered	Amount required (Rs. Crore)
1.	Widening from single lane to two lanes	22,522 km.	28,150.00
2.	Improvement of two lane roads: a) Strengthening weak pavement b) Widening to 4 lanes/6 lanes	 19,250 km. 22,000 km	 14,450.00 88,000.00
3.	Construction of expressways	2,000 km	16,000.00
4.	Construction of access controlled bypasses (average 20 km length of bypass @Rs. 7.5 crore per km.	60 Nos	9,000.00
5.	Construction of bridges	210 Nos	425.00
6.	Rehabilitation of bridges	425 Nos	320.00
7.	Miscellaneous (Missing links, Road safety etc)	Lump-sum	8,000.00
	Total :		**1,64,345.00** (Say Rs.1,65,000.00 crore)

development needs and requirement for national integration through better connectivity. The most important project taken-up in this regard is the National Highways Development Project (NHDP) comprising the 5,846-km Golden Quadrilateral connecting the four metropolitan cities of Delhi, Mumbai, Chennai and Kolkata and the 7,300-km North-South and East-West corridors connecting Srinagar-Kanyakumari, with a spur from Salem to Kochi, and Silchar- Porbandar respectively.

National Highways Development Project

8.3.86 The NHDP envisages four-laning/six-laning of the existing two lanes and its implementation has been entrusted to the National Highways Authority of India (NHAI). The NHDP would involve an investment of Rs.54,000 crore and the Government has made arrangements to ensure availability of funds through cess on petrol and diesel, multilateral funding, normal budgetary allocations and market borrowing. In addition, the NHAI will also take up four-laning of about 1,000 km, which includes port connectivity of 400 km and other projects of 600 km at a cost of about Rs. 4,000 crore.

8.3.87 The physical status of NHDP and other roads including port connectivity projects as on July 31, 2002 is given in Table 8.3.15.

Box- 8.3.4

National Highway Development Project

One of the most ambitious projects launched in independent India is the National Highway Development Project (NHDP) comprising the 5,846-km Golden Quadrilateral (GQ), and the 7,300-km North-South, East-West (NS-EW) corridors. Being implemented by National Highway Authority of India (NHAI), the GQ connects Delhi, Mumbai, Chennai and Kolkata and NS- EW Corridors link Kashmir to Kanyakumari and Silchar to Porbandar. The project envisages four /six-laning of the existing network and would involve an investment of Rs.54,000 crore. In addition, NHAI is also taking up four-laning of about 1,000 km of road network that includes port connectivity of 400 km and other projects of 600 km at a cost of Rs.4,000 crore.

2. The financial package for the GQ has been fully tied-up through cess on petrol and diesel, multilateral funding, normal budgetary allocations and market borrowing. Some gaps, however, remain in funding the NS-EW corridor projects. The options for bridging the gap are additional cess on petrol and diesel, toll on roads and market borrowings. Such borrowings could be resorted with the support of a Government of India guarantee or through collateralisation of future cess/toll receipts. Other choices are Build-Operate-Transfer (BOT) and BOT Annuity Schemes. BOT in road construction activities, however, has not received the expected response from the private sector, the concern apparently being uncertainty about future toll receipts. The relatively better response of the private sector to BOT (annuity), which involves a guaranteed annuity payment by NHAI to the investor is a pointer to this fact. The concern of private investor regarding uncertainty of future toll receipts needs closer examination in order to make BOT 'investor friendly'. The sharing of downside risk of traffic flows is one possibility on this regard.

3. The NHAI is also beginning to experiment with private sector participation in road maintenance for NHDP stretches that have been already completed. The move could herald the beginning of a new era in road maintenance, which could be emulated widely for non-NHDP National Highways and State Highways maintenance, which are often in a bad way for want of funds.

4. The GQ is scheduled for completion by the end of 2003 and the NS-EW corridors by 2007. Except for a few slippages, the programme is largely on track and is also expected to be a source of major fiscal stimulus to the economy. The revolution in the road sector is expected to go a long way in promoting the economic development of the country and integrating remote regions with the mainstream economic activity.

Table 8.3.15

Status of NHDP and Other NHAI Projects as on 31 July 2002

Project	Length (km)	Already 4-laned	Under Implementation	Yet to be awarded
Golden Quadrilateral	5846	1159*	4551	136
North-South & East-West	7300	773*	715	5812
Port connectivity	363	56	113	194
Others	653	103	212	338
Total	14162	2091*	5591	6480

* Includes a common stretch of 210 km

8.3.88 The GQ and NS-EW corridors are targeted for completion by December 2003 and December 2007 respectively. Though considerable progress has been made on the GQ project, the award of contracts is falling behind schedule, and this carries the risk of the project not being completed on time. A major streamlining of the monitoring and implementing mechanism is, therefore, necessary to ensure timely completion of the project. Progress of various segments of the GQ including number of contract position is given in Table- 8.3.16.

State Highways

8.3.89 The present condition and stage of development of State Highways and Major District Roads varies widely from State to State. The status of Major District Roads is particularly worrisome. The main reason for this state of affairs is that the funds for the development of this secondary system are very inadequate. The National Highways are provided with reasonable funds for their development at the Central level, while the rural roads receive the lion's share at the State level. In the process, the secondary system of roads is neglected.

Rural Roads

8.3.90 The Ninth Plan set a target of connecting all villages as per the 1991 Census by the end of the Plan period. However, on the basis of information received from States/Union Territories (except five States and one Union Territory for which data on the basis of the 1981 Census has

Table 8.3.16

Corridor-wise details of Golden Quadrilateral

Corridor	4 laned length (km)	Under Implementation Length (km) (No. of contracts)	Balance for award length (km) (No. of contracts)	Total length (km)
Delhi-Kolkata (NH-2)	322	1047(19)	84 (3)	1453
Kolkata-Chennai (NH-5,6 & 60)	146	1538 (37)	–	1684
Mumbai-Chennai (NH4,7 & 46)	197	1093 (23)	–	1290
Delhi-Mumbai (NH8,76 & 79)	494	873 (16)	52 (1)	1419
Total	**1159**	**4551 (95)**	**136 (4)**	**5846**

been used), about 56.55 per cent of total villages are estimated to have been connected by all-weather roads by the end of the Eighth Plan. Notwith-standing the efforts made over the years at the State and Central levels through different programmes, about 40 per cent of the villages in the country still remain to be connected by all-weather roads. According to the information provided by the State Governments, there were about 2.62 lakh uncon-nected villages/habitations in the country on 1st January 2000.

8.3.91 In order to give a boost to rural connectivity, a rural roads programme, the Pradhan Mantri Gram Sadak Yojana (PMGSY), has been launched in October 2000. The primary objective of PMGSY is to provide connectivity, by way of all-weather roads, to the unconnected habitations in the rural areas, so that habitations with a population of 1,000 and above are covered in three years (2000-2003). All unconnected habitations with a population of 500 persons and above are to be covered by the end of the Tenth Plan Period (2007). In respect of the hill States (North-East, Sikkim, Himachal Pradesh, Jammu and Kashmir, Uttaranchal) and the desert areas, the objective is to connect habitations with a population of 250 persons and above. The progra-mme, as a related objective, also aims to achieve an equitable development of the rural roads network in different States/districts so as to fully exploit the latent potential for rural growth. the PMGSY is being implemented as a 100 per cent centrally sponsored scheme.

Road Maintenance

8.3.92 A study by the World Bank showed that US$ 45 billion equivalent invested in main roads in 85 countries has been eroded over the last 20 years through lack of maintenance. This loss would have been averted by preventive maintenance at a cost of less than US$ 12 billion.

8.3.93 In India, the riding quality of the National Highways, State Highways and Major District Roads network is often very poor due to lack of maintenance. Though attention has been given to maintenance work in the Ninth Plan, there is need to considerably step up efforts in this direction, in view of the fact that the cost of *rehabilitation* would be several times more than the cost of maintenance. The availability of resources has been the main constraint in regular maintenance. To overcome this bottleneck, there is need to find ways for associating the private sector with such activities. This would also mean a review of the existing arrangement where State Public Works Departments (PWDs) carry out maintenance work through their road gangs. In certain areas where private sector maintenance has been tried (a 143 km State Highway stretch between Bhopal and Dewas), the results have been encouraging.

8.3.94 Following the 73rd Constitution Amendment Act, rural roads have been placed in the Eleventh Schedule and their upkeep has become the responsibility of the Panchayati Raj institutions (PRIs). Henceforth, all rural roads constructed/ upgraded should be transferred to the concerned PRIs and they should be maintained by them. The state authorities ought to remit the requisite cost of maintenance to the identified PRI, from the State Government funds. Since the Central Government has taken up the responsibility of providing funds to the States as grants for the construction of new rural roads under the PMGSY, it is imperative that the State Government clearly set aside adequate funds for the maintenance of existing rural roads as well as those constructed under the PMGSY. The State Governments must give an undertaking that, apart from meeting the maintenance requirements of existing rural roads, they would set apart a sum equivalent to 5-10 per cent of the funds provided by the Centre from their own resources every year in a separate Maintenance Fund for Rural Roads. This step will help improve the situation of rural roads over the years.

Goals and Objectives for The Tenth Plan

8.3.95 The main objective relating to the road sector for the Tenth Plan is balanced development of the total network. The task would include widening of roads, improvement in riding quality

Box 8.3.5

HIGHWAY MAINTENANCE

The existing road network is under severe strain due to rapid traffic growth, overloading of vehicles and lack of sufficient funds for road maintenance. A broad assessment of highways indicates that about 30% of National Highway network and 60% of State Highway network has poor riding quality.

Riding quality of about 14,300 km of National Highways has been improved in the last two years and improvement in 7,700 km was planned for 2001-02. The basic cause for poor maintenance is lack of funds for maintenance as per norms. They do not exceed 60 per cent of normal requirements for main roads and the amount is much less in the case of rural roads.

Norms for maintenance for different categories of roads have been revised by a Committee set up by the Ministry of Road Transport and Highways (MORT&H) and accepted by the Government. These norms, which take into account the expected level of service from various categories of roads have since been published by the Indian Roads Congress (IRC) and made applicable from 1 April 2001 for National Highways. Copies have also been sent to the State Governments for considering adopting these norms.

The MORT&H needs to institute a comprehensive Highway Management system and Bridge Management System for National Highways in India. These systems would encompass database management system, socio-economic model, HDM 4, Geographic Information system and a computer system platform to support the integration of these components. This approach may also be followed for proper upkeep and maintenance of State Highways.

The present system of financing maintenance is both inadequate and erratic. There is weak accountability and poor monitoring of the maintenance activities. In order to raise efficiency, road administration should explore ways to contract out more and more of their road maintenance activities to the private sector. In certain areas where private sector maintenance has been tried (a 143 km State Highway stretch between Bhopal and Dewas), the results have been encouraging. The possibility of introducing a five-year maintenance requirement in civil construction contracts should also be explored, a beginning for which could be made with National Highway contracts.

The NHAI is also beginning to experiment with private sector participation in road maintenance for completed NHDP stretches. The move could herald the beginning of a new era in road maintenance, which could be emulated widely for non-NHDP National Highways and State Highways maintenance, which are often in a bad way for want of funds.

and strengthening, road safety measures and providing wayside amenities to cater to the growing demand for road services. In addition, 100 per cent rural connectivity with all-weather roads is a priority objective in national planning. Inter-modal issues like road connectivity with airports, railways, ports etc. are also priority issues. The broad goals and objectives for road sector development in the Tenth Five Year Plan are given in Box – 8.3.6.

Mobilising Resources

8.3.96 The main issue in development of roads is mobilising resources for meeting various goals and objectives. This is the most difficult part of the exercise, especially because the demand for funds for the road sector has to compete against claims of other transport, infrastructure and social sectors. The exercise also has to be done in the context of utmost fiscal prudence. Given the limitation of gross budgetary support for road sector projects, emphasis therefore, has to be on (i) generation of resources through the levy of appropriate user charges and (ii) active participation of the private sector in financing and maintenance activities.

8.3.97 Funds for road development have basically been provided though the Government

Box 8.3.6
ROAD SECTOR OBJECTIVES FOR THE TENTH PLAN

The following broad goals and objectives for road sector development have been set for the Tenth Plan:

1. Balanced development of the total road network comprising three functional groups viz., the primary system (National Highways (NH) and expressways), secondary system (State Highways and Major District Roads) and rural roads.
2. Development of roads to be considered an integral part of the total transport system supplementing other modes, integrating the development plans with railways and other modes of transport.
3. Completion of the National Highways Development Project comprising the Golden Quadrilateral and the North-South and East-West corridors.
4. Phased removal of deficiencies in the existing NH network in tune with traffic for the next 10-15 years with emphasis on four-laning of high-density corridors.
5. To plan and take preliminary action for expressways to be built in future in those sections where these can be economically justified.
6. To make long distance travel safer and faster so as to give a boost to the economy.
7. Priority is to be accorded to areas like overloading of trucks, control of encroachments and unplanned ribbon development, energy conservation and environment protection.
8. Greater attention to be paid to rehabilitation and reconstruction of weak/dilapidated bridges for traffic safety.
9. Special attention is to be paid to the development of roads in the North-Eastern region.
10. Particular emphasis needs to be given to the commercialisation of highways particularly the National Highways and State Highways and bringing in the concept of user-charges for sustainable financing of the road sector. Further steps must also be taken to encourage private sector participation in the highway sector. It is necessary to implement the policy of levying toll on all four-lane roads on the National Highway network. States must adopt a similar strategy in respect of State Highways etc.
11. High-density corridors within the network of National and State Highways and Major District Roads should be identified. Such corridors and major inter-state roads should be developed on a priority basis.
12. To improve the quality of life in rural areas and ensure balanced regional development by achieving the PMGSY target of providing connectivity through all-weather roads to all habitations with a population of over 500 persons (as per the 2001 Census).
13. To encourage industry and export by providing sufficiently wide roads leading to industrial centres, ports, mining areas and power plants.
14. To encourage tourism by improving roads leading to centres of tourist importance.
15. To provide wayside amenities along highways.
16. To reduce transportation costs by providing better riding surface and popularising the use of containers and multi-axle vehicles in the haulage of goods.
17. Utmost attention to the proper upkeep and maintenance of the existing road network.
18. To ensure road connectivity where rail link is not available or possible.
19. Integrating the development plan with railways and other modes of transport and to:
    (a) identify feeder roads to important railway routes and undertake needed improvement including periodic maintenance;
    (b) link minor important ports with minimum two-lane NHs/SHs;
    (c) link all Inland Container Depots/container freight stations with minimum two-lane NHs/SHs.
20. Use of modern management techniques for scientific assessment of maintenance strategies/priorities.
21. Development of a road data bank and computerised project monitoring system and promotion of the use of information technology in the highway sector.

budget. The Central Government provides funds for the National Highways and State Governments for other roads. Fees/tolls are levied by the Central Govern-ment on bridges on National Highways and the proceeds are utilised for upgradation/ improvement of roads. Funds for rural roads to be constructed under the PMGSY are being provided through the Central Road Fund. The Central Road Fund Act, 2000 was notified on 27th December 2000. As per this Act, additional excise duty of Rs. 1.00 per litre on petrol levied since 2nd September 1998 and Rs. 1.00 per litre on high-speed diesel (HSD) levied since 1st March 1999 will accrue to this fund. The annual accrual through this source for 2001-2002 is estimated to be Rs. 5,962 crore. The allocation of cess among various constituent categories is as under:

1. 50 per cent of cess on HSD for the develop-ment of rural roads;
2. 50 per cent of HSD +100 per cent of petrol:
   - (i) Out of this development and maintenance Of National Highways 57.5%
   - (ii) Road bridges under/over railway lines/safety work at unmanned railway crossings 12.5%
   - (iii) Development and maintenance of state roads 30.0%

Resources for National Highways

8.3.98 In addition to the Central Road Fund, other existing and potential sources for financing National Highways projects are:

(i) In the face of the huge requirements of funds for both development and maintenance of all categories of roads, there is a need for setting up a Highway Infrastructure Savings Scheme on the lines of National Savings Scheme to tap the savings of individuals and companies.

(ii) The Central Government and the State Government both collect substantial revenue through the levy of different taxes on road user related activities. The collection of these taxes is estimated to be Rs. 40,000 crore in the 2001-2002. It is necessary that the Government utilise such funds principally for the development of roads.

(iii) Some part of resources needed for road links to industries, power plants, large colonies etc. could be raised from the beneficiaries of such mega projects.

(iv) A special purchase tax of Rs. 5,000 on two wheelers (excluding mopeds) and Rs.10,000 on passenger cars including multi-utility vehicles would generate a revenue of Rs. 2,000 crore a year. This amount can be utilised for urban transport-ation schemes covering the strengthening of public transport traffic management and safety measures.

(v) The multilateral financing agencies like the World Bank, Asian Development Bank (ADB) have been providing loan assis-tance for highway projects. This source would continue to be tapped in the years to come.

(vi) Toll Roads : Levy of tolls on roads is another alternative for generating addi-tional resources for their upgrading. The major attractions of toll financing is speedier construction of roads which may otherwise be delayed due to budgetary constraints. Further, being implemented on a pay-as-you-use principle, they are usually constructed and operated on commercial principles implying efficiency in execution and better level of service to users.

(vii) Private sector participation : With a view to attracting private investment in road development, the Government approved the concept of private sector participation in the development, maintenance and operation of National Highways, including expressways. To provide the enabling legal framework, the National Highways

Box 8.3.7

Toll on Roads

Toll collection for the maintenance and development of road projects is a means of introducing the 'user charges' concept to the road sector. Toll revenue is particularly useful for large value projects like bridges, expressways, four/six-laning of roads etc. In most instances, levying tolls pre-supposes the existence of an alternative route, so that the public has the option of choosing between the toll-based route that saves time and fuel and an alternative that is longer, relatively poor and congested.

2. The toll system is an integral part of schemes like build-operate-transfer (BOT). Here, the concessionaire builds the road, maintains it for a fixed number of years and charges tolls as service fee from vehicle using the road. In publicly-funded road projects, tolling becomes a conscious decision for generating revenue for maintenance and development of roads projects. The Union Cabinet has approved tolling on all sections of National Highways that have been four/six-laned. A ceiling toll rate based on Passenger Car Unit (PCU) has also been approved.

3. There are various estimates of the toll potential of the National Highways in general and the NHDP in particular. According to the Working Group on Road Sector for the Tenth Five-Year Plan, the toll potential of the Golden Quadrilateral from 2004 is Rs. 3,700 crore per annum and that of the North-South, East-West corridors Rs. 4,500 crore per annum from 2008. Not only can such a magnitude of money meet the maintenance requirement of roads but it can also generate substantial surplus for new road projects. The earnings could be leveraged through borrowing against the security of such future inflows, which could later be used for debt servicing. Such a financing mechanism, through securitisation of future receivables, has already been successfully tried by the NHDP for future cess receipts.

4. The most important requirement for the success of tolls as a source of revenue is the need to change the mind-set of the people, who inherently resist the concept of toll charging. However, such resistance can be minimised when viewed in the context of better road service and saving in time and fuel. The role of the tolling authority is to ensure that the toll mechanism does not lead to long queues and delays. Adoption of modern technology and modern ways to manage traffic on toll roads is, therefore, necessary.

Act, 1956 was amended in June 1995. The private sector can now invest in National Highway projects, levy, collect and retain fee from users and is empowered to regulate traffic on such highways in terms of the provisions of the Motor Vehicles Act, 1988.

8.3.99 In addition, two model concession agreements for major projects costing more than Rs.100 crore and for projects costing less than Rs.100 crore have been finalised. Such standardisation of terms and conditions is considered a major step in encouraging private sector participation.

Resources for State Roads

8.3.100 The following are the major sources of funds for the development of State Highways and Major District Roads.

(i) The Central Government has already created a Central Road Fund and about Rs. 962 crore was available during 2001-02. However, accrual to the Fund is quite low, keeping in view the requirement of the road sector.

(ii) BOT projects have to be encouraged to meet financing requirements of State

Highways. For this purpose, it is necessary to ensure that a well thought out legislation is passed in each State to prevent legal objections to the imposition of toll on the users of the development facilities. At present, at many places the existing Motor Vehicles Act, 1988 is being used for the purpose. It would be more appropriate to enact a special legislation keeping in view all the requirements of the BOT projects. The Central Government has already extended several fiscal and other tax facilities to the entrepreneurs undertaking infrastructure projects and has also prepared model BOT agreements. States may also adopt these agreements for road projects.

(iii) Since railway over-bridges are constructed at level crossings where heavy traffic crosses the railway line, toll funding of such works is a possibility. Such an experi-ment is already underway in Maharashtra where a large number of such ROBs have been taken up on toll basis.

(iv) External funding is also a source for financing. Institutions like the ADB, World Bank, Japan Bank for International Co-operation (JBIC) etc should be approached for funds to be used for the development of selected State Highways.

(v) Additional funds can be generated by the levy of surcharge on transport of minerals by roads. Since substantial transport is done through roads, considerable revenue could be generated through this source.

Resources for Rural Roads

8.3.101 The available source of funds for the PMGSY is 50 per cent share of the cess on HSD amounting to approximately Rs. 2,500 crore per annum, which is inadequate to finance the programme of such magnitude in a definite time frame (2002-07). For achieving the target, it would be imperative to generate additional sources, which could involve borrowings from the external funding agencies.

8.3.102 The priority under the PMGSY would be to provide connectivity to unconnected habitations. Only after all unconnected habitations in a district have been covered, can the upgradation of roads in already connected habitations be taken up. In these cases also, priority would be accorded to habitations connected by gravel roads.

8.3.103 For augmenting the availability of funds for rural roads, some States are adopting the practice of levy of market fee on agriculture produce. A similar approach can be considered by other States particularly to generate enough resources for the maintenance of rural roads.

Physical Targets For The Tenth Plan

8.3.104 The specific objectives, including physical targets, for the Tenth Plan are:

National Highways

(i) The top priority during the Tenth Plan is the completion of the NHDP. The GQ is scheduled for completion by the end of 2003 and N-S, E-W corridors by 2007. The N-S, E-W corridor project would, therefore, spill over into the beginning of the Eleventh Plan.

(ii) A number of physical targets have been set for stretches other than the NHDP. Details of these are at Annexure 8.3.3. These, however, have to be prioritised according to their importance to the national economy so that the available resources do not have to be spread thinly among a large number of competing projects, leading to avoidable delays. The major physical targets for non-NHDP components include:

(a) Accelerated efforts to bring the National Highway network to a minimum of two lane standards within the next ten years. A target of about 4,000 km has been set for two-laning during the Tenth Plan. Four-laning of 800 km of non-NHDP stretches is also to be taken up.

(b) Removal of existing deficiencies in the road network. The targets set include strengthening 2,000 km of the National

Box 8.3.8

Road Sector: Problems in Mobilising Resources

While the NHDP is the priority project and every effort is being made to meet the resource requirements for meeting the targets, the problem in meeting the physical targets for the non-NHDP component is the mobilisation of sufficient resources. The targets and the available sources of funds indicate a very big financing gap and, given the need for fiscal prudence and the competing claims of other sectors, it would not be possible to generate budgetary resources of the magnitude indicated. The solution would lie in prioritising the projects according to their importance in the national economy and emphasis on non-budgetary sources like private sector participation and levy of user-charges for transport services. The scope of increasing cess on petrol and diesel could also be explored to supplement resources for financing high priority projects like NHDP.

2. It is also important to understand that market borrowing has its limitations. First, the market appetite for road projects may act as a constraint, especially when a number of competing projects like PMGSY, NHDP etc. may target the same investor kitty. The Government therefore, has to prioritise the borrowing requirements in the context of claims from other infrastructural and transport sectors as well as other socio-economic requirements.

3. Further, the borrowings from external agencies like the World Bank, ADB, bilateral and commercial sources also contribute to the fiscal deficit. They also add to the country's external and public debt. The scope of such borrowing is also limited as most institutions have country exposure limits and the available resources have to be allocated among different sectors.

4. The argument also applies to extending Government guarantees on market borrowings by public and private sector entities. Such guarantees are a *contingent liability* and therefore, constitute fiscal risk for the Government. Therefore, while the emphasis has to be on IEBR, market borrowings by the public and private sector entities has to done on the basis of their own strength. Here, financing schemes like asset-securitisation, which provide a measure of confidence to the investor, would be useful. These would include financing mechanisms like borrowing against future toll receipts through their collateralisation.

5. While there is need to augment resources for the development of roads, it is equally important to optimally utilise the existing infrastructure. In this context, the possibility of developing canal banks as roads needs to be explored.

Highway network, improving the riding quality of 10,000 km. rehabilitation of 200 bridges etc.

(c) Plan expressways for high-density corridors and simultaneously create limited expressways where such investment could repay itself by toll financing. Therefore, land acquisition and feasibility studies of about 1,000 km of expressways has been planned for the Tenth Plan to provide unhindered and high-speed movement of traffic.

(d) Special attention for the developments of roads in the North-Eastern region.

State Roads

(i) All State Highways should have a minimum single-lane black-topped surface. Where traffic is more than 1,000 commercial vehicles (CVs) per day, hard shoulders with 1.75 m width should be invariably provided to Major District Roads and State Highways. Wherever possible, hard shoulders should be black topped. About 6,800 km on State Highways and 40,000 km on Major District Roads are targeted to be covered.

(ii) State Highway links carrying very heavy traffic should be four-laned. 'Heavy traffic' may be defined as the one in excess of 6,000 CVs

per day. A modest target of 1,000 km is suggested for the Tenth Plan

(iii) About 25 per cent of the State Highways length has a two-lane or wide carriageway. It is suggested that at least 45 per cent of the existing State Highway length should have a two-lane pavement by the end of the Tenth Plan period. For this purpose, stretches where traffic volume is more than 2,500 CVs per day should be chosen. About 13,000 km of existing length of Major District Roads is targeted to have two-lane black-topped carriageway.

BOX 8.3.9

Wayside Amenities: Looking Beyond NHDP

1. The revolution in the road sector ushered by the NHDP is expected to go a long way in promoting the country's economic development and in integrating remote regions with the mainstream economic activity. With the emphasis on GQ and N-S, E-W corridors, roads are also likely to emerge as a viable alternative for short and long distance travel, a situation that already exists in advanced countries. To support such development, complementary services in the form of wayside amenities need to be provided through commercialising such activities and integrating them with plans for tourism development.

2. The present state of wayside amenities, however, is abysmally poor. There is need for a comprehensive blueprint for developing such facilities together with plans for tourism development of various regions. Mandatory standards need to be stipulated for various facilities at wayside petrol pumps and restaurants. Apart from motels, restaurants and recreational facilities, there is also scope for encouraging the shopping malls off the city limits, drawing lessons from the successful experience of other countries in this regard. Such a push would give a big boost to the economic development of the regions bordering GQ, NS-EW corridors and high-density non-NHDP National Highways and State Highways.

3. With the Government strapped for cash, the resources and the initiative for such endeavour has to come mainly from the private sector. The role of the Government is to be restricted essentially to that of a facilitator. The success of NHDP could be a spring-board for attracting private investment in the area.

Rural Roads

(i) The main objective for the Tenth Plan is achieving the PMGSY targets of providing rural connectivity through all-weather roads.

(ii) According to preliminary estimates, there are around 100,000 unconnected habitations with a population of more than 500 persons. The requirement of funds would, therefore, be substantial. State Governments however, have also been allocating substantial money for rural road works. The actual requirement under the centrally sponsored scheme therefore, needs to be worked out on net basis. There are multiple agencies for implementing road sector projects in various States, both for State Highways and Major District Roads and PMGSY. This needs to be streamlined for improving efficiency and the work should be carried out by one/two agencies only.

Outlay for the Tenth Plan

8.3.105 The outlay for Central Sector roads for the Tenth Plan is Rs. 59,490 crore. This includes Rs. 34,790 crore of budgetary support and Rs. 24,700 crore of internal and extra budgetary resources (IEBR). The scheme-wise break up of the Tenth Plan outlay for Ministry of Road Transport and Highways is given in the Appendix.

THE PATH AHEAD

- Mobilise resources through direct and indirect user charges to bridge the gap between requirement and availability of funds.
- Monitor and review the performance of the BOT annuity scheme and take steps including bridging the information gap to encourage private sector participation. Sharing the downside risk of traffic flows could also be considered.
- Accord higher priority to the maintenance of roads and associate the private sector in this activity.
- Place emphasis on the development of the existing network rather than on declaration of new National Highways.

Box-8.3.10

Major Policy Issues in the Road Sector

1. The NHDP is the flagship project in the road sector with the highest priority. However, there have been slippages in the award of contracts for various segments of the GQ. Maximum efforts therefore, have to be made to ensure that the GQ is completed by the stipulated deadline of December 2003. This would mean a more effective monitoring system and strict enforcement of accountability. The lessons learnt from GQ would also provide useful inputs for the NS-EW corridor projects, which have to be completed by 2007.

2. While the NHDP is the national priority, there is also need to remove deficiencies in the non-NHDP National Highway network. The emphasis on removing such deficiencies began in the Ninth Plan and has led to substantial improvement in the riding quality of the National Highway network. However, it will take a long time before the network is brought up to the desired level. It is estimated that the cost of removing deficiencies in National Highways at current prices would be Rs. 1,64,345 crore.

3. The road sector is facing considerable funds constraint, especially in view of massive expansion, maintenance and upgradation requirements. While the need for according overriding priority to the road sector in the allocation of budgetary resources has to be emphasised, there is need to look at alternative means for bridging the resource gap. Private sector participation in road building activities has, therefore, to be encouraged.

4. Private sector response however, has been poor particularly in the BOT mechanism, which was expected to be the mainstay of private sector participation. This has happened despite the fact that the legal formalities have long been completed and Model Agreements are available for BOT operations. Under BOT, the investor is expected to build the road, maintain it for a fixed term and thereafter transfer it to the Government. The return to investor is in the form of toll charges. However, uncertainty about revenue from tolls has discouraged investors from coming forward with BOT proposals. Other mechanisms of private sector participation like the annuity-based BOT, where the Government commits a fixed annual payment to the investors in return for construction and maintenance for a pre-defined term, have received more encouraging response. There is, therefore, need to examine the reasons for poor investor response, assessment of investor risks in BOT projects and measures to make earnings from tolls more predictable.

5. User-charges through levying tolls on roads remains an effective means of supplementing funds. It could pay for maintenance and also provide funding for projects through leveraging resources by borrowing against future tolls receipt. However, the toll collection mechanism needs to be streamlined.

6. Funds are also the major constraint for road maintenance. There is need to find ways for associating the private sector with such activities also. The measures also apply equally to State Highways and Major District Roads, which are often in a bad state. Associating the private sector would also mean a re-look at the existing arrangement where State PWDs carry out the responsibility of maintenance through their road gangs.

7. A related issue is the need for prioritising National Highway projects. While the NHDP is the over-riding priority, there is need for prioritising non-NHDP national highway projects so that the available resources are not spread thinly among too many competing projects as it leads to delay in project completion due to funds constraint later on.

8. Equally important is the need to exercise restraint on the declaration of new National Highways. It is important to emphasise that the upgradation of large segments of State Highway to National Highway during the Ninth Plan has been a contributory factor to poor maintenance and riding quality of the non-NHDP National Highway network as the available resources are spread thinly. In order to de-politicise the process and to focus on the existing National Highway network, it is recommended that any new declaration should be approved by the Cabinet after due approval of the Planning Commission and the Ministry of Finance.

9. There are multiple agencies for implementing road sector projects in various States, both for State Highways and Major District Roads and PMGSY. This needs to be streamlined for improving efficiency and the work should be carried out by one/ two agencies only.

10. To reinforce the achievements of the NHDP, emphasis has to be laid on providing world-class wayside amenities on highways. Associating the private sector in providing such services and integrating such activities with the tourism development of various regions would be the necessary steps in completing the revolution in the road sector brought about by NHDP.

11. The NHDP, however, may not be the answer on very high traffic density National Highway stretches in the long run. There is, therefore, need to look at expressways for meeting such requirements. The planning for such expressway projects also has to begin at the earliest. All the expressways have to be in the private sector. The role of the Government would be restricted to that of a facilitator.

12. While the PMGSY would create an all-weather rural road network, there is need for further emphasis on the subsequent maintenance so that the assets created in rural areas do not wear out. Further, a missing link in the rural roads network is the lack of proper connection between villages and institutions like hospitals, schools etc.

- Prioritise the projects and programmes relating to development of National Highways.
- Initiate planning for expressways.
- Develop wayside amenities by associating private sector and integrating the development of these amenities with the development of tourism in various regions.

ROAD TRANSPORT

8.3.106 Road transport has close linkages with the economic development and social integration of the country. It is the prime motorised mode of transport linking the remote and hilly areas with rest of the economy. The easy accessibility, flexibility of operation, door-to-door service and reliability have earned road transport an increasingly higher share of both passenger and freight traffic vis-a-vis other transport modes. Substantial investment being made in the improvement of highways and an increase in the share of high value commodities in total freight would further boost the demand for road transport services.

8.3.107 The freight and passenger traffic carried by road transport is increasing at a rapid pace. While the freight traffic carried by road transport is estimated to have increased from six billion tonne km. (BTKM) in 1950-51 to 520 BTKM in 1999-2000, the passenger traffic increased from 23 billion passenger km (BPKM) to 2220 BPKM during the same period.

Review of Ninth Plan

Central Sector

8.3.108 Against an outlay of Rs. 60 crore in the Ninth Plan for the road transport sector, the expenditure was Rs. 42.78 crore. The shortfall in the expenditure was primarily attributed to less expenditure under the schemes of training for drivers, strengthening of the Central Institute of Road Transport (CIRT), Pune, and National Data Base Network and pollution control. The scheme-wise outlay and expenditure during the Ninth Plan are at Annexure-8.3.4.

Goods Transport

8.3.109 The freight operation in the country is almost wholly owned and operated by private operators. The State Road Transport Undertakings (SRTUs) of Jammu and Kashmir, Manipur, Mizoram, Sikkim and Tripura provide freight services in a limited way with the small number of trucks they own. The truck fleet strength of the Corporations/ Undertakings was estimated at 671 at the end of Annual Plan 2001-02. The number, however, is depleting rapidly for the want of adequate funds for replacement of over-aged vehicles.

8.3.110 The number of registered goods motor vehicles have grown from 82,000 in 1951 to 25.29 lakh in 1998. The bulk of the freight traffic services is operated by individual owners with one to three trucks. Such truck operators are estimated to be handling over 80 per cent of the freight traffic. The share of transport companies and agencies is less than 20 per cent.

Passenger Transport

8.3.111 Passenger transport services are provided both by SRTUs and private operators. Following liberalisation, the share of SRTUs has declined with the entry of private operators to meet the incremental passenger traffic demand. The share of the private sector in the total number of buses has increased from 57 per cent in 1980-81 to 77.26 per cent in 1997. Taking into account the traffic carried by other commercial and personalised vehicles, the share of the private sector in total passenger traffic is estimated at about 90 per cent.

State Road Transport Undertakings

8.3.112 There is no uniformity in the organisational structure of the public sector undertakings. Out of 62 SRTUs, 22 have been set up under the Companies Act, 1956, 24 have been registered under the Road Transport Corporations Act, 1950 and eight are municipal undertakings. The remaining eight are government departments. The reported fleet strength of the SRTUs as on 31 March 2001 is estimated at 1.15 lakh with a total

capital investment of Rs. 8,200 crore. They also employ 7,43,000 persons.

Physical Performance of SRTUs

8.3.113 There has been overall improvement in the performance indicators of SRTUs in the Ninth Plan. Vehicle productivity has increased from 275 revenue earning km per bus held per day in 1996-97 to 305 revenue earning km per bus held per day in 2001-02. Staff productivity has increased from 40.2 km per worker per day in 1996-97 to 47.8 km per worker per day in 2001-02. Bus staff ratio to fleet operated and fuel efficiency have also improved from 1 : 7.63 and 4.49 km per litre in 1976-77 to 1 : 7.16 and 4.61 km per litre in 2001-02 respectively.

8.3.114 The performance of the undertakings has varied from State to State. The undertakings in Andhra Pradesh, Karnataka, Haryana, Himachal Pradesh, Maharashtra and Tamil Nadu performed very well in physical terms while those in the northeast, Bihar and Orissa lagged behind. State-wise position of the physical performance of SRTUs is given in Annexure-8.3.5.

Financial Performance of SRTUs

8.3.115 Almost all the SRTUs incurred net loss. According to the latest estimates, the total loss by the undertakings had increased to Rs. 8,843 crore in the Ninth Plan from Rs. 2,679.71 crore in the Eighth Plan. However, two Corporations in Karnataka (Northwest Karnataka Road Transport Corporation (NWKRTC) and Bangalore Metropolitan Transport Corporation (BMTC)) have started generating profits from 1998-99 after reorganisation.

Policy Issues

Need For Strengthening Public Transport Services

8.3.116 The public transport service has failed to live up to the expectation of providing mobility with choice, comfort, frequency and safety. The Mass Rapid Transit System in the metropolitan cities have also proved to be inadequate in meeting the growing traffic demand. All this has led to an increase in personalised motor vehicles and the introduction of unsafe and polluting vehicles to cope with the rise in traffic demand. This has caused complete chaos in the system, leading to traffic congestion, increase in the accident rate and violation of regulatory provisions. The situation is particularly alarming in large cities. The increased urbanisation and concentration of population in large cities have put heavy pressure on the already saturated vehicular transport network, thus adversely affecting productivity in urban areas.

8.3.117 In order to deal with this situation, it is necessary to strengthen the public transport system. The bus-based road transport system provides the cheapest mode of transportation both in terms of capital and operational cost. The system has served the road passenger requirement in the past and would continue to play a dominant role in the foresee-able future. In order to ensure that the public transport system caters efficiently to the growing demand, a number of steps would need to be taken. These include improvement in the technology of vehicles and the quality of fuel, use of alternative fuels and improvement in inspection and maintenance practices. While the introduction of high capacity bus systems in the high-density corridors could be considered, it would be better to introduce an electricity-based transportation system in congested areas. The strengthening of the bus-based passenger transport system should be done in a manner that it could become an attractive substitute to the use of personal two-wheeler and motor vehicles.

Financial Health of SRTUs

8.3.118 The poor financial performance by the SRTUs, despite an improvement in the physical parameters, is a matter of concern. High rate of taxation, low fare structure, concessions to meet social responsibility, over-staffing, increasing interest burden and unhealthy competition among private operators have put an extra burden on SRTUs making their operations uneconomic.

Box 8.3.11

Reducing Metropolitan Congestion

Traffic congestion in a large city like Delhi is a major environmental concern. The problem is acute during the rush hours. Such congestion leads to (i) slow movement of traffic and consequent delays; (ii) high level of pollution due to vehicular emissions; and (iii) over-stretching of the public transport system.

The problem is not unique to India. Several other countries have experimented with methods to reduce such congestion in big cities. These methods range from restricting the use of vehicles to levying a fee on private vehicles.

In India, a possible solution to the problem of traffic congestion during peak hours could be to identify 'high-traffic zones' in the metros and stipulate that no motor vehicle with less than four persons (or two-wheeler with only one person) could ply in the zone during the peak hours. People could buy daily, weekly, monthly permits to avoid the stipulation. The major advantages of the scheme would be as under:

(i) easing congestion during the peak hours;
(ii) more economic use of private vehicles;
(iii) re-distribution of traffic to non-peak hours (some offices may shift working hours);
(iv) less pollution;
(v) saving on petrol and diesel, a substantial part of which is imported; and
(vi) revenue mobilisation.

8.3.119 It is necessary that SRTUs are run on commercial lines. Though they are inefficient, they do not necessarily provide poor quality service. They are also particularly useful in connecting remote areas, which the private sector may not find profitable to service. To improve their financial health, they should be given more autonomy, particularly in the matter of fixing fares.

Private Sector Participation

8.3.120 Involvement of the private sector in providing passenger transport services has eased the pressure on the SRTUs. However, there is need for further decontrol in the road transport service sector. Restrictive Government policies should be eschewed and the role of the Government should only be to ensure better transport services for the public. The removal of restrictions would also ensure more revenue for the exchequer in the form of higher tax payment by private operators. The strategy should be a judicious mix of public and private services, mainly because the existing public sector assets and manpower resources have to be utilised. The public sector need not operate on all routes in competition with the private operators. Its area of operation could gradually be restricted to less profitable routes which are required for socio-economic reasons. The private sector could also be encouraged to operate services on unprofitable routes through tax incentives. The long-term objective should be the pre-eminent role of private sector in providing all passenger transport services.

8.3.121 Private sector involvement in providing passenger transport services has not been without its share of problems. Rash driving, overtaking, unscheduled operation, tax evasion and unhealthy competition are common. It is, therefore, important to regulate private sector operations. State Governments should set up a regulatory body/authority for the purpose. The main task of such a body should be to ensure safety of road transport operations, adherence to schedule by the various operators and fixing the tariff. The road transport passenger operators also need to be organised on sound corporate lines especially to promote safety, reliability and provision of services in remote and backward areas. The State Government should issue guidelines on the minimum viable size

of the fleet, criteria for technical and financial soundness of the operator's etc. The formation of such compa-nies of private operators with a minimum fleet size of 50 in the metros and a size that is economically viable in other areas would help in the effective implementation of laws and regulations governing the tariff.

8.3.122 In the road transport freight segment, it is necessary for State Governments to take action for enabling the creation of cooperatives of small truck operators. These cooperatives could link up with large undertakings to reduce their cost and improve fleet utilisation.

Rationalisation of Motor Vehicle Taxation

8.3.123 A number of committees in the past have examined the motor vehicles tax structure. The major recommendations of these committees related to simplification of tax procedures and single point taxation. However, over the years, several distortions have crept into the motor vehicles taxation. There is a wide variation in the taxation rate among States and Union Territories. This leads to irrational pricing of services and loss of revenue to the states. This also affects movement of goods and passengers across inter-state borders and are a source of harassment to the operators. There is an urgent need to rationalise the tax system with a view to make it simpler.

8.3.124 Octroi and sales tax lead to unnecessary detention of vehicles, apart from causing harass-ment and adding to operating cost. At present, only a few states levy octroi. Beginning with small localities, these states should phase out levy of octroi. While sales tax barriers may be necessary to check tax evasion, these barriers may be put up only at the entry and exit points of States and not along the route. Streamlining procedures and computerisation of sales tax posts may help in reducing detention time and curbing malpractices.

Technological Upgradation

8.3.125 There has been substantial induction of new technology in the passenger transport segment, particularly in personalised vehicles. However, there has been almost no progress in this regard in the bus transport segment. More impor-tantly, there has been a technological stagnation in the field of road freight transport. Low diesel prices, extreme overloading of trucks, lax implementation of rules and regulations (which are not very stringent in any case), unhelpful tax regimes and congested roads – all militate against the introduction of new technology in the trucking sector. There is an urgent need to shift to the increased use of low tare weight and heavy haul multi-axle trucks, which are more fuel-efficient.

8.3.126 Multi-axle vehicles cause much less damage to roads than two-axle trucks. These vehicles are cost-effective not merely in terms of lower line-haul cost per tonne km, but also in terms of increased loading/unloading efficiency and higher inter-changeability of loads between vehicles and modes. Since the benefit in terms of lower road damage does not accrue to the user, it is necessary to apply differential taxation to encourage the use of multi-axled vehicles.

Road Safety

8.3.127 Safety on roads has become a major area of concern. The number of persons killed in road accidents in India has been increasing. In 1999 as many as 81,000 persons died in road accidents, which represents a 13-fold increase in 30 years. The fatalities per 10,000 vehicles in India are 21 as against one to two in high-income countries and four to six in some lower income countries. The economic cost of road traffic accidents in India is estimated to be Rs. 55,000 crore in 1999-2000. The Working Group on Road Accidents, Injury Preven-tion and Control set up by the Planning Commission has estimated the social cost of road accidents in India in 1999-2000 at about 3 per cent of GDP.

8.3.128 About 65 per cent of the casualties occur on the National Highways and State Highways, which constitute 7 per cent of the total road length in the country. There is a direct relationship between the average speed of vehicles and the rate of accidents. With the improvement of highways

which is underway, the rate of accident may go up unless some remedial measures are taken. About 83 per cent of road accidents occur because of the fault of drivers. The most vulnerable group consists of pedestrians and users of non-motorised transport, the majority of which are poor. They are not only unable to protect themselves from accidents but find it extremely hard to cope with the adverse consequences of accidents.

8.3.129 Measures need to be taken to minimise road accidents through the introduction of road safety devices, training of drivers and instructors, awareness programmes for the public and transport users, computerisation of the licensing system, creation of pedestrian and cycle paths, exclusive bus lanes and automated parking lots in major cities. The measures taken in this regard earlier have proved to be inadequate in reducing the accident rate. A multi-disciplinary and dynamic approach covering engineering, education and enforcement of regulatory provisions is needed.

Pollution Control and Alternative Fuels

8.3.130 The growing automobile population combined with lower quality of fuels is contributing to an increase in air pollution in India. The share of the transport sector in total emissions is increasing and is a matter of concern. There are serious respiratory health problems associated with air pollution. The main causes of vehicular pollution are outdated engine technology in heavy motor vehicles, poor maintenance, large number of overage vehicles, over loading, traffic jams and absence of checks on emission standards.

8.3.131 Steps have been taken to fix emission norms. Bharat Stage II norms, which are equivalent to Euro-II norms, have been extended to all the four major metros. Stricter norms conforming to Euro-III and IV are proposed to be notified in the near future. What is required is a comprehensive national policy on road-worthy vehicles keeping the need to contain pollution in mind. Transport operators should be encouraged to switch over to less polluting fuels such as compressed natural gas (CNG), liquefied petroleum gas (LPG), Ethanol, particularly in the public sector transport fleet to improve the air quality.

Database

8.3.132 Comprehensive data on traffic flows and costs of different modes of transport is essential for operational and planning purposes. The gap in traffic flow data relating to inter-regional commodity flows are far more serious in relation to the road transport sector vis-a-vis other modes of transport. Data on resource cost of various modes of transport also need to be collected at regular intervals.

8.3.133 Information on the travel pattern of passengers is equally important. There is need to collect information on a sample basis on inter-city traffic, both between moffusil towns and between metropolitan cities and moffusil towns.

8.3.134 In addition to data on traffic flows and costs, it is necessary to collect information on the operation of road transport, particularly in the private sector as also develop a database on non-mechanised vehicles operating in urban areas, particularly in the metropolitan cities.

8.3.135 In the Tenth Plan, efforts would be made to bridge the data gaps so as to make planning and project formulation more scientific.

Outlay for the Tenth Plan

8.3.136 The Central Sector outlay for road transport sector for the Tenth Plan is Rs. 210 crore, which would be budgetary support.

THE PATH AHEAD

- Initiate low cost measures to improve the public transport system in general and in urban centres, in particular, to ease congestion on road and conserve fuel.
- Associate the private sector with the provision of public transport services. The basic requirement is a corporate culture in passenger traffic services so as to provide

safe, reliable and quality service to commuters. This would require encouraging medium and large fleet operators to get into the passenger transport service sector.

- Reduce traffic congestion in the metros through innovative measures including introduction of user charges on private vehicles in the high traffic zone areas, particularly during peak hours.
- Encourage higher capacity and better technology vehicles both for the passenger and goods sectors so that development of road transport operations could keep pace with development of high quality roads.
- Encourage the adoption of low tare weight multi-axle commercial goods vehicles to minimise damage to roads.
- Rationalise the motor vehicle tax regime across States.
- Adopt a national policy on roadworthy vehicles together with a policy on clean fuel. A nation-wide policy is important instead of restricting these steps to selected metropolitan centres.
- Reduce non-physical barriers including check posts, octroi, sales tax posts etc. to allow freer movement of road transport.
- Adopt a multi-disciplinary approach covering engineering education and enforcement of regulatory provision to reduce the increasing number of road accidents.

PORTS

8.3.137 There are 12 major ports and 184 minor/ intermediate ports along India's 5,560-km coastline. The major ports are Kolkata/Haldia, Mumbai, Jawaharlal Nehru Port Trust (JNPT) at Nhava Sheva in Mumbai, Chennai, Kochi, Vishakhapatnam, Kandla, Mormugao, Paradip, New Mangalore and Tuticorin. A new major port, Ennore Port, has started functioning near Chennai from 1 February 2001. The ports at Kolkata, Mumbai, Chennai and Marmugao are more than hundred years old, while the Kochi and Visakhapatnam Ports are over 60 years old. The ports at Kandla, New Mangalore, Tuticorin, Paradip and Haldia were developed after Independence and the JNPT was commissioned in 1989. Major ports handle about 75 per cent of the country's port traffic of the country, with the minor/ state ports handling the remaining 25 per cent.

Review Of The Ninth Plan

Traffic and Capacities

8.3.138 The Ninth Plan had projected a traffic of 429 million tonnes (mt), including throughput by minor ports. A traffic of 290 to 300 mt was expected at major ports by the end of Ninth Plan. The actual traffic handled as on 31 March, 2001 was 281 mt. Commodity-wise traffic handled by major ports during the first four years of Ninth Plan and estimates for the year 2001-02 are in Table – 8.3.17.

Table 8.3.17

Traffic handled (Million Tones)

Year	POL & its products	Iron ore	Fertiliser and FRM	Coal	Container	Other cargo	Total
1997-98	102.64	40.69	8.78	38.85	23.26	37.44	251.66
1998-99	107.41	32.54	9.00	39.02	23.78	39.97	251.72
1999-00	116.71	36.09	10.10	37.09	27.69	44.24	271.92
2000-01	106.68	40.21	9.22	47.81	32.44	44.73	281.09
2001-02 (Target)	110.0	42.40	10.50	46.00	35.30	46.90	291.10

POL = petroleum, oil and lubricants; FRM = fertilisers raw material

8.3.139 The major shortfall (about 38 mt) will be in petroleum crude and product traffic, coal and fertilisers. Containerised cargo too will be slightly lower than the projected volume. However, iron ore and other break bulk cargo are expected to exceed the target. The reasons for the shortfall, particularly in petroleum crude, is the delay in commissioning of Essar Ltd.'s refinery at Jamnagar and in the expansion of the Kochi of the Kochi Port Trust and New Mangalore refineries of New Mangalore Port Trust.

8.3.140 The aggregate traffic handled by state ports in the terminal year of the Eighth Plan (1996-97) was 27.83 mt, which increased to 86.58 mt during 2000-01. The rise is attributed to the phenomenal cargo throughput of state ports in Gujarat. Their share increased from 19.8 mt in 1996-97 to 71.10 mt during 2001-02. During the Ninth Plan, the growth of traffic at major ports, state ports and overall traffic was 4.9 per cent, 27.9 per cent and 8.5 per cent respectively. This shows that performance of state ports was much better than that of major ports.

8.3.141 The total capacity of major ports at the end of the Eighth Plan i.e. 31 March 1997 was 219.55 mt. The Ninth Plan visualised a capacity addition of 159 mt at major ports to take the total to 374 mt. However, the actual capacity at the end of the Ninth Plan is likely to be only 344.4 mt, showing an increase of 124.85 mt during the Plan period. Such capacity addition would be achieved by projects executed by the ports and those taken up under BOT schemes and with private sector investment. The break up of capacity added by ports and BOT schemes and other projects would be 92.35 mt and 32.5 mt respectively. The capacity of 344.4 mt at the end of the Ninth Plan will be more than adequate to meet the targeted traffic of 289.10 mt. The capacity addition of 124.85 mt in the Ninth Plan is given in Table 8.3.18. The details of the schemes taken up during the Ninth Plan for capacity addition are given at **Annexure-8.3.6** and **8.3.7.**

Ninth Plan Outlay and Expenditure

8.3.142 The details of Ninth Plan outlay and expenditure from 1997-98 onwards are given at **Annexure-8.3.8.**

8.3.143 During the Ninth Plan, an outlay of Rs. 9428 crore (excluding Rs. 262 crore for survey vessels) had been approved for the port sector. Out of this, Rs. 6,316 crore (67 per cent) was allocated for ongoing schemes and the remaining Rs. 3,112 crore (33 per cent) for the new schemes. However, the aggregate of this five Annual Plan outlays during the period was Rs. 6,963.92 crore. Against this, a sum of Rs. 4,838.92 crore is expected to be spent. This includes an expenditure of Rs. 994.74 crore on account of gross budgetary support as against the provision of Rs. 2,162 crore.

8.3.144 In respect of major ports, there has been a heavy shortfall in expenditure as compared to the outlay during the Ninth Plan. The main reasons for shortfall have been delays in sanctioning the schemes, slow progress of work by the contractors, adverse weather conditions, contractual disputes/ litigation, delays in tender finalisation, award of contracts and deferment of projects/schemes etc. and weeding out of some schemes.

Table 8.3.18

Sl. No.	Name of the Scheme	Capacity addition in Ninth Plan (in mt)
1.	Capacity addition schemes taken up in the Ninth Plan through port/Government funding (31 schemes)	92.35
2.	Capacity addition schemes completed/likely to be completed in the Ninth Plan through BOT/captive users (10 schemes)	32.50
	GRAND TOTAL (1+2)	**124.85**

Private Sector Participation

8.3.145 The Ninth Plan envisaged a crucial role for the private sector/captive users in augmenting capacity at various ports. A number of steps had been taken and these have borne fruit now. Several projects are being taken up in the private sector or through the resources provided by the captive users.

Box 8.3.12

Private Sector Participation in Ports

- The Ninth Plan envisaged private sector/ captive users investment of Rs. 8,000 crore with capacity addition to the tune of 76 mt. Seventeen private sector/captive port projects of 60.05 mt capacity with an investment of Rs. 3,480.20 crore have already been approved and they are at different stages of construction.
- Nine more private sector/captive user port projects with 32.86 mt plus 9 lakh twenty equivalent units (TEUs) and an investment of Rs. 3,608.20 crore are in the pipeline.

Details are given in **Annexure 8.3.9** and **8.3.10.**

Policies and Programmes for the Tenth Plan

Productivity

8.3.146 The targeted traffic of 289.10 mt and the anticipated capacity of 344.4 mt at the terminal year of the Ninth Plan indicate that port capacity is no more a constraint. Hence, in the Tenth Plan there is a need to improve productivity at the major ports to improve the quality of service and reduce the turnaround time of ships to the minimal level.

8.3.147 Although productivity in terms of ship turnaround time, waiting time and average ship berth day output has slightly improved over the last decade, the performance continues to be modest when compared with generally accepted international standard and performance of regional ports.

Box 8.3.13

Port productivity at major ports

Port productivity, in terms of average output per ship berth day output, average pre-berthing waiting time and average turnaround time registered an improvement during the Ninth Plan. Average pre-berthing waiting time has come down from 1.7 days in 1996-97 to 0.50 days in 2000-01. Average turnaround time has come down from 7.5 days in 1996-97 to 4.7 days in 2000-01. Output per ship berth day has increased from 4,497 tonnes in 1996-97 to 6,469 tonnes in 2000-01. Labour productivity has increased from 307 tonnes in 1997-98 to 413 tonnes in 2000-01 in terms of output per gang shift.

Corporatisation of Major Ports

8.3.148 The functioning of major ports under various Port Trusts is operationally inflexible, and they are unable to respond quickly to changing market situation due to delays inherent in the decision making process. Steps are, therefore, being taken by the Government towards corporatisation of major ports.

Box 8.3.14

Corporation of Major Ports

- A new major port, Ennore Port Company Limited, has started functioning from 1 February 2001.
- It has been decided that existing major ports would be corporatised, starting with JNPT and Haldia. To enable speedy corporatisation of the existing major ports, the Major Port Trusts Act, 1963 needs to be amended.The amendment needs to provide for vesting undertaking of the major ports in successor companies, define the scope of transfer of assets and liabilities, protect the right of successor companies in relation to the licenses etc. granted to the erstwhile port trusts, vest the land and waterfront in the Central Government, provide consideration for transfer of assets and liabilities, protect the guarantees enjoyed by the port trusts and lay down the terms and conditions of leasing the land and waterfront to the companies. The Major Port Trusts Amendment Bill, 2001 has been introduced in Parliament.

Private Sector Participation

8.3.149 The broad objectives of the participation of private sector in port development have been to bring about an improvement in efficiency, productivity, quality of service as well as to usher competitiveness in the provision of port services. In addition, the private sector is expected to mobilise adequate resources required for capacity augmentation and introduce the latest technology and management techniques in the ports sector.

8.3.150 The Government has identified the following areas for private sector participation:

(i) Leasing out assets of the ports.

(ii) Construction and operation of container terminals, multiple cargo berths and specialised cargo berths, warehousing, storage facilities, tank farms, container freight stations, setting up of captive power plants etc.

(iii) Leasing of equipment for cargo handling and leasing of floating rafts from the private sector.

(iv) Pilotage.

(v) Captive facilities for port based industries.

8.3.151 During the Tenth Plan, an ambitious investment plan for private sector participation is to be initiated. In addition to Plan allocations for major ports, investment to the tune of Rs. 11,256 crore is expected from the private sector.

Joint Ventures

8.3.152 The objective of setting up joint ventures is to attract new technology, introduce better managerial practices, expedite implementation of schemes, foster strategic alliances with minor ports for the creation of optimal port infrastructure and enhance the confidence levels of the private sector in funding of ports.

8.3.153 A scheme for joint ventures between major port and foreign ports, between major port and minor ports, without tender, as well as major port and companies following the tender route has been approved by the Cabinet and guidelines on joint venture formation have been issued. Amendments to the Major Port Trusts Act, 1963 for this purpose have come into effect from 1 September 2000.

Development of Gateway Ports

8.3.154 International trade is witnessing an increasing trend towards containerisation. JNPT and Chennai Ports, which are capable of berthing mother vessels, need to be developed as mainland gateway ports connected by a rail/road bridge and

Box 8.3.15

Development of Gateway Ports

At present, about 70 per cent containers are trans-shipped at Colombo, Dubai, Singapore etc. benefiting those ports. This has made India's imports costlier and exports less competitive due to longer transit time and additional port cost. Trans-shipment through Indian ports by way of establishing two hub ports would result in a saving of Rs. 1,000 crore per annum, in addition to cutting transit time. The policy to avoid trans-shipment at foreign ports should lay emphasis on:

- Increased thrust on private sector participation;
- simplifying customs procedures;
- starting a round-the-clock working regime in customs;
- stopping the payment of multiple overtime to customs officials;
- relaxation in the cabotage law for export/import container cargo;
- implementing Electronic Data Interchange (EDI) for trade facilitation;
- relaxing bank guarantee and bond formalities for transhipment of cargo; and
- an integrated approach to be adopted by railways, roads and ports so as to ensure hinterland connectivity.

equipped with efficient, modern container handling facilities. The availability of such inter-modal facilities will result in considerable savings in cost and time for ships from the east carrying containers destined for Chennai and beyond and those from the west carrying containers for Mumbai and beyond.

Tariff Policy and Regulatory Authority

8.3.155 Currently, the tariff structure is determined by the cost-plus approach, which is not an appro-priate pricing mechanism for cargo services. While fixing tariff, the improvement in productivity and efficiency needs to be taken into account. It needs to be ensured that the users do not pay for the inefficiencies of the ports.

Box 8.3.16

Tariff Policy and Regulatory Authority

The tariff policy needs to be revised, with the overall objective of moving towards competitive pricing. For this, the tariff policy may also be used as a leverage to prescribe standards of service, thus contributing to enhanced productivity and operational efficiency. Cross subsidisation needs to be phased out. The tariff policy should also be used as an instrument for rationing port capacity i.e., higher tariffs should be charged for the most congested facilities/periods.In the same way, differential tariff needs to be introduced for discouraging old vessels. At present, the Tariff Authority for Major Ports (TAMP) determines the tariff structure for all the major ports. Minor ports, however, are not covered by such an arrangement. In order to have a level playing field among all ports, both major and minor, and to introduce competitive pricing, the tariff could be internally determined by the port authorities and the present regulatory authority (i.e. TAMP) could be restructured as an appellate body to take care of stakeholders' interests. It should not only cover issues relating to fixing of freight charges but also quality of services etc. The orders of the regulatory authority should be enforceable.

Manpower Planning

8.3.156 Initially, the cargo handling and loading/unloading of ships in the Indian ports was done manually and was highly labour-intensive. This scenario has changed with the advent of technology in the maritime transportation system. The emphasis has shifted towards carriage of goods in larger vessels and mechanised loading/unloading. This has led to a larger quantity of cargo being handled by lesser number of workers at the Indian ports.

8.3.157 The manning scales were evolved over a period of time, based on local conditions and other factors in individual ports. The existing norms of productivity of both labour and equipment can be stepped up and the manning scales revised, based on a more rationalised categorisation of cargo, introduction of mechanical aids and cargo handling techniques. Innovative initiatives, including private sector participation in maintaining and leasing equipment, need to be taken to improve the produc-tivity levels at ports.

Development of Hinterland/Port Connectivity

8.3.158 The lack of proper connectivity with the hinterland has hampered the development of ports. Hence, the development of other modes of transport – railways, highways, inland water transport and even pipelines is essential. The cost of connectivity could be shared by the modes or funded through some innovative methods, viz. privatisation/joint ventures.

Information Technology in Ports

8.3.159 The maritime industry world-wide is undergoing rapid technological changes mainly because of innovations in information and communication technology. Automation leading to improved efficiency will help in the management of the growing demand of port services. During the Tenth Plan, efforts at automation will be concentrated on three major areas:

(a) Use of the Vessel Traffic Management System (VTMS) for navigation of ships within port limits.

(b) Use of computers in cargo/container hand-ling operations.

(c) Use of e-commerce/EDI for trade-related document transactions.

Environmental Clearance/Security/Safety Issues

8.3.160 The environmental issues that need to be addressed in port development projects include: (i) the impact of dredging and disposal of dredged material on the marine environment; (ii) impact of a project on shore line stability i.e. accretion/ erosion; (iii) impact on ecologically sensitive areas like mangroves, coral reefs, sand dunes, breeding and nesting grounds, migratory path of turtles etc.; (iv) impact on the hydrological balance of the area, including quality of ground water; (v) impact on coastal water due to pollution (liquid effluents and solid waste) from port activities; (vi) impact on fisheries and the fishermen; (vii) risk analysis and its impact on both aquatic and terrestrial ecology, including humans; and (viii) disaster management/ contingency plans to meet emergency situations, if any.

8.3.161 The procedure with regard to environ-mental clearance needs to be reviewed and simplified.

8.3.162 In order to ensure security at ports, there should be regular interaction between the navy, coast guard, customs and port authorities for exch-ange of information. It would also help if guide-lines could be formulated on the course of action to be taken for reporting suspected activities and be widely publicised.

Physical Targets for the Tenth Plan

Traffic

8.3.163 The traffic through the major ports is projected to increase from 289.10 mt at the end of Ninth Plan to 415 mt at the end of Tenth Plan, a growth rate of 6 per cent per annum. Traffic projec-tions (commodity-wise) for major ports and other ports are given in **Table – 8.3.19.** The table 8.3.19 shows that the major hike in traffic during the Tenth Plan will be in case of petroleum oil lubricants (POL), coal and contain-erised cargo traffic. Details of the commo-dity-wise traffic target are given in **Annexure-8.3.11.**

Capacity

8.3.164 The Tenth Plan visualises physical capa-city addition of about 126.20 mt – 52.60

Table 8.3.19

Traffic Projections (commodity-wise) for Major Ports and Other Ports

(In million tonnes)

Commodity	Traffic as on 31.3.2002	Projections	
		Major Ports	Other Ports
I. POL	110.00	154.30	81.00
II. IRON ORE	42.40	51.50	13.00
III. COAL	46.00	71.30	17.00
IV. FERTILISERS	10.50	13.45	5.00
V. OTHER CARGO (Non-containerised)	46.90	62.35	29.00
VI. CONTAINERISED CARGO	35.30	61.10 (5.09 Mill. TEUs)	5.00 (0.60 Mill. TEUs)
TOTAL	289.10	415.00	150.00
GRAND TOTAL		565.00	

Table 8.3.20

Port-wise Traffic and Capacity Projections at the end of the Tenth Plan

(In million tones)

Sr. No.	Name of Port	Traffic as on 31.3.07	Capacity as on 31.3.02	Capacity addition as on 31.3.07	Planned capacity augmentation by the end of 31.3.07		
					New schemes	Spillover of Ninth Plan	Improvement in productivity
1.	Kolkata	21.40	9.20	—	—-	—-	
2.	Haldia	33.40	32.40	2.00	—-	2.00	
3.	Paradip	28.90	37.45	0.60	0.6	—-	
4.	Visakhapatnam	60.00	36.20	10.50	7.50	3.00	
5.	Chennai	40.00	27.87	4.20	—-	4.20	
6.	Tuticorin	18.70	14.95	3.35	1.00	2.35	
7.	Kochi	17.20	14.40	13.50	13.50	—-	
8.	New Mangalore	32.70	28.45	12.00	8.00	4.00	
9.	Mormugao	26.30	19.98	7.00	2.00	5.00	
10.	Mumbai	30.40	37.50	11.50	4.00	7.50	
11.	JNPT	34.50	29.00	14.00	9.00	5.00	
12.	Kandla	51.00	41.00	19.55	—-	19.55	
13.	Ennore	20.50	16.00	13.00	13.00	—-	
	GT (All Major Ports)	**415.00**	**344.40**	**111.20 + 15.00 126.60**	**58.60**	**52.60**	**15.00**

mt from schemes continuing from the Ninth Plan, 58.60 mt from new schemes and 15.00 mt from improvement in productivity. The details of port-wise traffic and capacity projections at the end of the Tenth Plan are in Table – 8.3.20. The major capacity additions during the Tenth Plan will be at Visakhapatnam, Kochi, New Mangalore, Mumbai, JNPT, Ennore and Kandla Ports.

Programme

8.3.165 The projected capacity addition of 126.20 mt is proposed to be achieved in the following way (Table 8.3.21):

Details of the scheme-wise break-up of the capacity generation on account of spillover schemes of the Ninth Plan and new schemes to be taken up during Tenth Plan are given in Annexure-8.3.12 and 8.3.13.

Development of Intermediate and Minor Ports

8.3.166 Minor/intermediate ports are subjects in the Concurrent List of the Constitution. The primary responsibility for their development and management rests with the concerned State Governments. There are 184 minor/intermediate ports in India. Most of these are located in Maharashtra, Gujarat, Kerala, Tamil Nadu and Andhra Pradesh. Out of these, only 53 are well developed and provide all weather berthing facilities for cargo handling. The remaining cater to fishing boats, passenger boats etc. The cargo handled by these ports comprise mainly fishery products, food grains, fertilisers,

Table 8.3.21

Ports – Capacity to be increased during Tenth Plan

(In million tones)

A	Ninth Plan (as on 31.3.2002)	Expected Capacity		344.40
B.	Tenth Plan (as on 31.3.2007)	(i)	Through spillover schemes	52.60
		(ii)	Through new schemes	
		(iii)	Through productivity	58.60
			Improvement measures	15.00
		Total (B):		126.20
		Overall capacity by the end of Tenth Plan (A + B) =		470.60

building materials, coal, cement, petroleum crude and products and edible oil.

8.3.167 The traffic handled by minor ports is continuously on the rise, increasing from 27.83 mt in 1996-97 to 86.58 mt in 2000-01. Currently, nearly 25 per cent of the total traffic is being handled by the intermediate/minor ports.

8.3.168 The role of minor ports is becoming increasingly important owing to the development of coastal shipping and they are viewed as an alternative to congested major ports. Therefore, there is an urgent need for the concerned States to provide adequate funds for the development of minor ports so that they could effectively cater to coastal vessels and assist in development of the hinterland.

Andaman Lakshadweep Harbour Works (ALHW)

8.3.169 The Andaman Lakshadweep Harbour Works (ALHW) was set up in 1965 for planning, execution and maintenance of the port and harbour facilities in the Andaman and Nicobar Islands and Lakshadweep Islands. At the Andaman and Nicobar Islands, harbour facilities have been created at most of the inhabited islands with breakwaters, jetties and allied facilities. In the Lakshadweep Islands, jetties have been constructed at all the ten inhabited islands, the approach channel dredged and navigational aids provided. It is recommended that ALHW establishments at the Andaman and Nicobar Islands be merged with Port Management Board of the Andaman and Nicobar Islands Administration and ALHW establishments at Lakshadweep Islands be merged with Port Department of the Lakshadweep Administration. During Ninth Plan, Rs. 141.15 crore is expected to be spent on the schemes run by ALHW.

8.3.170 In the Tenth Plan, emphasis has been laid on completion of spillover schemes of the Ninth Plan and the new schemes based on future requirement of port facilities in both the Andaman and Nicobar Islands and Lakshadweep Islands.

Minor Ports Survey Organisation (MPSO)

8.3.171 The Minor Ports Survey Organisation (MPSO) was created in 1962 to carry out hydrographic surveys for the minor ports and inland waterways. The organisation works on a no profit-no loss basis. It is presently carrying out hydrographic surveys required for construction and extension of ports and harbours, inland waterways, surveys of rivers for navigation and flood control, coastal erosion etc. and general navigational surveys of harbours, creeks and approaches, including those of the Andaman and Nicobar Islands and Lakshadweep Islands. During the Ninth Plan, the MPSO has spent Rs. 2.38 crore on its survey related activities.

8.3.172 It has been decided that the administration of MPSO, which is located at Mumbai, may

be transferred to Director General of Shipping, Mumbai in the Tenth Plan period.

Dredging Corporation of India (DCI)

8.3.173 The Dredging Corporation of India (DCI) was established in 1976 to provide integrated dredging services to major and minor ports.

8.3.174 An outlay of Rs. 695 crore has been approved for DCI during the Ninth Plan, which includes a gross budgetary support of Rs. 65 crore. The DCI has important schemes like the acquisition of two Trailer Suction Dredgers (TSD) of 6,500 cubic meter (cu.m.), Cutter Suction Dredger (CSD) of 2000 cu.m./pump hour, three TSDs of 4,500 cu.m. and replacement of CSD aquarius. The Corporation is expected to incur a total expenditure of Rs. 626.09 crore during the Ninth Plan.

8.3.175 Against the Ninth Plan projection for capital dredging of 91 million cu.m. for major ports and the Indian Navy, the anticipated achievement would be about 36 million cu.m. The reason for the major shortfall is non-materialisation of capital dredging projects at Kolkata, Chennai and Kochi Ports amounting to 47.23 million cu.m. The Ninth Plan projection for maintenance dredging was 338 million cu.m. Out of this, 67 million cu.m. was to be carried out by the ports with their own dredgers and the balance 271 million cu.m. by outside agencies. The likely achievement during Ninth Plan would be about 277 million cu.m., leaving a shortfall of 61 million cu.m.

Development Programmes of Dredging Sector

Dredging requirements

8.3.176 The maintenance dredging requirement of all major ports and the Indian Navy during the Tenth Plan is estimated at 319.43 million cu.m. Similar estimates for capital dredging is 138.087 million cu.m. While the ports have targeted to carry out maintenance dredging of 29.035 million cu.m. utilising their own craft, the balance 290.395 million cu.m. and the complete capital dredging of 138.087 million cu.m. will have to be outsourced.

8.3.177 The requirement of capital and maintenance dredging for state Ports and fishing harbours is estimated at 5.8 million and 11.7 million cu.m. respectively on the basis of projections by Director of State Ports, Andhra Pradesh for Kakinada, Ports Department, Pondicherry, Gujarat Maritime Board and the Department of Animal Husbandry. The requirement of dredging at state ports and fishing harbours would be minimal and could be met by the indigenous dredging companies.

8.3.178 The Tenth Plan has been formulated keeping in view the following factors:

(a) DCI should retrofit its dredgers once every ten years to upgrade the dredger equipment and instrumentation at par with international dredging companies;

(b) DCI possesses sufficient maintenance dredging capacity to meet the annual requirements of major ports and the Indian Navy;

(c) execution of capital dredging are through open tendering by the ports/navy in which DCI also participates from time to time, subject to the availability of capital dredging capacity to DCI;

(d) the maintenance dredging requirements of minor ports and fishing harbours could be created by various indigenous dredging companies in the private sector, dredgers with the Gujarat Maritime Board etc; and

(e) DCI should continue efforts for improving the productivity and quality of service.

Plan Outlay

8.3.179 An outlay of Rs. 5418.29 crore has been allocated for port sector during the Tenth Plan, schemewise break up of which is given in the Appendix.

THE PATH AHEAD

- Increase the scope of private sector participation.
- Effect organisational changes in the form of corporatisation for efficient management,

institutional funding and attracting private investment.

- Make the TAMP an appellate body and extend its jurisdiction over all comparable non-major ports.
- Improve productivity of major ports through technological upgradation.
- Rationalise manning scales to improve the productivity.
- Establish two major gateway ports and provide for inter-modal linkages through efficient rail and road services.
- Simplify procedural formalities including customs procedures to encourage transhipment of containers at Indian ports.
- Ensure provision of efficient inland transport infrastructure connecting ports.

SHIPPING

8.3.180 The role of shipping in promoting trade and economic development has been well-recognised. The shipping sector assumes special significance in India as over 90 per cent of the country's overseas trade in terms of volume and 68 per cent in terms of value is sea-borne.

8.3.181 India's 102 shipping companies together own a fleet of 562 vessels with a GT (Gross Tonnage) of 6.91 million as on 1 March 2002. The Shipping Corporation of India (SCI), the country's largest carrier, owns 97 ships with 2.64 million GT and accounts for 40 per cent of national tonnage. The share of Indian flagships in the country's overseas sea-borne trade has been hovering around 30 per cent during the last few years.

Table 8.3.22

Progress of Tonnage Acquisition Programme

Item	Ninth Plan	1997 (Dec)	1998 (Dec)	1999 (Dec)	2000 (Dec)	2001 (Dec)
Total tonnage (million GT)	9.00	7.052	6.878	6.785	7.052	9.5
Of which SCI		3.123	3.013	3.074	3.056	2.64
No. of Ships (Total)		484	476	484	510	557
Of which SCI		121	117	120	117	97

Table 8.3.23

Outlay and Expenditure of Shipping (Central Sector)

(Rs crore)

Year	SCI	DG (S)	Total
1997-98 (Outlay)	885.19	12.99	898.18
1997-98 (Actual)	315.00	7.69	322.69
1998-99 (Outlay)	1162.61	12.99	1175.60
1998-99 (Actual)	872.00	9.06	881.06
1999-2000 (Outlay)	1478.86	12.09	1490.95
1999-2000 (Actual)	160.00	10.77	150.77
2000-01 (Outlay)	567.01	18.00	585.01
2000-01 (Actual)	345.00	13.50	358.50
2001-02 (Outlay)	835.71	20.00	855.71
2001-02 (RE)	692.00	20.00	712.00

Review Of The Ninth Plan

8.3.182 Liberalisation and simplification of ship acquisition, a process which was initiated in the Eighth Plan, continued in the Ninth Plan. The earlier requirement of approval by the Ship Acquisition Licensing Committee of the Ministry of Shipping has been dispensed with. All vessels have been put under open general license (OGL) from 1 April 2001 to make their imports easier. In spite of this, consi-derable shortfall in the achievement of Ninth Plan targets is likely. Against a target of 9 million gross tonnage (GT) for the Ninth Plan, the achievement as on 1 March 2002 was only 6.91 million GT which is at par with the target achieved during the Eighth Plan. Thus, there has been almost no net addition to tonnage during the Ninth Plan. Till the Seventh Plan, tonnage growth was very tardy. After reaching the level of 7 million GT in 1995 from 5 million GT in 1975-76, it has stagnated again. The slow progress in tonnage acquisition was mainly due to:

- Lack of fiscal incentives to remain internationally competitive.
- Difficulty in raising external commercial borrowings.
- Prevailing market condition is depressed and charter/freight rates have fallen considerably, especially in the dry-bulk and liner sector.
- Considerable changes in the trade pattern, which has compelled the SCI to abandon many of its projects.

8.3.183 In February 2001, the SCI was granted the status of mini ratna which meant an enhanced delegation of financial power for investment decisions up to Rs. 300 crore. However, this limit has been found to be inadequate when acquisition of two or three large vessels are necessary for one project.

8.3.184 In addition, it is expected that the SCI would be able to register its presence in the transportation of liquefied natural gas (LNG) by taking equity participation in joint ventures. The SCI is already operating an LNG vessel 'Laxmi' jointly with Japanese firm, M/s Mitsui OSK Lines and the Government of the Sultanate of Oman. The SCI is also partner in the two joint ventures for providing vessels to Petronet LNG Ltd.

Approach To The Tenth Plan

8.3.185 Shipping is an extremely volatile sector characterised by long periods of depression and short periods of boom. It is always difficult to predict the share of Indian vessels in the total trade and, therefore, estimate the target for acquisition of ships by Indian companies. Recent liberalisation in Government policy ending the compulsion to use Indian fleet has further contributed to the uncertainties in forecasting the demand for ships. Indian ships have significant presence in the oil and POL trade. With the dismantling of the administrative price mechanism (APM) for the petroleum sector and freedom granted to oil companies to set up their own captive facilities for crude import, it would be difficult to indicate the share of Indian shipping in this trade as well. In the circumstances, it is advisable to facilitate the growth of Indian shipping through appropriate policy measures so that the Indian shipping industry could remain competitive. Presence of Indian shipping is necessary for a number of reasons, the most important being its beneficial impact on the freight rates and availability of fleet during emergencies.

8.3.186 In order to facilitate acquisition of ships during the Tenth Plan, it may be necessary to take the following steps:

- Adoption of a tax regime such as tonnage tax, which is followed by many countries.
- Continuation of the present policy of cargo support and its extension to LNG.
- Tax incentives for the crew in order to retain good quality staff.
- Simplification of procedures for the acquisition of ships by the public sector.

Tonnage Acquisition Programme

8.3.187 At the present stage of economic development, India's liner trade is expected to grow

rapidly as there will be increased imports of crude oil, machinery/parts and finished products as well as exports of value added items. As per an estimate by RITES, the liner cargo traffic at Indian ports would increase from 45.31 mmt in 1996-97 to about 118.62 mmt in 2006-07, showing a compound growth of about 10 per cent per annum. To cater to a reasonable share of this trade, there is an urgent need to induct additional tonnage of suitable size/type and composition in the Indian liner fleet.

8.3.188 Table – 8.3.24 indicates the proposed acquisition in the Tenth Plan:

Coastal Shipping

8.3.189 Coastal shipping is one of the most energy efficient and cheap modes of transport for the movement of bulk commodities over long distances. Considering the vast coastline and congestion on land routes, coastal shipping offers an effective alternative means of transport. The land route, particularly from Chennai to Visakhapatnam on the east coast and also a section on the west coast, is parallel to the coast. This offers the potential of diversion of railroad cargo to the sea route, which would result in immense savings.

Table 8.3.24

Projections for Tenth Plan – Acquisition of Vessels

Sl. No.	Type of Vessels	Fleet strength as on 31.3.1997 (end of Eighth Plan)		Fleet strength as on 1.4.2001		Balance of existing fleet as on 31.3.2007 (end of Tenth Plan)		Suggested acquisition during Tenth Plan period	
		No.	GT	No.	GT	No.	GT	No.	GT
1.	Dry Cargo Liners	83	0.49	82	0.32	50	0.12	20	0.10
2.	Cellular Containers	7	0.09	10	0.14	5	0.1	5	0.12
3.	Dry Bulk Carriers	133	3.02	115	2.66	98	2.1	40	1.00
4.	OBOs	3	0.17	4	0.20	1	0.03	-	-
5.	Crude Tankers	33	1.84	36	1.93	25	1.61	20	1.50
6.	Product Tankers	47	0.83	54	1.02	14	0.26	15	0.30
7.	Chemical Tankers	6	0.10	7	0.10	3	0.06	3	0.06
8.	LPG Carriers	4	0.07	6	0.12	3	0.06	3	0.06
9.	Tugs	32	0.01	90	0.03	84	0.02	-	-
10.	Timber Carriers	4	0.01	2	0.01	2	0.01	-	-
11.	Passenger Vessels	16	0.06	25	0.07	36	0.7	-	-
12.	Ethylene Carriers	3	0.01	3	0.01	3	0.01	-	-
13.	RO – RO	1	-	1	-	1	-	-	-
14.	Dredgers	11	0.04	15	0.06	7	0.03	-	-
15.	OSVs	71	0.09	69	0.07	11	0.02	30	0.04
16.	Specialised OSVs	27	0.08	27	0.07	2	-	20	0.08
17.	LNG	-	-	-	-	-	-	-	-
		481	6.91	546	6.81	345	4.25	156	3.26

OBOs = Oil Bulk Ores; OSVs = Offshore Supply Vessels; RO-RO = Rollover-Rollover

8.3.190 During the Ninth Plan period, a physical target of addition of 75 vessels of 0.265 MMT GRT was proposed in addition to 25 vessels as replacement. Although, 79 vessels have been added to the coastal fleet during the above period, which exceeded the Plan target of 75 vessels on 'additional tonnage' account, the pay load capacity in GRT terms grew only marginally and is lower than the target by almost 200 per cent. This is mainly because a large number of tugs were added to the coastal fleet, having almost no impact on the cargo/passenger carrying capacity. The pressure on land-based modes, therefore, has not been reduced.

8.3.191 Presently, the cargo moved by coastal shipping, which is entirely reserved for Indian vessels, mainly comprises coal, klinker, cement, crude oil, POL and iron ore. However, the development of coastal shipping has been slow. The ship owners are reluctant to acquire dedicated coastal vessels due to various impediments such as complex customs procedures, time-consuming port clearances, high manning scales at par with overseas shipping, poor port infrastructure etc.

8.3.192 The following policy measures need to be considered for the development of coastal shipping:

- Continuation of cabotage law supported by suitable fiscal and financial incentives.
- Earmarking exclusive ports for coastal shipping along the Indian coasts.
- Exclusive berths to be earmarked for coastal ships at all major ports.
- Laying down less stringent construction, survey, loadlines and safety requirements for coastal vessels.
- Review of minimum manning scales for coastal vessels, keeping in view the need to encourage coastal traffic on a commercial basis.
- Grant of customs duty exemption to ship owners and users on par with ship repair units to enable them to import spare parts/equipment for coastal vessels.

Lighthouses and Light Ships

8.3.193 The Department of Lighthouses and Light Ships is a revenue earning department and derives its income from light dues and light charges from ships entering and leaving Indian ports. During Ninth Plan, the anticipated revenue earning was Rs. 408 crore.

8.3.194 Against the Ninth Plan outlay of Rs.123 crore, the expenditure in this sector was about Rs. 62 crore. In the Tenth Plan, emphasis will be placed on automation of existing lighthouses, improvement in visual aids, replacement of existing lighthouse tenders, improvement of training facilities and establishment of a Coastal Vessel Traffic Service (CVTS). Establishment of new lighthouses would be considered on a selective basis.

Plan Outlay

8.3.195 An outlay of Rs. 6,273.84 crore has been allocated to shipping sector in the Tenth Plan, the schemewise break-up of which is given in the Appendix.

Inland Water Transport

8.3.196 Inland water transport has not been able to realise its full growth potential despite being an extremely energy efficient, environmentally clean and economical mode of transport. India has navigable waterways aggregating 14,544 km. of which 5,200 km of major rivers and 485 km of canals are navigable for mechanised crafts.

8.3.197 Inland water transport in India is dominated by country boats which cater to passenger traffic. Mechanised operations are restricted to specific locations and most of the services provided are again in the form of passenger ferries. Large-scale movement of goods through inland water transport mode is yet to be developed in the country.

8.3.198 The concept of National Waterways was introduced in 1982 to give a boost to the development of inland water transport in the country. At present, there are three waterways that have been

declared as National Waterways. These are Ganga, from Haldia to Allahabad (1,620 km), the Brahmaputra, from Dhubri to Sadiya (891 km) and the West Coast Canal from Kottapuram to Kollam including Champakara and Udyogmandal canals (205 km).

8.3.199 The responsibility of development of these waterways rests with the Inland Waterways Authority of India (IWAI). This authority, along with Central Inland Water Transport Corporation (CIWTC) as the principal operator, are the two Central agencies engaged in the development of inland water transport in the country. The efforts of these organisations are supplemented and supported by inland water organisations of various States and private operators.

Review of the Ninth Plan

Inland Waterways Authority of India

8.3.200 The approved outlay for Ninth Plan and the progress of expenditure in respect of the IWAI are given in Table-8.3.25.

Table 8.3.25

IWAI – 9th Plan outlay and expenditure

(Rs. crore)

Ninth Plan Outlay	**308.00**
1997-98 Expenditure	22.90
1998-99 Expenditure	32.45
1999-2000 Expenditure	26.63
2000-01 Expenditure	36.87
2001-02 (Provisional)	27.85
Grand Total (1997-98 to 2001-02)	**146.70**

8.3.201 The expenditure was incurred mainly on the provision/maintenance of fairway, terminals and navigational aids on the three national waterways, techno-economic feasibility studies on several other waterway systems, assistance to States under centrally sponsored schemes and loan interest subsidy for acquisition of island vessels.

8.3.202 During the Ninth Plan, a number of steps were taken to give a boost to the development of inland water transport. These include finalisation of a policy for the development of inland water transport, which would facilitate the participation of the private sector in various areas of infrastructure development and setting up of an Inland Water Transport Development Council chaired by the Union Minister for Shipping with concerned States as members. The prime objective of this Council is to facilitate better interaction between State Governments and the Central Government in the implementation of the inland water transport policy and making it a viable alternative mode of transport.

8.3.203 During the Ninth Plan, the IWAI took up a number of projects aimed at providing two meters Least Available Depth (LAD) for selective stretches of national waterways, construction of terminals and provision of 24 hours navigation facility in the Kolkata-Farakka stretch of National Waterway No. 1, Bangladesh and India in National Waterway No.2, and Kottapuram–Kollam in National Waterway No. 3. The Authority also procured hardware like hydraulic survey launches, tugs and floating pontoons etc.

Central Inland Water Transport Corporation (CIWTC)

8.3.204 The CIWTC was set up in May 1967 by taking over sick units of Royal Steam Navigation and Company. The main activities of CIWTC are:

a) Lighterage operations on the Hooghly which handles 80-85 per cent of the total cargo carried by the corporation.

b) Transportation from Kolkata to Bangladesh and to Assam (NW-2).

c) Transportation from Kolkata to various destinations on NW-1.

d) Construction and repair of small and medium size vessels.

e) Repair of ocean-going vessels.

8.3.205 Against the Ninth Plan outlay of Rs.100 crore, a sum of Rs. 54.86 crore is estimated to have been spent by CIWTC Table-8.3.26.

Table 8.3.26

CIWTC – 9th Plan outlay and expenditure

Year	Outlay	Expenditure
1997-98	10.00	10.00
1998-99	7.30	7.30
1999-2000	6.04	6.04
2000-01	9.26	7.72
2001-02	25.00	23.80
Total	**57.60**	**54.86**

8.3.206 Most of the Plan outlay has been utilised by CIWTC for capital dredging vessels and modernisation of handling facilities. The Corporation has been a loss-making organisation since its inception. The accumulated total loss and operating losses of CIWTC in March 2001 were of the order of Rs. 579 crore and Rs. 291 crore respectively.

8.3.207 The cargo handled and the revenue earned by CIWTC have not shown significant increase over the years, except in 1999-2000. The increase was due to lighterage operation.

8.3.208 Considering the continuous losses and poor productivity of its operations, a revival plan for CIWTC was finalised in June 2001. The elements of the Plan, to be implemented over a four-year period, include: concentrating on the river service activities only so that the CIWTC becomes a viable entity, pruning of the strength of employees to 1,400 from the current level of 2,400 at the end of the fourth year, disposal of surplus land and buildings, divisional restructuring, complete dispensation of non-Plan budgetary support from the fifth year etc.

Policies and Programmes in the Tenth Plan

8.3.209 Currently, most of the waterways suffer from navigational hazards like shallow water and narrow width of channel during dry weather, siltation, bank erosion etc. In addition, the absence of infrastructure like surface road links to facilitate the smooth transit of cargo have been a constraining factor. Furthermore, less than 400 vessels are available for inland water transport. Other constraints include: diversion of water for irrigation and other uses resulting in the decrease in river levels particularly in the upper reaches; deforestation and erosion of banks leading to heavy sedimentation load; inadequate vertical and horizontal clearances; and inadequate loading/unloading/berthing facilities etc.

8.3.210 Notwithstanding the limitations and constraints being faced, inland water transport could play an important role in the movement of passenger and freight in regions with a considerable length of navigable waterways. It could be developed significantly in regions where traffic originates and terminates at places near waterways. With the development of multi-modal transportation, inland water transport could play an important role in places where the origin and destination are not located at the waterfront. However, to ensure that the mode regains its rightful place in the transport system, the emphasis has to be on the development of infrastructure facilities. This would require taking up

Table 8.3.27

CIWTC – Cargo movement

Year	Cargo moved in lakh tones			Freight earned (Rs. crore)
	Lighterage	Long distance	Total	
1995-96	0.25	0.77	1.02	8.30
1996-97	0.20	0.64	0.84	7.20
1997-98	1.00	0.18	1.18	8.00
1998-99	0.96	0.17	1.13	8.10
1999-2000	2.30	0.21	2.51	12.02

projects relating to dredging, training of the rivers, creation of 24-hour navigation facilities, adequate and efficient terminal facilities for berthing of vessels and handling of cargo on the riverfront. It may also be necessary to augment the inland water transport fleet.

8.3.211 In the Tenth Plan, the emphasis would be on the development of existing national waterways rather than declaration of new ones. The private sector would be encouraged to provide both infrastructure facilities and inland water transport vessels. Other thrust areas include: stabilising, strengthening and upgrading the infrastructure on the existing national waterways in terms of river management and providing required navigable depth, terminals with mechanical handling facilities and navigational aids, etc.; providing port-hinterland connectivity through inland water transport; creation of interface between shipping, coastal shipping and inland water transport at ports connected by national waterways; development of water-based tourism; encouraging private sector participation for the development of infrastructure facilities and facilitating the acquisition of more vessels.

Private Sector Participation

8.3.212 The Inland Water Transport Policy appro-ved by the Government in January 2001 aimed at giving a boost to the development of this mode of transport. The Policy includes a number of incentives for encouraging private sector participation, not only in the area of ownership and operation of cargo and passenger vessels but also construction and operation of terminals on river ports, provision and operation of mechanised handling systems, fairway development including dredging, provision and maintenance of navigation facilities and pilotage services. Thus, in the Tenth Plan, the private sector would be involved in a whole range of inland water activities through joint ventures, BOT projects etc.

8.3.213 Inland water transport offers great scope for evolving an inter-modal approach to its development with the help of the private sector. Projects linking the inland waterways with the ports, particularly the minor and intermediate ports, could be undertaken. This would facilitate the transportation of cargo from the hinterland directly to the destination without any diversion to road transport. Such a strategy will be devised by involving all the stakeholders in order to make the projects viable.

8.3.214 The northeastern region offers immense potential for the development of inland water transport as a cheap, viable and eco-friendly transportation mode for various commodities through Bangladesh. The existing infrastructure, which offers an assured draft of two meters, is being utilised and with the decision to set up a permanent terminal, greater interest and involvement is expected in infrastructure development along National Waterway II. There is, however, a need to deploy a fleet of shallow draft vessels to take advantage of the increasing cargo-carrying opportunities in the region. The involvement of the private sector would be crucial in this regard.

8.3.215 Considering the huge requirement of funds for the development of inland water transport, the resources from multilateral funding agencies would be tapped as part of private sector investment. Apart from meeting the financial requirement, the external assistance would provide technical expertise also. This would help in modernising the inland water transport sector, which would then compete effectively with other modes of transport.

8.3.216 With the coming into existence of the National Inland Water Training Institute (NIWTI) at Patna, training activities will be actively coordinated with State units as well, giving the necessary emphasis on human resource development in this sector.

8.3.217 The CIWTC has carrying capacity estimated at about 34,300 dead weight tonne (DWT). The cargo moved by the Corporation is only about 30 mt km. The productivity of CIWTC is only 875 tonne km per tonne capacity. This compares very unfavourably with the productivity of private operators, which ranges from 7,000 to 10,000 tonne km per tonne of capacity. In the Tenth Plan, the emphasis would be on improving the productivity

of CIWTC. With the implementation of the reorganisation package June 2001, the Corporation will become a viable unit, concentrating on movement along National Waterways I and II, and thereby emphasising on the principal operation in this long stretch of waterway.

Plan Outlay

8.3.218 An outlay of Rs. 903.00 crore has been earmarked in the Central Budget of the Ministry of Shipping in the Tenth Plan (2002-07) for IWT sector.

CIVIL AVIATION

8.3.219 The main advantage of civil aviation vis-à-vis railways and road transport is the speed of travel and consequent saving of time. A part of this gain is, however, nullified for short-haul flights due to time taken in reporting, security checks, flying, luggage clearance etc. Air travel, nevertheless, retains a substantial edge over other modes of transport for long distance travel. It is particularly useful for business travel, international tourism and for transporting high value and perishable commodities. Air transport also provides easy accessibility to remote regions, which has implications for national integration and security. The advantage, however, has to be weighed against high cost of air travel and cost to the economy because of its high fuel intensity.

8.3.220 The civil aviation sector has played an important role in India's economy. It provides fast and reliable mode of transport across the country and is particularly important for many areas/places still not adequately connected by rail or road. In 2000-01, 42.03 million domestic and international passengers and 846.42 thousand tonnes of cargo were handled at various airports in the country. With increasing globalisation, this sector will play a more significant role in integrating the Indian economy with the rest of the world.

8.3.221 The civil aviation sector could broadly be divided into three distinct functional entities – regulatory-cum-developmental, operational and infrastructural. The regulatory functions are the responsibility of the Directorate General of Civil Aviation (DGCA) and Bureau of Civil Aviation Security (BCAS). Operational functions are performed by Air India Ltd., Indian Airlines Ltd., Pawan Hans Helicopters Ltd. together with other private sector airline operators. Air India provides international air services while Indian Airlines and its wholly-owned subsidiary, Alliance Air, and other operators provide domestic air services in the country. Indian Airlines also provides international air services to some of the neighbouring countries. Pawan Hans Helicopters provides helicopter support services primarily in the petroleum sector. Infrastructural facilities are provided by the Airports Authority of India (AAI). It manages 94 civil airports including 11 international airports at Delhi, Mumbai, Kolkata, Chennai, Thiruvananthapuram, Bangalore, Hyderabad, Ahmedabad, Goa, Amritsar and Guwahati and 28 civil enclaves at defence airfields. The Indira Gandhi Rashtriya Udan Academy (IGRUA) is the premier flying institute responsible for imparting flying training for the award of the commercial pilots licence and commercial helicopter pilots licence. Hotel Corporation of India, a subsidiary of Air India Ltd., is in the business of providing in-flight catering.

Review of the Ninth Plan

8.3.222 The likely expenditure by various organisations in the Ninth Plan period was Rs. 6,599.51 crore (59.4 per cent) against the approved outlay of Rs. 11,112.37 crore. The utilisation of budgetary support was still lower at Rs.183.77 crore (37.1 per cent) against the approved budgetary support of Rs. 495.37 crore (Annexure – 8.3.14).

8.3.223 The lower expenditure was due to certain constraints faced by the civil aviation sector. Air India and Indian Air Lines did not go in for fleet augmentation partly because of resource constraints and partly in view of the proposed disinvestment of these airlines. It was felt that the strategic/joint venture partner would be more suitable to make investment towards fleet augmentation taking into account their perceptions of the changing market scenario. The AAI also did not take up major projects of new terminal buildings at Delhi and Mumbai in

view of the proposals for long-term leasing of these airports. There was also some delay in finalising certain projects and in obtaining requi-site approvals for commencement of projects. The progress of the projects was also slow in certain areas, especially in the northeastern region due to local law and order problems, inclement weather, non-availability of clear site, changes in the scope of projects after their sanction and litigation by contractors. Pawan Hans Helicopters made provisions for fleet augmentation but could not procure new helicopters for want of firm demand from the customers.

8.3.224 Notwithstanding all this, the civil aviation sector in India has undergone some significant developments/transformation during the Ninth Plan period. The more important developments are :

a) The Government considerably disengaged itself from commercial operations of airlines.

b) The Government encouraged an increase in the role of the private sector in order to bridge the resource gap as well as to bring greater efficiency .

c) The process of disinvestment of Air India and Indian Airlines was initiated. A decision has been taken to disinvest up to 60 per cent of Government equity in Air India of which 40 per cent would be offered to the private sector and the balance 20 per cent to employees, financial institutions and public. However, not more than 26 per cent of the total equity would be held by a foreign airline. In the case of Indian Airlines, out of 51 per cent equity to be disinvested, 26 per cent would be given to a strategic partner and balance 25 per cent to the employees, financial institutions and public. The process of disinvestment has, however, been delayed.

d) The decision to restructure existing airports at Delhi, Mumbai, Chennai and Kolkata through long-term lease in order to make them world class is another important milestone. The process of leasing of four metro airports, however, has also been delayed. The new airport at Neduembassery near Kochi has been constructed by Kochi International Airport Limited, a company promoted by the Kerala government with equity participation from a large number of non-resident Indians and financial institutions. Greenfield international airports at Hyderabad and Bangalore are also on the anvil with equity being shared by the AAI (13 per cent), State Government (13 per cent) and joint venture partner (74 per cent).

e) Emphasis was laid on improvement/ upgradation in airport infrastructure, domestic passenger and cargo transport service.

f) Keeping in view the current security scenario in the country and elsewhere, the Government has taken a number of special steps to tighten security at the Indian airports for the safety of passen-gers. Subsequent to the hijacking incident involving Indian Airlines flight IC-814 in December 1999, the contingency plan to deal with hijacking and other unlawful activities operations is being revised.

Objectives and Policies in the Tenth Plan

Objectives

8.3.225 The main objective of the development of the civil aviation sector in the Tenth Plan is to provide world class infrastructure facilities and efficient, safe and reliable air services to meet the requirements of domestic and foreign trade and tourism. Meeting the air transport requirements of remote and inaccessible areas would also be a priority.

8.3.226 Air transport is a field for competitive development. The objective of development of air transport in the country, therefore, would be achieved through private sector participation on a much larger scale than before.

Policy Framework

Domestic Air Transport

8.3.227 The main advantage of civil aviation is its speed, particularly over long distances and difficult terrain. Air transport, however, is fuel-intensive, with the cost of fuel accounting for about 25 per cent of the cost of air operations. Viewed in the inter-modal context, the presence of other modes of transportation and considering the total travel time (including time taken from city centre to the airport, reporting time, flying time, luggage clearance time etc.), saving in time offered by the air transport may be marginal on short haul routes. It is, therefore, desirable that the short haul routes covering distances of up to 250–300 km are served by other modes of transport like railways and road transport in order to optimise the use of scarce energy resources. However, there may be need to provide air services on short-haul routes, for areas with difficult terrain or for an important tourist destination. These inter-modal issues need to be addressed more effectively in the context of an air transport policy for the country.

8.3.228 The demand for air transport traffic had hovered around 10 million passengers for quite some time. After registering a negative growth in the first year of the Ninth Plan, the growth rate picked up. In 2000-01, the passenger growth rate was 7.9 per cent and the rate of growth is likely to dip in the terminal year of the Plan.

8.3.229 The increase in demand for air transport depends on a number of factors, which include rate of growth of the economy and fall in real prices of air services. The airlines operate at very thin margins. The utilisation of capacity becomes another important factor for determining the viability of air operators. In order that air transport plays its role in accordance with its comparative advantage, it is necessary to remove the bottlenecks affecting the sector. To enhance the operational efficiency in the civil aviation sector, the infrastructure facilities may be augmented, specifically to ensure full utilisation of runways leading to improved payload. Other steps required include extension of runways where payload penalty is experienced, strengthening of Air Traffic Services (ATS) routes and use of satellite based navigation system to reduce flying time and allocation of optimal flight levels through a modern air traffic management system.

8.3.230 Fuel is the largest component of airline cost. Even though the pricing of Aviation Turbine Fuel (ATF) is now on import parity basis, the rates applicable for domestic operations continue to be significantly higher than that of international operations. Further, the ATF is subject to high rate of sales tax varying from 20 to 36 per cent. The high ATF cost for domestic air transport increases the cost of operation and makes it unviable even in areas where it has comparative advantage over other modes of transport. The removal of this constraint would help in stepping up the rate of growth of the sector.

Route Dispersal Guidelines

8.3.231 There is need to make air services more effective and reliable in the northeast and other inaccessible areas. The Ministry of Civil Aviation has formulated route dispersal guidelines which, inter alia, provide for the air operators to operate at least 10 per cent of their deployment of capacity on trunk routes, in Category II routes which are meant to connect the northeastern region, Jammu and Kashmir, Andaman and Nicobar Islands and Lakshadweep. The guidelines are aimed at ensuring the availability of a minimum level of air operations in Category II routes. However, the airline operations in Category II routes, being short-haul in nature, are loss-making. The operation of route dispersal guidelines is meant to cross subsidise operations in Category II routes from the profits generated on trunk routes. All the airlines are, therefore, forced to operate part of operations, on Category II routes. The more appropriate way to ensure reliable air services in these areas would be to provide direct subsidies though minimum subsidy bidding. The amount of subsidy required to support the air operations may be funded by setting up a fund through contributions made by operations on trunk routes and supplemented through other means.

Foreign Equity Participation

8.3.232 At present, the domestic air transport policy debars foreign airlines from equity participation in the companies formed for domestic air transportation. The policy allows participation of foreign individuals/companies up to 40 per cent and the participation of non-resident Indians (NRIs)/ overseas corporate bodies (OCB) up to 100 per cent in the domestic air transport services. This is not a desirable policy as it debars those who actually have the experience in airline operations, while allowing the participation of those who may not have expertise in the airlines business. The issue relating to permitting foreign airlines equity investment in companies formed for domestic operations need to be reconsidered. Moreover, overall increase in the foreign equity limit in domestic airlines operations may also be considered with a view to attracting new technology and management expertise.

International Air Transport

8.3.233 In the past, capacity constraint on some of the international routes have been experienced and this has had an adverse impact on tourism and trade. There is a need to review the policy of regulating international services through bilateral air services agreements. While reviewing this policy, the interest of national carriers, on the one hand, and the need for promoting tourism and trade and the convenience of the travelling public on the other, may have to be considered. Domestic private carriers may also be permitted to utilise international air transport bilateral traffic rights subject to the first right of refusal by Air India and Indian Airlines. For future rights acquired through bilateral negotiations, the possibility of competitive bidding should be considered.

Foreign Equity

8.3.234 At present, the foreign equity limit in the international services is 26 per cent. In order to attract investment in the sector, the possibility of increase in foreign equity also need to be considered.

International Air Transport Tourist Charter

8.3.235 Currently, international air cargo services are governed by the open sky policy. It is applicable to all airports having custom and immigration facilities. There is no restriction on these flights within the country except carriage of domestic cargo. The operators of cargo flights are also free to charge rate as per market conditions.

8.3.236 In order to promote international tourism, the liberal policy of foreign charter flights could also be considered. Charter flights may be permitted to all airports having customs/immigration facilities.

Infrastructure Facilities

8.3.237 Barring a few airports, the available infrastructure facilities are under-utilised at most airports. About 50 per cent of the airports under the AAI are not being utilised by various airlines. Besides, there are a large number of airports where full infrastructure is available but only one or two flights a day operate, leading to heavy under-utilisation of infrastructure as well as wastage of manpower. Only nine airports of AAI manage to make profits. In view of this, no new airport should be opened without Government approval. Private sector participation may be encouraged wherever it is considered necessary to construct a new airport.

8.3.238 There is a continuing need for the upgradation and modernisation of air traffic services. The navigation and surveillance facilities should be upgraded as a matter of priority to be in line with world standards. New approaches in airport designs should be considered to accommodate technological innovations like the new large aircraft. Technological upgradation should be extended to cover the ground facilities through introduction of automation and computerisation, mechanisation of baggage handling facilities and provision of aerobridges etc.

Leasing of major airports

8.3.239 The organisational structure of airports need to be corporatised to enable the entry of the

private sector, both for existing and greenfield airports. The process of long-term leasing of airports at Delhi, Mumbai, Chennai and Kolkata in order to make them world class has already been initiated. This would help in attracting investment to improve infrastructure facilities and services at these airports. The AAI could also develop other airports with the lease rental of these airports. There are a number of issues relating to the leasing of the four metro airports. This include terms of lease, transfer of employees, lease payment, aeronautical tariff setting, financing of capital expenditure etc. which need to be resolved at the earliest so that develop-ment of these airports could be initiated. It would also be necessary to specify the appropriate standards to develop all these airports keeping in view the facilities available in the newly-developed airports in Asian countries.

Regulatory Framework

8.3.240 Considering that the major airports would be developed through long-term lease and there is move towards privatisation of airlines, it is essential to have a regulatory framework in place. Airports are considered as 'natural monopoly' and, therefore, there is need to regulate them. The regulatory authority needs to monitor the airport charges and performance of airport infrastructure against specific standards. Airline services is a field for competitive development. Yet considering the present size of the market and the presence of economies of scale, the need for monitoring quality of services and the provisions of air services for meeting social obligations, it may be necessary to consider providing a suitable regulatory framework for the air services as well.

Public Sector Undertakings/Civil Aviation Agencies

Air India Ltd.

8.3.241 The international passenger traffic to/from India has shown a growth of 4.3 per cent per annum during the 1987-2000 period. The average annual growth rate for foreign carriers was 4.2 per cent and that for Indian Airlines was 5.3 per cent per annum in the same period. The growth rate achieved by Air India during the same period was 3.8 per cent per annum. As a result of this, the market share of Air India in the international passenger market has declined from 21.3 per cent in 1997 to 21.1 per cent in 2000.

8.3.242 The growth in capacity and traffic carried during the Ninth Plan is in Table-8.3.28.

8.3.243 The financial performance of Air India during the Ninth Plan period is in Table – 8.3.29.

8.3.244 The Government is in the process of disinvesting its stake in Air India to a strategic partner who is expected to bring management expertise, finance and support the aircraft acquisition process.

Table 8.3.28

Air India's Growth in Capacity and Traffic in the Ninth Plan

(In Million)

Year	Capacity Available ATKMS	Capacity Utilised RTKMS	Load Factor %
1997-98	2,293.7	1,453.8	63.4
1998-99	2,394.3	1,473.6	61.5
1999-2000	2,238.3	1,456.5	65.1
2000-01	2,226.9	1,501.4	67.4
2001-02(Budget)	2,436.8	1,617.8	66.4

ATKMS = Available Tonne km; RTKMS = Revenue Tonne Km

Table 8.3.29

Air India: Financial Performance in the Ninth Plan

(Rs.crore)

Financial Parameter	1997-98	1998-99	1999-2000	2000-01	2001-02 (Bud)
Revenue Operating	3,837.21	4,135.26	4,448.05	4,872.71	5,436.70
Expenses Operating	4,029.84	4,139.84	4,372.00	4,869.61	5,464.40
Profit / (Loss)	(192.63)	(4.58)	76.05	3.10	(27.70)
Total Revenue	4,174.16	4,236.72	4,716.97	5,224.10	5,691.90
Total Expenses	4,355.17	4,411.20	4,754.60	5,268.50	5,670.40
Net Profit / (Loss)	(181.01)	(174.48)	(37.63)	(44.40)	21.50

The terrorist attack of 11 September 2001 however, brought uncertainty about the future prospects of international civil aviation and the process of disinvestment is, therefore, likely to be delayed.

8.3.245 Air India has not added to its aircraft fleet except by way of lease during the Ninth Plan due to losses it incurred. Air India would consider phasing out 13 aircraft and induct 26 aircraft comprising 12 small capacity long range and 14 small capacity short range aircraft. The fleet size at the end of Tenth Plan is likely to be 36.

8.3.246 Air India will intensify the marketing efforts, improve its product and on-time performance to maximise yields and improve the net margins. Effort would also be made to increase the market share through code sharing, alliances and operating lease aircrafts through deployment of the maximum fleet of the airline on the core network and by building up secondary networks through alliances and tie ups.

Indian Airlines Ltd.

8.3.247 Indian Airlines could not utilise its fleet to the full extent in the early years of the Ninth Plan as a result of the exodus of pilots and engineers and massive expansion by the private sector. With the operationalisation of its subsidiary, Alliance Air, in 1996, Indian Airlines was able to increase aircraft utilisation. Introduction of a productivity-linked incentive scheme and the lease of two aircraft in 1998 contributed to an increase in the capacity in subsequent years. The current market share of Indian Airlines is estimated to be over 50 per cent.

8.3.248 The growth in capacity and traffic carried during the Ninth Plan period is in Table-8.3.30.

Table 8.3.30

Indian Airlines: Growth in Capacity and Traffic in the Ninth Plan

Year	Capacity Available ATKMS	Capacity Utilised RTKMS	Load Factor %
1996-97	1,075.0	698.1	64.9
1997-98	1,094.1	700.8	64.1
1998-99	1122.9	709.1	63.1
1999-2000	1120.9	740.3	66.0
2000-01(Prov.)	1153.7	777.3	67.4

Table 8.3.31

Indian Airlines: Financial Performance in the Ninth Plan

(Rs.crore)

Financial Operating	1997-98 (Actual)	1998-99 (Actual)	1999-2000 (Actual)	2000-01 (RE)	2001-02 (BE)
Operating Revenue	3,769.20	4,025.74	4,154.48	4,292.95	4,665.63
Operating Expenses	3,507.65	3,726.04	3,950.99	4,390.57	4,874.91
Operating Profit/(Loss)	261.55	299.70	203.49	(97.62)	(209.28)
Total Revenue	3,796.14	4,048.91	4,171.19	4,300.45	4,672.13
Total Expenses	3,744.07	4,028.15	4,117.92	4,550.57	5,000.41
Net Profit/(Loss) Before Tax	52.07	20.76	53.27	(250.12)	(328.28)

8.3.249 Indian Airlines earned a profit in the first three years of the Ninth Plan by resorting to aggressive marketing initiatives, cost control measures and increased utilisation of aircraft. The strategy, how-ever, could not be sustained for long. Hike in ATF prices, increase in landing and navigational charges, increase in insurance premium rates and adverse impact of foreign exchange rates resulted in losses in 2000-01. The financial performance of Indian Airlines during the Ninth Plan is indicated in Table-8.3.31.

8.3.250 Domestic air passenger traffic is estimated to grow at an average annual rate of 5 per cent during the Tenth Plan period. Indian Airlines is targetting to improve its market share to around 55 per cent.

8.3.251 The operation of Indian Airlines in the northeast, and Andaman and Nicobar Islands are uneconomical due to low fares and shorter stage length. A committee constituted by the DGCA on air transport operations in the northeast in December 1999 observed that the average fares in the region were around 40 per cent lower than in the rest of India. All scheduled airlines incur substantial losses due to mandatory minimum capacity requirement in the region. Indian Airlines is estimated to incur a net loss of Rs. 70 crore annually on operations in the northeast. The losses could be reduced if fares in the region are suitably increased, airport charges reduced and Inland Air Travel Tax (IATT) exempted. The North Eastern Council may also extend financial assistance for airline operations. Reduction in ATF prices, exemption from withholding tax on lease rentals and improved yields can improve the financial status of all airlines.

8.3.252 During the 1990s, Indian Airlines expanded its international operations to the Gulf region and South East Asia. Indian Airlines prepares to consolidate its existing international operations and continue to avail opportunities for the expansion of the network to increase the market share of the Indian national carriers.

8.3.253 Indian Airlines proposes to phase out the fleet of A 300 and B 737 aircraft by 2003-04. It is envisaging the induction of three types of jet aircrafts and one type of turbo-prop aircraft in the fleet during the Tenth Plan period. To reduce the investment as well as to provide flexibility in responding to future market trends, Indian Airlines proposes to consider a fleet strategy of a mix of lease of aircraft in mid-life and purchase of new aircraft.

8.3.254 The Government has decided to disinvest 51 per cent equity in Indian Airlines within the para-meters of the Domestic Air Transport Policy. The disinvestment process is being undertaken by Minis-try of Disinvestment.

Airports Authority of India

8.3.255 The AAI is responsible for the management and development of civil airports and civil enclaves at defence airports in the country. It is also responsible for providing navigational facilities to the aircraft operating in India.

8.3.256 AAI was able to substantially achieve the goal of upgradation of infrastructure and modernisation of communication facilities and maintenance of existing infrastructure during the Ninth Plan. In order to keep pace with the growth of international trade and for the promotion of exports, the airport infrastructure was upgraded in terms of storage space, better handling capacity and development of cargo complexes particularly at the Delhi and Mumbai airports. Investments were also made in respect of hinterland airports having potential for exports and tourism like Agra, Jaipur, Ahmedabad, Varanasi, Lucknow and Thiruvananthapuram. Substantial investments were made for the development of air strips and upgradation of communication facilities and other infrastructure in the northeast, Jammu and Kashmir and Andaman and Nicobar Islands as private investments was unlikely in these areas and adverse economic factors. Twelve airports were identified for being developed as model airports and renovation/ construction of new terminal complexes, extension of runways, upgradation of communication facilities and other passenger-related facilities were undertaken on a priority basis.

8.3.257 The net profit of the AAI increased from Rs. 196.14 crore in 1997-98 to Rs. 214.08 crore in 2000-01 and it is estimated to increase to Rs. 251.30 crore in 2001-02. The details of its financial perfor-mance are in Table – 8.3.32.

8.3.258 During the Tenth Plan, the emphasis would be on upgradation, expansion of airport infrastructure and strengthening of the security arrangements at the airports. Almost all the international airports are facing capacity shortages, leading to congestion. The services and facilities at the international airports require a major boost to match international standards. The Government, therefore, has decided to restructure the four metro airports of the AAI through long-term lease. The lessee will be required to undertake specified upgradation works in the short term and in the long term lessee will be required to comply with minimum pre-identified performance and planning standards. In view of this, it has been decided major upgradation works at Delhi and Mumbai terminal will be taken up by the lessee. In addition, the programme of upgradation of runways, additional taxiways and increased aircraft parking stands at airports will be taken up during the Tenth Plan. Modernisation and upgradation of communication and navigation facilities at all airports will be taken up to improve the air traffic management system in the overall interest of safety and capacity utilisation.

8.3.259 Introduction of automation and computerisation, mobile check-in counters, improvements

Table 8.3.32

Airport Authority of India: Financial Performance

(Rs.crore)

Financial Year	1997-98	1998-99	1999-2000	2000-01	2001-02 (BE)
Revenue	1,279.64	1,591.27	1,691.28	1,873.44	2,148.88
Expenses	963.45	1,255.49	1,346.55	1,514.36	1,740.26
Net Profit/(Loss) before tax	316.19	335.78	344.73	359.08	408.62
Provision for tax	120.05	127.37	133.35	145.00	157.32
Profit after Tax	196.14	208.41	211.38	214.08	251.30

in immigration, security checks, mechanisation in cargo terminals, reduction in bunching of flights and contracting out the operation and maintenance facility will be taken up to ensure speed and efficiency in passenger baggage and cargo handling. The passenger terminals located at a distance will be linked by providing interconnecting corridors.

Pawan Hans Helicopters Ltd.

8.3.260 Pawan Hans Helicopters Ltd. provides helicopters support services to the oil sector. The Oil and Natural Gas Corporation (ONGC) has been the largest customer. The endeavour will be to retain operations with ONGC. Presently, Pawan Hans is undertaking tasks for State Governments, public sector undertakings, transportation for pilgrims, pipeline surveillance etc. During the Tenth Plan, the services will be extended to the power sector, adventure sports, tourist charters, intra-city transportation and cargo for Arunachal Pradesh as new avenues in the domestic sector. An endeavour will also be made to explore the international markets, particularly in the neighbouring countries to strengthen its customer base for its expansion plans. Pawan Hans presently has the major market share amongst the commercial helicopter operators in India.

8.3.261 The growth of the private sector in the commercial helicopters segment has been sporadic and limited so far to casual charters, including those for corporate travel and elections. In view of the high cost, the private sector so far has not been attracted to this field.

8.3.262 Pawan Hans proposes to expand its fleet and replace the ageing medium helicopter fleet. The expansion plan will include a mixed fleet of large, medium and small helicopters.

Bureau of Civil Aviation Security

8.3.263 The BCAS is responsible for ensuring adequate security arrangements at the airports. It issues, from time to time, instructions and guidelines to State/Union Territory police, airport authorities and air carriers about measures to be enforced to prevent hijacking and other terrorist activities and ensuring security at airports. It also maintains close liaison with international agencies for assessing threats from international terrorists.

8.3.264 Security in airlines operations has assumed greater importance as a result of recent increase in terrorist incidents and hijacking of aircrafts. It is felt that suitable strengthening of the BCAS organisation has become essential to ensure safety in air operations. In the Tenth Plan, a thorough review will be carried out on the existing set up of BCAS and organisation will be restructured suitably so as to meet the increasing challenge to the aviation sector from terrorist organisations. It is also proposed to restructure the BCAS by adding five new regional offices to the existing four metro international airports, setting up dog squads at the eight hyper-sensitive airports and bomb detection and disposable squads at seven hyper-sensitive airports along with installation of additional security equipment and systems at identified 14 hypersensitive and 33 sensitive airports. The introduction of a smart card access control data-based management system, biometric passenger profiling system is also proposed to be taken up. The recommendation of the Expenditure Reforms Commission for transferring the Bomb Detection and Disposal Squad and Dog Squad to the Central Industrial Security Force (CISF) are being examined .

Indira Gandhi Rashtriya Uran Akademi

8.3.265 The IGRUA is an autonomous body under the administrative control of the Ministry of Civil Aviation for imparting flying training to commercial pilots. During the Tenth Plan, ab-initio aircraft are proposed to be acquired. Apart from the purchase of equipment and vehicles, some civil works will also be undertaken.

Aero Club of India

8.3.266 The Aero Club of India was established in 1927 with the objective of inculcating an interest in aviation among the youth and provide ab-initio training for them to become pilots and aircraft maintenance engineers. Initially, flying clubs were

set up at Delhi, Mumbai, Kolkata and Allahabad. At present, most states in the country have Aero Club of India member flying clubs.

8.3.267 The Aero Club of India is the apex body of all flying clubs, gliding clubs and other aero sports organisations which are engaged in powered flying, gliding, ballooning, sky diving, hang gliding, micro light flying, parasailing, aero-modeling etc. It is also a sports federation recognised by the Ministry of Youth Affairs and Sports. It represents India in the International forum.

8.3.268 It is a self-supporting organisation. The Club has proposed setting up an Aero Sports Village near Delhi. Budgetary support will be required for purchase of land and construction of building etc.

Hotel Corporation of India

8.3.269 The Hotel Corporation of India (HCI) is a subsidiary of Air India. It incurred losses during the Ninth Plan particularly because of low room occu-pancy rate in all its hotels. Based on the recommen-dations of Disinvestment Commission, the hotels of HCI are to be disinvested. The process of disinvestment is being undertaken by the Ministry of Disinvestment. On 11 March 2002, an agreement was signed with M/s Tulip Hospitality Services Ltd to sell Centaur Juhu, Mumbai. On 26 March, Indo Hokey Hotel Ltd at Rajgir was sold to M/s Impac Travels Pvt Ltd. In the case of Centaur Hotel, Delhi, Cabinet Committee on Disinvestment has directed for rebidding by exploring ways and means to secure better response.

Directorate General of Civil Aviation

8.3.270 The DGCA is responsible for ensuring quality and safety in aircraft operations in the country. The training programmes under the Cooperative Development of Operational Safety and Continuing Airworthiness under the International Civil Aviation Organisation (ICAO) taken up in the Ninth Plan will be continued in the Tenth Plan as well. Another programme will also be taken up under a European Union–India Project. The thrust would be on stepping up of regulatory control through intensive advance training of DGCA officers.

Outlay For The Tenth Plan

8.3.271 The outlay for civil aviation in the Central sector in the Tenth Plan is Rs. 12,928 crore. This includes Rs. 400 crore of budgetary support and Rs. 12,528 crore of IEBR. The schemewise break-up of the Tenth Plan outlay for Ministry of Civil Aviation is given in the Appendix.

THE PATH AHEAD

- Accelerate the process of disinvestment of Government equity in Indian Airlines and Air India.
- Consider increasing the share of foreign equity in both domestic and international carriers with a view to attracting new technology and management expertise.
- Re-consider bar on equity participation by foreign airlines in a company formed for domestic air transportation.
- Speed-up the process of long-term lease of the four metro airports in order to make them world class airports.
- Replace the route dispersal guideline system that provides air services to northeast and other isolated areas with a more transparent and efficient system.
- Increase private sector participation in the provision of infrastructure facilities as well as air services.
- Ensure adequate security arrangements at various airports in view of the increased threat perception.

Profile of Transport Sector

S.No.	Item	Unit	1950-51	1960-61	1970-71	1980-81	1990-91	1991-92	1995-96	1996-97	1997-98	1998-99	99-2000
1	RAILWAYS												
1.1	Route Length	Kms.	53596	56247	59790	61240	62367	62458	62915	62725	62495	62809	62759
1.2	Electrified Route Length	Kms	388	748	3706	5345	9968	10653	12306	13018	13490	13765	14261
1.3	Throughput												
1.3.1	Freight Traffic(Total)	M.Tonnes	93	156.2	196.5	220	341.4	360	405.5	409.02	429.4	420.9	456.4
1.3.2	Net Tonne (Kms.)	B.T.Kms.	44.12	87.68	127.36	158.47	242.7	256.9	273.52	279.99	286.77	284.27	308.04
1.3.3	Passengers Originating	Million	1284	1594	2431	3613	3858	4049	4018	4153	4348	4411	4585
1.3.4	Passengers Kms.	Million	66517	77665	118120	208558	296544	314564	341999	357013	379897	403884	430666
2	ROADS												
2.1	Total	000 Kms.	400	525	915	1485	2350	2486	3320	2466	2540	2616	2695
	Of which NHs.	000 Kms.	22	24	24	32	33.7	33.7	34.5	34.6	38.52	49.58	52.01
2.2	%age of village with 1000 + population connected with all weather roads	Percent	NA	NA	NA	29	45.8	46.6	85.7				
2.3	Surfaced Length	000 Kms.	156	234	398	684	1113	1160	1517	1394	1422	1450	1479
3	ROAD TRANSPORT												
3.1	No. of Goods vehicles	In'000	82	168	343	554	1356	1514	1785	2260	2529	2858	3229
3.2	No. of Passenger Buses	-do-	34	57	94	162	331	358	449	488	535	594	659
4	MAJOR PORTS												
4.1	No.of major ports	Numbers	5	9	10	10	11	11	11	11	11	11	11
4.2	Traffric handled	M.Tonnes	19.38	33.12	55.58	80.27	151.67	156.64	215.34	227.26	251.66	251.72	271.87
5	MINOR PORTS												
5.1	Traffic handled	M.Tonnes	N.A.	N.A.	6.69	6.73	11.27	13.33	24.36	24.93	38.61	36.31	62.52

Annexure 8.3.1 Contd.

S.No.	Item	Unit	1950-51	1960-61	1970-71	1980-81	1990-91	1991-92	1995-96	1996-97	1997-98	1998-99	99-2000
6	CIVIL AVIATION												
6.1	Indian Airlines												
(I)	Available Tonne Kms.	Million	N.A.	113	208	663	927	1090	1046	1075	1094	1123	1121
(ii)	Revenue Tonne Kms.	-do-	N.A.	83	161	420	699	761	723	698	701	709	740
6.2	Air India												
(I)	Available Tonne Kms.	Million	N.A.	N.A.	515	1623	2260	1973	2610	2452	2294	2394	2238
(ii)	Revenue Tonne Kms.	Million	N.A.	N.A.	275	980	1381	1149	1619	1485	1454	1474	1457
6.3	No.of Airports and Civil Enclaves	Number	N.A.	N.A.	N.A.	84	117	117	120	120	120	122	122
7	INLAND WATER TRANSPORT												
7.1	Length of Navigable Waterways	Kms.	14544	14544	14544	14544	14544	14544	14544	14544	14646	14646	14646

Annexure 8.3.2

Plan-Wise Addition to NH Length

Period	Length added in km	Total length in km
As on 1.4.1947		21,440
Pre First Plan (1947-1951)	815	22,255
First Plan (1951-1956)	-	22,255
Second Plan (1956-1961)	1,514	23,769
Third Plan (1961-1966)	179	23,948
Interregnum period (1966-1969)	52	24,000
Fourth Plan (1969-1974)	4,819	28,819
Fifth Plan (1974-1978)	158	28,977
Interregnum Period (1978-1980)	46	29,023
Sixth Plan (1980-1985)	2,687	31,710
Seventh Plan(1985-1990)	1,902	33,612
Interregnum Period (1990-1992)	77	33,689
Eighth Plan (1992-1997)	609	34,298
Ninth Plan (1997-2002)		
1997-1998	4,219	38,517
1998-1999	11,068	49,585
1999-2000	2,425	52,010
2000-2001	5,727	57,737
2001-2002	375	58,112

Annexure 8.3.3

	Scheme	Period 2002-2007 Unit Km/Nos
(i)	Four-laning/six-laning	800 km
(ii)	Widening to two lane	4,000 km
(iii)	Strengthening	2,000 km
(iv)	Improvement of Riding Quality (IRQP)	10,000 km
(v)	Bypasses	25 Nos.
(vi)	Construction of Bridges	100 Nos.
(vii)	Rehabilitation of Bridges	200 Nos.
(viii)	Construction of ROB/RUBs,	—
(ix)	Wayside amenities, road safety and miscellaneous	—
(x)	Expressway (Land Acquisition etc.)	1,000 km
(xi)	Expansion of NH network	2,000 km
	Total	
	Other	
(xii)	BRDB plan	
	Grand total	

BRDB – Border Road Development Board

Annexure 8.3.4

Outlay and Expenditure-Road Transport.

(Rs. Crore)

	Scheme	Ninth Plan	
		Outlay	Expend.
1	Capital contribution to SRTCs	8.63	7.15
2	Road safety programmes	37.42	29.31
	Road safety cell	0.75	0.73
	Publicity measures	8.67	9.17
	Grant-in-aid	3.00	1.68
	Pollution testing equipment	6.00	3.44
	Road safety equipment	4.00	0.98
	National Highways/patrolling Scheme	15.00	13.09
3	Training and computer system	4.45	2.94
	National Institute of Road Safety	2.00	1.10
	Training of drivers in unorganised Sector	0.75	0.85
	Training programme (HRD)	0.50	0.55
	Computer system	1.20	0.80
4	Research and development	1.15	0.10
5	Strengthening of CIRT, Pune	4.65	1.40
6	Misc. including studies	3.70	1.88
	Transport studies	1.50	0.86
	Data collection	0.50	0.29
	National data-base network	0.95	0.10
	Control of pollution of motor vehicle	0.75	0.63
	Energy conservation	0.00	0.00
	TOTAL	60.00	42.78

Annexure 8.3.5

State-wise Physical Performance of SRTUs (2001-02)
(Latest Estimates)

Name of SRTUs	Fleet Utilisation % of buses on road	Vehicle Prod. Revenue Earning km per bus held per day	Bus staff ratio on fleet operated	Staff Prod. Revenue Earning km per worker per day	Fuel efficiency km per litre.
Andhra Pradesh	99	315	6.8	44	5.07
Arunachal Pradesh	68	136	5.2	23.9	2.94
Assam	51	96	31.0	6	4.0
Bihar	12	29	29.4	8.3	4.1
D.T.C.(Delhi)	80	183	10.4	34.7	3.85
Goa (Kadamba)	77	203	6.7	40	4.2
Gujarat	88	327	7.0	51.7	5.3
Haryana	95	308	6.0	54.4	4.44
Himachal Pradesh	97	222	5.4	42.1	3.52
Jammu and Kashmir	65	76	4.1	17.9	3.9
Karnataka					
KSRTC	95	341	5.7	59	4.83
NWKRTC	95	333	6.0	52.5	5.01
BMTC	97	217	5.7	38.2	4.46
NEKRTC	92	325	5.5	53.7	4.87
Kerala	80	273	7.0	45	4.0
Madhya Pradesh	81	227	6.0	35.5	4.1
Maharasthra	94	292	6.8	44	4.67
Manipur	10	6	17.0	31	3.5
Meghalaya	39	60	17.1	9.1	3.5
Mizoram	54	60	5.0	6.2	3.15
Nagaland	63	63	11.7	13.1	3.5
Orissa	32	253	7.7	37	4.1
Punjab Roadways	84	222	4.2	46.4	4.25
PEPSU RTC	95	262	5.0	52.2	4.37
Rajasthan	92	310	6.1	58.2	4.85
Sikkim	80	61	3.2	18.8	3.25
Tamil Nadu	92	376	8.0	50.1	4.29
Tripura	50	81	18.2	8.9	3.55
Uttar Pradesh	93	266	6.2	41.6	4.85
Calcutta STC	70	133	11.3	16.9	3.55
North Bengal STC	65	158	10.5	24.2	3.9
South Bengal STC	74	193	7.9	33.2	3.85
All India Average	90	290	7.2	45.4	4.61

Annexure 8.3.6

Details Of Capacity Addition Schemes Taken Up In The Ninth Plan Through Port/Government Funding

Sl. No.	Name of the Scheme	Capacity additions in Ninth Plan (in mt)
1	Third oil jetty at Kandla	2.00
2	Eighth cargo berth at Kandla	0.60
3	Construction of berth No. 11 and barge terminal at Haldia	1.30
4	Multipurpose berth at Vishakhapatnam Port Trust	1.00
5	Virtual jetty at New Mangalore	3.50
6	Shallow water berth at Tuticorin Port Trust	0.25
7	Deepening of approaches to berth Nos. 10 and 11 at Mormugao Port	0.80
8	Third oil jetty at Haldia	6.00
9	Second multipurpose berth at Paradip	1.00
10	Capital dredging at Tuticorin	2.95
11	Western Quay at Paradip	0.60
12	3 Nos 20 MT cranes at Chennai Port	1.00
13	Multipurpose berth at Haldia	1.50
14	Construction of LPG berth at Vizag	1.00
15	Construction of new Port at Ennore	16.00
16	Improvement to iron ore handling facilities at Marmugao Port Trust	0.50
17	Replacement of sub-marine pipelines at Mumbai	7.00
18	Construction of fourth oil jetty at Kandla	2.00
19	Reduction in capacity of fertiliser berths at JNP from 2.9 mt to 1.5 mt	(-) 1.40
20	Construction of multipurpose berth No. 12 at Haldia	0.40
21	Creation of mechanised coal handling facilities at Paradip Port	20.0
22	Construction of oil berth at Paradip Port	6.0
23	Construction of western quay of Paradip Port (balance capacity)	1.4
24	Construction of second multipurpose berth at Visakhapatnam Port Trust	0.7
25	Further extension of container terminal at Chennai Port	0.5
26	Construction of berth No. 8 at Tuticorin Port	1.50
27	Port facilities for MRPL expansion at NMPT (balance capacity)	5.20
28	Construction of multipurpose berth at New Mangalore	3.00
29	Construction of shallow water berth at JN Port	1.20
30	Reconstruction of BTP as multipurpose berth of Cochin Port	0.50
31	Reassessment of port capacities due to increased productivity etc in consultation with major ports	4.35
	Total	**92.35**

Annexure 8.3.7

Details Of Capacity Addition Scheme Completed/Likely To Be Completed In Ninth Plan Through BOT/Captive User

Sl. No.	Name of the Scheme	Capacity addition in Ninth Plan (in mt)
1.	New container terminal at JNPT (P&O Ports)	7.80
2	Container terminal at Tuticorin Port (PSA)	1.80
3	IFFCO berth at Kandla Port	2.00
4	Second SBM single bio mooring of IOC at Kandla Port	10.00
5	Captive IOC jetty at Kandla Port	2.00
6	Captive fertiliser handling facilities by Oswal Fertilisers at Paradip Port	0.70
7	Captive BPCL berth at JNPT	5.50
	Total (A)	**29.80**
	Productivity Improvement measures	
1	Fertiliser berth (Oswal), Paradip	0.55
2	Container Terminal at JNPT (NSICT)	1.20
3	Container Terminal at TPT (PSA –SICAL)	0.95
	Total (B)	**2.70**
	Grand Total (A+B)	**32.50**

Annexure 8.3.8

Ninth Plan – Outlay and Expenditure – Ports

(Rs. crore)

Ports	Ninth Plan outlay	97-98 Outlay	97-98 Expdr.	98-99 Outlay	98-99 Expdr.	99-00 Outlay	99-00 Expdr.	00-01 Outlay	00-01 Expdr.	01-02 Anti. Expdr.
Kolkata	50	13.45	6.04	7.99	11.04	7.9	12.08	5.04	5.41	2.36
Haldia	200	26.27	22.07	22	50.32	22	70.2	59.76	46.22	9.30
RR/SBR										
Schemes	295	5.5		0.11		0.1	0	214.34	0.05	7.11
Total	**545**	**45.22**	**28.11**	**30.1**	**61.36**	**30**	**82.28**	**279.14**	**57.68**	**18.77**
Mumbai	1208	156.24	75.61	110.9	52.46	223.1	211.21	217.99	114.02	70.04
JNPT	700	94.86	106.75	70.5	21.16	50	50.51	101.70	30.79	22.14
Chennai	1500	228.38	123.1	170	225.86	379	302.1	228.50	199.37	130.00
Kochi	380	16.21	10.04	10	19.93	20	22.76	26.00	13.81	10.82
Vizag	900	70.5	55.29	50	51.3	51.8	91.25	138.4	104.97	61.19
Kandla	560	85.08	50.9	65.5	50.19	71.8	63.38	109.93	41.25	48.00
Mormugao	360	15.42	7.78	15	31.05	30	25.5	50.21	30.85	27.76
Paradip	1200	224.84	117.62	120	199.73	344	235.96	275.52	130.38	60.00
New Mangalore	640	31.44	20.58	30	14.81	44	44.55	90	88.75	36.65
Tuticorin	550	34.18	16.07	55	48.36	170	194.38	72.6	15.94	32.06
Major Ports (A)	**8543**	**1002.37**	**611.85**	**727**	**776.21**	**1413.7**	**1323.88**	**1589.99**	**821.81**	**517.43**
DCI	695	299.85	75.98	190	96.74	150	115.91	317	265.67	71.79
ALHW	125	27.3	16.66	30	26.04	30	29.59	42.3	34.76	34.10
MPSO	15	1.7	0	1.5	1.11	1.75	1.75	1.23	0.90	0.12
Minor Ports	30	3	0.37	0.5	0	3	0.03	1	0.05	0.05
Misc. Items	20	8	2.34	5	2.98	5.25	4.18	5.65	3.21	3.41
Others (B)	**885**	**339.85**	**95.35**	**227**	**126.87**	**190**	**151.46**	**367.18**	**304.59**	**109.47**
Total (A+B)	**9428**	**1342.22**	**707.2**	**954**	**903.08**	**1603.7**	**1475.34**	**1957.17**	**1126.40**	**626.90**
Ennore Port Ltd									0.00	0.00
Survey Vessels	262	30	30	30	84.77	20	20	50	25.00	35.53
Grand Total	**9690**	**1372.22**	**737.2**	**984**	**987.85**	**1623.7**	**1495.34**	**2007.17**	**1151.40**	**662.43**

RR= River Regulatory SBR = Ship building and repair

Annexure- 8.3.9

Approved Private Sector/Captive Port Projects

Sl. No.	Project Name	Port name	Capacity (tonnes)	Project cost (Rs crore)	Project status
1.	Container Terminal	Jawaharlal Nehru	7.20	800	The Container Terminal was developed by NSICT which is a consortium led by M/s. P&O Ports, Australia in 1997. Partial operation with one berth started in April 1999. The second berth opened for operation in August 1999. The project is completed in all respects.
2.	Liquid Cargo Berth	Jawaharlal Nehru	5.50	200	The project is under execution by BPCL/IOC Ltd. The progress of the project is behind schedule. Ninety-nine per cent works are completed. The Terminal is almost complete and is likely to be commissioned soon.
3.	Fifth Oil Jetty (Iffco Jetty)	Kandla	2.00	21.5	Jetty commissioned on 30 April1998.
4.	Oil Jetty awarded to M/s IOCL.	Kandla	2.00	20.7	Awarded to Indian Oil Corporation. Jetty commissioned on 1 March 2001.
5.	Oil Jetty awarded to M/s HPCL	Kandla	1.50	18.0	It was a virtual jetty which has now been decommissioned.
6.	Oil Jetty and related facilities	Vadinar (Kandla)	15.00	565	The project is awarded to Essar Ltd., and is held up on account of environmental non-clearance.
7.	Container Terminal	Tuticorin	3.60	100	The Terminal was commissioned on 21 December 1999 and is under operation. Against the minimum throughput of 2,28,000 TEUs for the fourth year (15 July 2001 to 14 July 2002) up to 31 January, 2002 the quantity handled is 1,20,370 TEUs. The port had collected from the BOT operator the royalty for the previous years.
8.	Captive coal berth to SEPC	Tuticorin	1.50	250	Project is awarded to M/s SEPC on 28 August1999. The lease rent for the first year was paid by the firm. Fifty per cent of the second year's lease rent ending July 2001 was paid on 20 June 2001 with the request to grant time up to 31 May 2002 to remit the balance amount as well as the third year lease year. M/s SEPC is awaiting escrow from TNEB/Government of Tamil Nadu.
9.	Captive berth to Oswal Fertilisers Ltd.	Paradip	2.5	100	The Project is complete and in operation.

Sl. No.	Project Name	Port name	Capacity (tonnes)	Project cost (Rs crore)	Project status
10.	Construction of a berth at Pir Pau for handling inter-alia coal on BOT basis	Mumbai	1.5	200	Commercial offer of Tata Electric Companies had been accepted by the Board and licence agreement signed on 19 July 2000.
11.	Container Terminal at Chennai	Chennai	3.0	400	Agreement signed on 9 August 2001 between Chennai Port Trust and P&O, Australia. Container Terminal is handed over to M/s P&O on 30 November 2001.
12.	Multipurpose General Cargo Berths 5A and 6A	Mormugao	5.0	250	Awarded to M/s ABG Goa Port Ltd., which is executing the work on BOOT basis.
13.	Multipurpose Berths at Visakhapatnam Port	Vizag	2.00	175	Government approval conveyed to construct two berths on BOT by M/s Gammon India Ltd. License agreement has been signed.
14.	Allotment of Multipurpose berth No. 12	Haldia Dock Complex (HDC)	0.5 mt in case of mixed cargo including containers/ 35,000 TEUs in case of exclusive handling of container.	30	Awarded to a consortium comprising TISCO and IQ. Martrade GMBH (Germany).
15.	Multipurpose Berth No. 4 A at Haldia	Haldia Dock Complex	1.5	50	Draft license agreement has been finalised. Awarded to M/s ISP Ltd and Government conveyed its approval.
16.	General Cargo Terminal in Indira Dock	Mumbai	0.75	50	Awarded to M/s United Lined Agencies Ltd.

Annexure- 8.3.9 Contd.

Sl. No.	Project Name	Port name	Capacity (tonnes)	Project cost (Rs crore)	Project status
17.	BOT Coal Berth at New Mangalore	New Mangalore	5.0	250	Two coal berths were considered by New Mangalore Port Trust on BOT basis, one on tender basis and the other on captive user basis. Single tender received has been rejected, as it was not financially attractive. The second berth was on the captive user basis; given on nomination to M/s. Nagarjuna Power Corporation Ltd (NPCL). Government approved an MoU between NMPT and NPCL and certain changes are to be made in its conditions for revising royalty charges and upfront fee, revision of payments etc suggested by Ministry of Shipping. They have taken up the matter with Karnataka Power Thermal Corporation Ltd. They had also filed a petition in the high court requesting the State Government to expedite the clearance of power purchase agreement (PPA) signed with KPTCL. In its judgement the Hon'ble High Court has directed to the State Government to reconsider the PPA for clearance within eight weeks. In November 2001, the Government of Karnataka filed a review petition in the High Court. Other requirement to achieve financial closure such as finalising EPC Contract, fuel supply contract etc have all been readied by M/s NPCL. Price fixation for land acquisition has been done. Regarding changes in MOU between NMPT and NPCL, NPCL has taken up the matter with KPTCL.
	TOTAL		**60.05**	**3,480.20**	

Kandla Port Trust revised its figures of project cost and confirmed as indicated above.

Annexure 8.3.10

Private Sector Port Projects Under Consideration Or Bids Invited

Sr. No.	Project	Port name	Capacity (mt)	Project cost (Rs. crore)	Project Status
1.	Development of container terminal and trans-shipment terminal	Kochi Port	5.00	600	Only one bid from P&O Ports has been received. The Port Trust Board has approved the proposal. The matter is under consideration in the Ministry.
2.	Marine chemical terminal	Jawaharlal Nehru Port	15.00	2,000	The market study recently conducted by port indicates that traffic is much less than what was anticipated by the consultant during 1993-94. Hence, the port is planning to review the project in its present configuration.Port has received expres-sion of interest (EOI) which is being finalised
3.	Development, operation, maintenance and management of four container terminals on BOT basis.	Mumbai Port	5.00 lakh TEU	287	Fresh tenders with relaxed conditions has been invited and bids opened on 28 December 2001.
4.	Construction of a second liquid chem-ical/POL products berth at Pir Pau on BOT basis.	Mumbai Port	2 mt	94	The bid document is under preparation.
5.	Construction and license out berths at for handling cap-tive cargos on BOT basis of -	Visakhapatnam Port			
a.	M/s Utkal Aluminia International Ltd (WQ 6)		1.00	40	M/s Utkal were asked to advance an amount of Rs. 5.00 crore to meet estimated cost of the part of the proposed WQ 6 berth which is to be taken up along with WQ 7. Phasing of the investment by M/s Utkal is yet to be agreed to.
b.	M/s L&T (WQ 7 berth)		1.00	445	Construction of the same is proposed to be taken up by VPT itself and the estimate is approved by the VPT Board. Designs and tender papers prepared by the consultant to issue notice inviting tender in October 2001 so as to complete the construction by September 2003 concurrently with the BOT berths of EQ

Annexure 8.3.10 Contd.

Sr. No.	Project	Port name	Capacity (mt)	Project cost (Rs. crore)	Project Status
					8 and EQ 9. As the Andhra Pradesh Pollution Control Board (APPCB)'s consent has been obtained for this berth also to commence construction, it is proposed to apply for the same simultaneously. Accordingly services of EPTCL Govt. of Andhra Pradesh are being undertaken for preparation of REIA report.
6.	Container terminal at multipurpose berth outer harbour	Visakhapatnam Port	4 lakh TEUs	100	Board Resolution dated 30 November 2001 was sent to Ministry of Shipping on 1 December 2001 to communicate approval of Govt to award the work on BOT license to M/s United Liner Agencies of India Pvt. Ltd., Mumbai (the successful bidder).
7.	Installation, maintenance and operation of 2 nos. 33 ton cap. Rail mounted gantry type.	Visakhapatnam Port	5 million tones	43	Pre-qualification bids were invited for short listing.
8.	Development and operation of container terminal.	Kandla Port	3.36	369	It has been decided to discharge the bid invite fresh bids by spelling out terms and conditions in clear and unequivocal terms vide Ministry's letter dated 25 January 2002 to KPT.
9.	Allotment of multipurpose berth No. 11	Haldia Dock Complex (HDC)	0.5 million tones in case mixed cargo including containers /35,000 TEUs in case of exclusive handling of container.	30	Four parties have qualified as per provisions of request for qualifications Document. They are being issued with request for proposals Document for submission of technical and price bids.
	TOTAL		32.86 mts + 9 lakh TEUs	3608.20	

Annexure- 8.3.11

Traffic Projections (Commodity-Wise) For Major Ports And Other Ports

(In mt)

Commodity	Traffic as on 31.3.2002	Projections	
		Major Ports	Other Ports
I. POL			
a) Crude		112.50	56.00
b) Products		31.80	10.00
c) LPG		5.00	5.00
d) LNG		5.00	10.00
e) Total POL	108.00	154.30	81.00
II. IRON ORE	42.40	51.50	13.00
III. COAL			
a) Thermal		55.15	
b) Coking Coal		16.15	
Total Coal	46.00	71.30	17.00
IV. FERTILISERS			
a) Finished		4.96	
b) Raw Materials (dry)		8.49	
Total	10.50	13.45	5.00
V. OTHER CARGO			
(Non-containerised)	46.90	62.35	29.00
VI. CONTAINERISED CARGO	35.30	61.10 (5.09 Mill. TEUs)	5.00 (0.60 Mill. TEUs)
TOTAL	**289.10**	**415.00**	**150.00**
GRAND TOTAL		**565.00**	

Annexure-8.3.12

Details of capacity augmentation through spill over schemes of Ninth Plan

Sl. No.	Name of the Scheme	Expected accrual in MTPA
A)	**Sanctioned/ongoing schemes**	
1.	Port facilities by M/s. Essar at Vadinar	15.00
2.	Allotment of Berth No. 5A to APEDA on nomination basis at Kandla Port	0.35
3.	Modernisation of MOT Berths in Mumbai Port	4.00
4.	Construction of Berth at Pir Pau for handling coal on BOT	1.50
5.	Construction of Berths 5A and 6A at Mormugao Port	5.00
6.	Additional capacity expected by providing equipment by PSA at Tuticorin Port	0.85
7.	Additional container handling facilities at Chennai Port by P&O Ports Limited.	2.50
8.	Modernisation of West Quay Berths at Chennai Port	1.00
9.	Modernisation of South Quay 3 and East Quay Berths at Chennai Port	0.70
10.	Construction of Multipurpose Berth No. 4A at Haldia Port	1.50
	Sub Total (A)	**32.40**
B)	**Schemes likely to be sanctioned / commenced**	
11.	Construction of Berth No. 13 at Haldia	0.50
12.	Construction of Multipurpose Berth WQ 7 at VPT	1.00
13.	Construction of EQ 8 and EQ 9 on BOT basis at VPT	2.00
14.	Construction of additional general berth at NMPT	4.00
15.	Marine Chemical Terminal (2 Berths) at JNPT	5.00
16.	Construction of Second Liquid Chemical Berth at Pir Pau of Mumbai Port	2.00
17.	Captive coal berth at Tuticorin	1.50
18.	Construction of Ninth Cargo Berth (Renamed as 11th Cargo Berth) at Kandla Port	0.80
19.	Development of Container handling facilities at Kandla Port	3.40
	Sub Total (B)	**20.20**
	Total (A+B)	**52.60**

Annexure-8.3.13

Details of capacity augmentation through new schemes

Sl. No.	Name of the Scheme	Capacity in MTPA
A)	**Govt. / Port Funding**	
1.	Multipurpose Berth at inner harbour of Visakhapatnam by extending OR-I and OR-II berths	0.50
2.	Construction of WQ-6 on captive basis at Visakhapatnam	1.00
3.	2 Nos of edible oil jetties at Tuticorin	1.00
4.	Crude handling facilities at Kochi	6.00
5.	Modernisation of ore handling complex at Visakhapatnam	6.00
	Sub Total (A)	**14.50**
B)	**Joint Venture Basis**	
6.	Construction of berth at Vasco Bay of Mormugao Port	2.00
7.	Container Offshore Berths at Mumbai	4.00
	Sub Total (B)	**6.00**
C)	**Private Sector**	
8.	Berth for clean cargo at Paradip	0.60
9.	Vallarpadam Container Terminal of Cochin	5.00
10.	LNG/LPG facilities at Cochin Port	2.50
11.	Container terminal for transhipment at New Mangalore	5.00
12.	Captive coal jetty for NPCL at New Mangalore	3.00
13.	Modification to bulk berth at JN Port	9.00
14.	2 Nos. of coal berths at Ennore	8.00
15.	2 Nos. of berths for chemicals and LNG at Ennore	5.00
	Sub Total (C)	**38.10**
	Total (A+B+C)	**58.60**

Annexure 8.3.14

Outlay and Expendirue – Ninth Plan- Civil Aviation

(Rs. crore)

Sl.	Organisation	Ninth Plan Appr. Outlay	1997-98 Outlay	1997-98 Act. exp	1998-99 Apr. outl.	1998-99 Act. expr.	1999-2000 Appr. outl.	1999-2000 Act. expr.	2000-01 Appr. outl.	2000-01 Act. expr.	Annual Plan 2001-02 Appr. outlay	Annual Plan 2001-02 Anti. expr.	Annual Plan 2001-02 % age	9 th plan Anti. Amount	9 th plan Exp. % age
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	AI	3664	1233.5	517.75	602.53	550.01	433.46	383.09	675.3	641.6	445.44	345.46	77.55	**2437.91**	**66.5**
	Of Which BS				5	0	0.01								
2	IA	3640.75	470	441.9	630	522.03	540.01	492.27	550	421.26	460	431.8	93.87	**2309.26**	**63.4**
	Of Which BS	125			125	0	0.01								
3	AAI														
	I)NAD	1899.35	334.58	220.53	542.85	210.37	397.61	201.02	505.72	237.15	417.8	191.6	45.86	**1060.67**	**55.8**
	ii)IAD	1522.52	274.57	118.05	257.58	109.5	300.32	159.61	329.81	111.53	155.91	93.17	59.76	**591.86**	**38.9**
	Total	3421.87	609.15	338.58	800.43	319.87	697.93	360.63	835.53	348.68	573.71	284.77	49.64	**1652.53**	**48.3**
	Of Which BS	283.37	35.74	10	68.17	25	41	25	37.53	25.2	50.84	40.25	79.17	**125.45**	**44.3**
4	PHHL	209.2	87.25	26.85	90	5.55	101.55	1.21	126.45	2.31	127	32.9	25.91	**68.82**	**32.9**
5	HCI	89.55	50	8.52	42.4	10.19	20	13.37	24.77	17.34	23	23.25	101.09	**72.67**	**81.2**
6	BCAS	25	2.5	0.01	3	2.35	3.58	1.37	5.72	2.57	5.41	1.25	23.11	**7.55**	**30.2**
	Of Which BS	25	2.5	0.01	3	2.35	3.58	1.37	5.72	2.57	5.41	1.25	23.11	**7.55**	**30.2**
7	DGCA	27	3.77	1.07	4.45	3.38	4.4	3.47	5	4.36	5.5	4.6	83.64	**16.88**	**62.5**
	Of Which BS	27	3.77	1.07	4.45	3.38	4.4	3.47	5	4.36	5.5	4.6	83.64	**16.88**	**62.5**
8	IGRUA	35	14.73	10	12.94	11	6	6	6.75	5.89	1.25	1	80.00	**33.89**	**96.8**
	Of Which BS	35	14.73	10	12.94	11	6	6	6.75	5.89	1.25	1	80.00	**33.89**	**96.8**
	Total	**11112.37**	**2470.9**	**1344.7**	**2185.8**	**1424.38**	**1806.9**	**1261.41**	**2229.52**	**1444.01**	**1641.31**	**1125.03**	68.54	**6599.51**	**59.4**
	Of Which BS	**495.37**	**56.74**	**21.08**	**218.56**	**41.73**	**55**	**35.84**	**55**	**38.02**	**63**	**47.1**	74.76	**183.77**	**37.1**