

9

Transport

9.1 INTEGRATED TRANSPORT SYSTEM

9.1.1 The transport system in India comprises a number of distinct modes and services, notably railways, roads, road transport, ports, inland water transport, coastal shipping, airports, and airlines. Railways and roads are the dominant means of transport carrying more than 95% of total traffic generated in the country. Although other modes such as coastal shipping and inland water transport would play a greater role, the railways and roads would continue to dominate the transport landscape in the foreseeable future.

9.1.2 It is necessary to foster the development of the various transport modes in an integrated manner that will lead to the realization of an efficient, sustainable, safe, and regionally balanced transportation system, where each mode of transport operates in its field of economy and usefulness, with competitive and non-discriminatory prices that are adequate to support progressive development of transport infrastructure and services. This would also enable the comparative advantages and economic efficiencies to be properly reflected in the user costs.

9.1.3 The liberalization of our economy has brought home the urgency of recognizing that an efficient transportation system is necessary for increasing productivity and enabling the country to compete effectively in the world market. Adequacy and reliability of transport infrastructure and services are important factors that contribute towards the ability of the country to

compete in the field of international trade and attract foreign direct investment. The government has a major role to play in this sphere. Even in a market economy, the framework that national governments provide for the transport sector largely determines the level of cost and transport operations. It is, therefore, necessary to create a policy environment that encourages competitive pricing and co-ordination between alternative modes in order to provide an integrated transport system that assures the mobility of goods and people at maximum efficiency and minimum cost.

9.1.4 With the vision of formulating an integrated policy and long-term investment planning, the Planning Commission has undertaken a project of conducting a Total Transport System Study with the help of M/s Rail India Technical and Economic Services. This study will generate traffic flows covering the four major mechanized modes of transport—railways, highways, airways, and shipping—and also forecast mode-wise traffic demand for specified horizon years upto 2025–26. The study will also help to analyse inter-modal transport resource costs and determine optimal inter-modal mix.

9.2 RAILWAYS

9.2.1 Indian Railways is often referred to as the life-line of the Indian economy because of its predominance in transportation of bulk freight and long-distance passenger traffic. The network criss-crosses the nation, binding it together by ferrying freight and passengers

across the length and breadth of the country. As the Indian economy moves into a higher growth trajectory, Indian Railways has also stepped up developmental efforts and is preparing itself for an even bigger role in the future.

REVIEW OF THE TENTH PLAN

9.2.2 The Tenth Plan has seen a remarkable turnaround in the financial performance of the Indian Railways, making it possible for it to place increased reliance on internal resources and market borrowings for development. The actual mobilization of internal resources went up from a meagre Rs 3113 crore or 27% of the total resource mobilization in its first year to a sizeable contribution of more than Rs 12000 crore or nearly 50% of the total resource mobilization in its final year. The table in Annexure 9.2.1 also shows the marked step up in internal resource generation in the last two years of the Tenth Plan, with commensurate decrease in the contribution of GBS during this period. Notably, the bulk of the contribution to the GBS has been on account of the Special Railway Safety Fund (SRSF), as brought out in the table in Annexure 9.2.2. Additional GBS provided through SRSF has helped the Railways in wiping out arrears in renewal of critical assets that enabled improvement in availability as well as utilization of assets, which has eventually contributed to the turnaround in the performance of the Railways.

Physical Targets and Achievements

9.2.3 The Tenth Plan targets and achievements are summarized in Table 9.2.1. Indian Railways have far exceeded the Tenth Plan projections both in passenger and freight traffic. Originating freight has shown an

average annual growth of 8.1% over the Tenth Plan period as against 3.8% in the Ninth Plan period. Similarly, in BTKM, the corresponding growth in freight was 7.4% and 3.7%. The average annual passenger growth in the Tenth Plan was no less impressive, at 4.2% in terms of the number of originating passengers and 7.4% in terms of the passenger kilometre as compared to respective figures of 4.2% and 6.7% in the Ninth Plan.

A Remarkable Performance

9.2.4 The impressive achievement in freight loading and movement—exceeding the target by 16.7%/20%—was the result of a market-focused strategy aimed at capturing large volumes of traffic along with efficient utilization of assets and resources with associated reductions in unit costs despite rising input costs. The major initiatives that contributed to enhancing the competitive advantage included the decision to use the carrying capacity of the wagons optimally by increasing the loadability of the wagons on selected routes up to 15%, realignment of tariffs to the competitive conditions in the market, and incentivization of loading in the lean season and in the empty flow direction. Incremental loading has come across-the-board from all commodity groups, barring the expected decline in petroleum products. Major increases were seen in coal, iron ore for export and steel plants, cement, and other commodities (which include containers). The Railways' share in respect of commodities such as cement and steel has increased despite stiff competition from roadways. This praise-worthy performance needs to be sustained, consolidated, and carried forward with outcome-based enhancements in the Eleventh Plan.

TABLE 9.2.1
Physical Targets and Achievements

	Ninth Plan (2001–02)	Tenth Plan					
		Target for Terminal Year (2006–07)	2002–03	2003–04	2004–05	2005–06	2006–07
Originating freight (mt)	492.5	624	518.7	557.4	602.1	666.5	728.4
Freight net tonne km(billion)	333.2	396	353.2	381.2	407.4	439.6	475
Originating Passengers(million)	5169.3	5885	5048.2	5202.9	5475.5	5832.4	6352.1
Passenger km (billion)	494.2	625	515.4	542.1	576.6	616.6	691.8

Productivity

9.2.5 The spurt in traffic has been supported by a concomitant increase in the productivity of the assets. This quantum jump in the productivity of assets, including wagon and track utilization, has come about as a result of various initiatives. The increase in axle load on mineral routes, improved maintenance practices, and reduced detentions at terminals have all contributed significantly to higher wagon productivity. With the growth in volumes and the improved productivity, the unit cost of operations has been brought down. Improved productivity of assets over the Plan period is summarized below in Table 9.2.2.

9.2.6 There is a sustained improvement in wagon utilization from 2468 net tonne kilometre (NTKM) per wagon per day in the first year of the Tenth Plan to 2963 NTKM in its final year. The wagon turnround has come down to six days from seven days in the beginning of the Tenth Plan and eight and a half days in 1996–97. Track utilization improved markedly from 7.74 million NTKM per route km to 9.05 million NTKM per route km.

9.2.7 Significant improvements in managerial practices have underpinned the improvements in the productivity of human resources during the Tenth Plan, which increased from 0.26 million NTKM per employee to 0.33 million NTKM per employee by the

fourth year of the Tenth Plan while passenger km per employee increased from 0.37 million to 0.47 million during the same period.

POLICY ISSUES AND STRATEGIES FOR THE ELEVENTH PLAN

9.2.8 Indian Railways is at the threshold of a major change at the beginning of the Eleventh Plan. The key challenge before it is not attracting additional traffic, but rather meeting the accelerating demand for high-quality services imposed by a vibrant economy for which it has to take immediate and appropriate steps to augment capacity and deploy it optimally through new investment and tariff policies. The Railways also has to execute projects speedily and procure assets at a rapid pace by incorporating best practices in project implementation, production, and procurement of new assets.

9.2.9 The mid-term appraisal of the Tenth Plan document had noted that the Chinese Railways is carrying 4.5 times more freight than the Indian Railways, mainly due to the larger investments made in the Chinese Railways in expanding and strengthening the infrastructure which also contributed towards improvements in the productivity of the Chinese Railways. Indian Railways carries more passengers than Chinese Railways, but the longer term development of the Railways in India depends crucially upon its ability to

TABLE 9.2.2
Productivity Performance

Productivity Indicator	Ninth Plan (2001–02)	Tenth Plan			
		2002–03	2003–04	2004–05	2005–06
Wagon Utilization					
NTKM/wagon/day (Broad Gauge [BG])	2223	2468	2574	2617	2872
Wagon km/wagon/day (BG)	191.6	204.6	187.8	204.5	211
Wagon turnround (in days) (BG)	7.2	7.0	6.7	6.4	6.1
Track Utilization					
NTKM/route km (million)	7.38	7.74	8.14	8.57	9.05
Passenger km/route km (million)	10.1	10.5	10.8	11.5	12.2
NTKM/Engine Day Online (Goods-BG)					
Diesel	167163	164713	199958	218045	279066
Electric	311061	326798	352669	415244	465375
Human Resources Productivity					
NTKM/employee (million)	0.24	0.26	0.28	0.31	0.33
PKM/employee (million)	0.35	0.37	0.40	0.43	0.47

move freight, in keeping with the needs of the growing economy, and at speeds and reliability determined by the need to be competitive. This is especially important given the greater energy efficiency of the Railways in the long-distance freight (Box 9.2.1).

Box 9.2.1
Expansion of Chinese and Indian Railways
(1992–2002)— A Comparison

	China	India
New track (RKM)	13797	682
Track doubling (Kilometres)	9400	1519
Electrification (RKM)	8975	5192
Investment (billion \$)	85	17.3
Freight (2003–04) (billion Net Ton Kilometres)	1724	381
Passenger (2003–04) (billion Passenger Kilometres)	478	541

Investments

9.2.10 In light of the huge arrears in replacement of over-aged assets in the early part of the Tenth Plan, a decision was taken to create a Rs 17000 crore SRSF of which Rs 12000 crore was to come from general revenues. As a result, the proportion of GBS had increased to 45% during the Tenth Plan as compared to 34% in the Ninth Plan and 23% in the Eighth Plan. With SRSF coming to a closure, the GBS would normally be expected to decline from this level in the Eleventh Plan. However, the projected levels of economic growth and the sharp rise in manufacturing output would necessitate that capacity augmentation of the Railways is supported by GBS to the maximum extent possible. Even so, the trend of increased reliance on internal resources (IR) and extra budgetary resources (EBR) witnessed in the last two years of the Tenth Plan would need to continue in the Eleventh Plan. For this to happen, innovative, non-traditional strategies and methods have to be adopted for garnering the resources to fund the higher levels of investment required for capacity augmentation of the system to meet the heightened demand for railways' services. The situation calls for concerted efforts to generate IR and EBR in light of the possibility that a significant proportion of the surpluses generated may have to be set aside for implementation of the Sixth Pay Commission

recommendations, to meet the increased requirement of replacements and renewals, as well as the payment of increased dividend liability.

9.2.11 The scope for resource mobilization also needs to be enlarged by rationalizing the tariff structure of freight and passengers with a view to reducing the present cross-subsidization both within the passenger segment and also from the freight to the passenger segment. At present, there is excessive cross-subsidization from freight to passenger services. Specific areas have to be thrown open for private sector participation, including those through PPPs. The PPPs are projected to contribute over 9% of the total required investment of around Rs 215000 crore in the Railways during the Eleventh Plan, a sharp increase from the 0.4% private sector share in the Tenth Plan.

Renewals, Rehabilitation, and Replacements

9.2.12 A clear priority is achieving higher maintenance standards of the existing assets to sustain the 2006–07 levels of traffic of about 730 million tonnes. Renewals, rehabilitation, and replacements have to be accomplished with an overall objective of reduced asset failures and, even more importantly, improved safety. An investment of over Rs 60000 crore (at constant 2006–07 price) will be required during the Eleventh Plan to maintain existing assets by timely rehabilitation and replacements, as well as for modernization to improve their utilization levels. Such a strategy would enable the Railways to increase throughput from the existing level of assets.

Capacity Enhancement

9.2.13 Another key priority is to achieve a significant enhancement of the capacity given the expected growth in traffic. Until now the emphasis has been on incremental capacity augmentation. Recognizing the need for a major shift in the strategy for capacity augmentation, the mid-term appraisal of the Tenth Plan document had envisaged construction of Dedicated Freight Corridors (DFCs) on selected trunk routes. This has since been given effect to with the announcement of construction of DFCs separating freight traffic from passenger traffic on trunk routes. The proposal for capacity augmentation through construction of DFCs along the highly saturated freight routes is a major

prong of the new long-term strategy to provide premium services in freight and passenger. Passenger services on the existing trunk routes along these DFCs will also benefit from the release of capacity by freight movement but would require investments to improve speeds and capacity so that both quantum availability and quality of passenger services offered can be significantly enhanced (Box 9.2.2).

9.2.14 Additional capacity on other routes based on a route-wise planning and low-cost capacity improvements will be another prong of the Eleventh Plan strategy. Route-wise planning will enhance line and terminal capacity simultaneously, since inadequate terminals often are the binding constraints affecting the seamlessness of train movement.

9.2.15 With the quantum increase in both passenger and freight traffic during the last three years of the Tenth Plan and the projected increase in the Eleventh Plan, rolling stock availability will be a key factor. In addition to augmenting the existing production capacities, new production facilities for coaches, locomotives, and wagons would be required. These new production facilities would have to be capable of producing superior locomotives, coaches, wagons, and other rolling stock.

9.2.16 For successful implementation of all the capacity-enhancement projects, including DFCs, a crucial input is availability of sufficient capacity in terms of construction agencies and qualified human resources. Adequate awareness has to be created in the country so that appropriate agencies, namely, the technical institutions and the construction industry, prepare for the task of making available necessary technical human resources and acquire necessary capabilities through joint ventures, etc. Identification of financially viable 'bankable' projects with acceptable risk profiles would need to be coupled with a cogent and comprehensive approach to regulation that establishes the role and scope of regulatory institutions, and their relationship with the legislative and executive branches of the government and the consumers at large.

Strategy for Capacity Enhancement in the Short Term

9.2.17 The strategy in the short run should be focused on maximum utilization of the existing capacity by addressing the directional and seasonal variations in demand. Initiatives taken in the recent years for generating traffic in the traditional empty flow direction and managing seasonal fluctuations in demand using a system of differential pricing should be further strengthened and the response mechanism

Box 9.2.2 Dedicated Freight Corridors (DFCs)

In order to create capacity and improve quality of services, Dedicated Railway Freight Corridor Projects on Western and Eastern Routes were included in the Rail Budget of 2006–07. The Western corridor of 1469 km will connect Jawaharlal Nehru Port to Dadri and Tughlakabad in the North. The Eastern corridor of 1232 km will connect Ludhiana to Sonnagar via Dadri and Khurja, thus facilitating transfer from one corridor to another. The Eastern corridor will further get extended to Kolkata region to connect the proposed deep-sea port. The estimated cost of construction of both these corridors is expected to be around Rs 28000 crore and it is likely to take about five years for completion of these corridors and have a spill-over beyond the Eleventh Plan.

In order to obtain increased throughput and reduce the cost of operations, DFCs are designed to run double stack container trains with 25 tonne axle load running at a maximum speed of 100 km per hour.

An SPV (Dedicated Freight Corridor Corporation of India Ltd) has been formed to implement the DFCs Project. The SPV will plan, construct, and maintain infrastructure. It will also be responsible for operation of trains. The relationship between the Ministry of Railways and the SPV will be codified in a Concession Agreement which draws upon best practices worldwide. Feasibility studies and detailed planning for DFCs on the North–South, East–West, East–South, and South–South routes would also be taken up.

Construction of DFCs would reduce unit cost of transportation with substantial savings in operations and by increasing throughput for infrastructure. Coupled with improved reliability and quality of service, including more efficient inventory management, competitive advantage of Indian goods in the international market is expected to improve significantly.

The Western DFC is expected to also service an Industrial Corridor, for which necessary initiatives are being planned.

institutionalized, so that policy and operations' responses are dynamic and flexible.

9.2.18 The second important strategy would be investments in identified mineral routes and feeder routes to DFCs. It is envisaged that the entire 6973 km of iron ore route will be upgraded for running 25 tonne axle load trains during the Eleventh Plan period. This has already started in the terminal year of the Tenth Plan. Track and bridge structures will be strengthened concomitantly. It is also envisaged that 4220 km of existing feeder routes joining the DFC will be upgraded to 25 tonne axle load. With investments directed into identified mineral routes, it should be possible to switch over to 25 tonne axle load concurrently with availability of requisite rolling stock.

9.2.19 Finally, the investments in signalling improvements such as automatic signalling, introduction of intermediate block sections, block-proving axle counters, track circuiting, etc. coupled with induction of high power locomotives should also create additional capacity in the short run at low cost. Further, the improved wagons with the higher pay-load to tare ratio of around 4, as against the extant 2.6, should be inducted expeditiously to obtain the much needed additional capacity. Switching over to mechanized maintenance of track by investing in track machines would also free some of the capacity locked up in manual maintenance of the track. Reduction in asset failures would also be a part of the strategy to improve line capacity in the interim period.

Technology Upgradation

9.2.20 To keep pace with the technological developments in various aspects of the Railways sector, it is necessary to continuously upgrade the technology. In addition to pursuing the measures indicated above, measures such as introducing longer trains and optimization of coach capacities have to be fully explored.

9.2.21 Speed differential between the freight and passenger trains has to be narrowed down by inducting high-speed freight stock and upgrading freight terminals and their approaches to obtain additional capacity in the medium term as well as to increase the reliability of service in freight business.

9.2.22 Information technology applications hold the key to the Railways' sustained improvement in services and efficiency. Internet ticketing was introduced in August 2002 with the objective of providing tickets at the doorstep of the customer. Initially it was started in Delhi, which is now extended to over 200 cities. Further, in September 2005, e-ticketing was started as a pilot project in two trains, which is now extended to all trains. Booking of *Tatkal* tickets was also started through Internet in December 2005. The concept of 'ticket at doorstep' will have to be further developed for reserved, unreserved, and sub-urban tickets. An integrated Railway information system on real-time basis would be developed and implemented to provide information of train movement, ticketing, facilities on display systems on stations and trains, as well as through diversified media.

9.2.23 Freight Operation Information System (FOIS) which was sanctioned initially in 1984 was taken up in right earnest after detailed scrutiny in 1998–2003 and the first module of the two modules identified, that is, Rake Management System, is fully implemented and commissioned. Implementation of the FOIS has reached the next stage with the implementation of the second module, that is, Terminal Management System, in 489 locations and benefits will now begin to accrue to customers. FOIS will have to be extended to all loading points and be interfaced with customers' information systems, weigh bridges, etc. This is expected to be over during this Plan period.

9.2.24 Coach toilets are the main source of poor sanitation in railway premises. In order to prevent discharge from the toilets while the train is in railway station premises, speed actuated controlled discharge toilets and biodegradable toilets will be introduced in passenger coaches. In collaboration with IIT, Kanpur, efforts are already on to develop indigenous technology to produce fully environment-friendly toilets to suit Indian conditions, so that the discharge from coach toilets does not create unhygienic conditions all along the railway track.

Throw Forward

9.2.25 The Railways has a large number of ongoing projects, which require very large funds for completion

(Box 9.2.3). The requirement of fund for completing these projects under various categories is as shown in Table 9.2.3. At current prices, the total throw forward would be around Rs 65000 crore. In comparison with the position at the beginning of Tenth Plan, the maximum increase has been in the areas of new lines and doubling.

**Box 9.2.3
Throw Forward—A Way Forward**

Arising from operational necessity, works on doubling, electrification, and gauge conversion are to be completed in a time-bound manner. Due to scarcity of the available resources it is not possible to fix time frames for the completion of other throw forward works. However, works on new lines, accounting for almost 60% of throw forward's value, have been accorded priority gradings as a part of the mid-term review of the Tenth Plan in order to focus the available resources on such works which give immediate benefits and also meet national priorities. All pending works were, thus, categorized in order of their importance into four categories, and higher outlays are being provided to 'last mile' projects, 'operationally required' projects, projects of strategic importance, and projects taken up on cost-sharing basis. This has already started showing results with physical achievements matching the financial outlays, especially in respect of gauge conversion works.

**TABLE 9.2.3
Throw Forward of Projects**

Type of Projects	Estimated Throw Forward	
	Km	Rs Crore
New lines	8132	31519
Gauge conversion	7148	10417
Doubling	3213	7314
Electrification	1952	1080
Traffic facility works	325	2044
Metropolitan transport projects	(nos)	3820
Total	—	56194

Tariff Regulating Mechanism

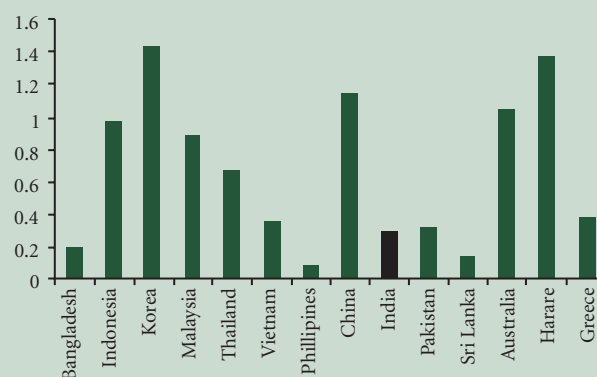
9.2.26 The Indian Railways has embarked upon a review of its accounting policies and practices to introduce a fully computerized accounting and MIS so as to generate costing data on commercial lines.

The objective is to enable assessment of profitability of different operations and routes, provide specific cost information to be used for marketing purposes, and facilitate indexing of tariffs to input costs.

9.2.27 The fare–freight ratio, that is the ratio of passenger fare per km and freight rate per tonne km, in India is among the lowest in the world, indicating the extent of cross-subsidization from freight to passenger (Box 9.2.4). In addition, premium passenger services are priced very high vis-à-vis second class. This is not a viable strategy since the Railways are competing with air traffic for premier segment and the airline sector is strongly competitive. Reducing cross-subsidization within passenger fares and between the fares of passenger and freight is now an urgent necessity. In any case, Railways have to move towards aligning the fares with the costs in all modes and classes of traffic.

9.2.28 With the availability of more reliable and scientific data on costs, there will be a rational basis for arriving at costs for individual services within the passenger services as also for freight services. Therefore, the next logical step is to have a Tariff Regulating Authority to determine rail fares on a rational basis, after factoring in relevant issues of unavoidable losses on account of uneconomic lines and sub-urban services.

**Box 9.2.4
Fare–Freight Ratio of World Railways**



Source: World Bank Study.

Logistic Solutions

9.2.29 Railways have to play an increasing role in the integrated multi-modal transport system to capture the new traffic thrown up by the growing Indian economy. To realize this, Railways needs to seriously consider provision of complete logistic solutions to its freight customers, in addition to decreasing unit costs and providing superior services. It is proposed to develop logistic parks integrating bonded warehousing, logistic processing, commodity exposition, and logistic distribution. The key development is targeted at import/export logistic distribution facilitating international purchasers, third-party and fourth-party logistic companies, and logistic agencies.

9.2.30 Further, logistic hubs can be developed along or near important railheads through joint ventures between State Governments and Railways, through PPPs and direct private sector participation. These hubs will be strategically located to capture agro-industrial produce in the hinterland and to provide competitive transport to expand access to markets for industries in the covered areas. These hubs could be developed as mini-freight villages or as logistics parks

depending on the turnover. In the event of a large turnover, there is scope for accommodating a gamut of value-added facilities such as warehousing, refrigerated store houses, cranes and other handling facilities, packing/repacking, assemble, repairs, maintenance, financial services, agro-marts, and electronic centres. These hubs can be developed through PPPs on Build–Own–Operate (BOO) basis as 24 × 7 service centres. For the promotion and development of logistical hubs, Railways should assume a central role and establish consultative machinery involving the major user industries and logistical service providers. Such a forum would also help the Railways to plan for capacity augmentation on a long-term basis.

High-speed Passenger Services

9.2.31 The Eleventh Plan strategy is to consolidate the share of Railways in passenger business, particularly, in long-distance and medium-distance segment by increasing the commercial speed of passenger trains, and introduction of fast services between metropolitan cities with peak speeds up to 150 km per hour from the present speed of 110–130 km per hour. The development of high-speed corridors, which are an

Box 9.2.5 Public–Private Partnership (PPP)

As on date, the Indian Railways have a large shelf of uncompleted projects whose completion would require about Rs 65000 crore. To meet the requirement of future growth of the Indian Railways, further new investment projects are required for which very large funds are needed. The magnitude of the task is huge and any neglect of the same is bound to lead to severe capacity limitations adversely affecting the competitiveness and growth of the economy.

It is estimated that the Indian Railways would not be able to generate sufficient funds internally, through borrowings and from budgetary support for meeting the investment requirements of the Eleventh Five Year Plan. The shortfall would be met through private investments in PPP projects. Additional investment from private sector is also expected through their investments in manufacturing facilities created as a consequence of partnerships with IR. Together it is expected that about Rs 20000 crore worth of investments would be done by private sector during the Eleventh Five Year Plan.

Private sector participation in container movement is already unfolding on a large scale after it was decided to introduce competition in this segment. Necessary Model Concession Agreement (MCA) has been finalized, agreements signed with 15 parties in January 2007, and the scheme has since been operationalized with seven new operators, excluding CONCOR, commencing operations by utilizing about 30 new rakes.

This policy is required to be taken forward by building in suitable guarantees and commitments from railways in order to enable the private operator to provide value-added container services and make investments in container handling facilities such as Inland Container Depots and Container Freight Stations (CFSs). Long-term commitments on transit time and access charges on the part of Railways would be necessary for stimulating private investments in the container logistics sector.

A range of PPP models have been identified which need further fine tuning. These include multi-modal logistics parks, upgradation of major freight and passenger terminal, construction of road over bridges (ROBs), Railway Optical Fibre Cable (OFC) network, consolidation of piece meal parcels into wagons and train loads, etc. A programme for re-development of 22 railway stations into world-class stations through the PPPs has already been initiated.

environment-friendly solution for high-speed passenger transport, will be explored on selected routes. This will be done through PPP route. Speeding up delivery of passenger services by utilizing Mainline Electric Multiple Unit (MEMU) and Diesel Electric Multiple Unit rakes would also be pursued with greater vigour. Trains would be augmented to 24 coaches on all important sectors.

Terminal Facilities

9.2.32 Terminal capacity is an important determinant of the carrying capacity affecting the flow of passenger and freight trains. Full benefits of the line capacity works cannot be derived until terminal constraints are removed. In order to make Indian Railways a world-class railway system, substantial improvements to the terminal facilities are required.

World-class Stations

9.2.33 Most of the railway stations and passenger terminals on the Indian Railway network were built several years back and are suffering from severe infrastructural inadequacies in handling the passengers. As the stations occupy the prime land in the heart of cities, they offer promising possibilities for their re-development by leveraging a part of the real estate development potential. A total of 22 stations have been identified which are located in metropolitan cities and major tourist centres for development through PPP route. The preparatory work for New Delhi and Patna stations through appointment of consultants has already been taken in hand.

Safety and Security

9.2.34 Improved safety is best achieved by upgrading technological aids together with improving reliability of assets, while minimizing human dependence. Elimination of collision through use of anti-collision devices, adoption of fire-proof coaches to reduce fire accidents, crash worthy coaches to reduce fatalities in case of accidents, and reducing level crossing accidents are all part of this Plan. Enhanced training to impart better skills in O&M of assets will also be the focus during the Plan. In order to improve the security of the passengers in general, and women and children in particular, efforts will be made to empower the Railway Protection Force by providing them

modern equipment and weaponry as also through better training facilities and upgrading the information system.

PHYSICAL TARGETS FOR THE ELEVENTH PLAN

Freight Traffic

9.2.35 The freight traffic projections for the terminal year of the Eleventh Plan have been pegged at 1100 million tonnes of originating freight and 702 billion tonne km (BTKM) of transportation output. The projections for freight traffic are given in Table 9.2.4.

TABLE 9.2.4
Projection of Freight Traffic in the Eleventh Five Year Plan vis-à-vis Achievements in the Ninth and Tenth Plans

	2001-02	2006-07	2011-12
Originating freight (million tonnes)	492.5	728.4 (47.9)#	1100 (51.0)#
Freight tonne km	332.2	475 (43.0)#	702 (47.8)#

Note: # % increase over the previous Plan.

Passenger Traffic

9.2.36 Passenger traffic is expected to grow at a rate of about 5.5%. The projections for passenger traffic are given in Table 9.2.5. The Eleventh Plan will focus on reducing the cost of operations, developing attractive service packages, and adopting competitive pricing to safeguard the market share of upper-class rail travel against airlines.

TABLE 9.2.5
Projection of Passenger Traffic in the Eleventh Five Year Plan vis-à-vis Achievements in the Ninth and Tenth Plans

	2001-02	2006-07	2011-12
Originating passengers (million)	5169.3	6352.1 (22.9)#	8400 (32.2)#
Passenger km (billion)	494.2	691.8 (40.0)#	942 (36.2)#

Note: # % increase over the previous Plan.

9.2.37 To cater to the projected annual growth of non-sub-urban traffic at 8%–9%, it would be necessary to expand supply by increase in train services and augmentation of seating capacity of trains. Augmentation of train composition to 24 coaches, started in the Tenth Plan, would be continued and extended to other sectors.

Bridges

9.2.38 There are 127768 bridges of Indian Railways. Of these, 44% are more than 100 years old. Railways will undertake repair, rehabilitation, and rebuilding of bridges on the basis of their physical condition as ascertained during annual inspections.

Signalling and Telecommunication

9.2.39 More than 10000 Route Kilometres (RKM) still has obsolete overhead alignment-based communication system on certain routes. It is planned to speedily replace it with an Optical Fibre Cable (OFC) and quad cable-based communication system.

Electrification

9.2.40 During the Eleventh Plan about 3500 km of track will be electrified which is nearly double the Tenth Plan achievement of about 1800 km.

Energy Management

9.2.41 For the first time in the history of Indian Railways, direct power supply from the NTPC has been obtained for the Ghaziabad–Kanpur section yielding substantial savings of about Rs 50 crore per annum with relatively small investment of Rs 68 crore. Further, Railways is also exploring the possibility of buying power from NTPC or from other power utilities, through tariff-based competitive bidding, under Open Access System. Setting up of a 1000 MW captive generation power plant at Nabinagar in Bihar, a joint venture with NTPC, is also approved which is expected to be commissioned during this Plan period. To further the cause of clean and green energy, a 10 MW wind energy plant is being set up at Chennai to provide captive power to a Railway production unit.

Rolling Assets

9.2.42 Technological upgradation and modernization of rolling stock is a key element of the plan for rolling assets. Universal switch-over to 22.9 tonne axle load wagons from the present axle load of 21.3 tonne will lead to improved loadability of the wagons. Efforts will be directed to bring lighter and corrosion-resistant material to improve the payload to the tare ratio of wagons. Railways are also planning to introduce special types of wagons for movement of automobiles, bulk

cement, fly ash, and hazardous chemicals. During the Eleventh Plan the proportion of high horsepower locomotives will be increased. The requirements are shown in Table 9.2.6.

TABLE 9.2.6
Eleventh Five Year Plan—Requirement for Rolling Stock

	Tenth Plan		Eleventh Plan Target
	Target	Actual	
Wagons (nos in FWUs)	65000	90554	155000
Electric locos (nos)	343	524	1800
Diesel locos (nos)	444	622	1800
BG conventional Coaches (VUs)	9160	10789	17500
EMUs/DEMU/MEMUs (VUs)	2715	1413	5000

Note: EMUs = Electric Multiple Units; FWUs = Four Wheeler Units; VUs = Vehicle Units.

Metropolitan Transport Projects

9.2.43 The sub-urban services would require separation from main line systems in places like Mumbai. The emphasis in sub-urban services would be to increase peak time services and augment trains to 12 car rakes.

9.2.44 The Mumbai sub-urban services are severely strained and will be augmented with the capacity additions as part of the Mumbai Urban Transport Project (MUTP) works. The introduction of air-conditioned sub-urban coaches/trains will also be considered, if possible, through PPPs.

9.2.45 Mumbai Rail Vikas Corporation Ltd type model which is implemented for rail component of Phase II of the MUTP, wherein the State Government of Maharashtra has agreed for financing on the basis of Peak Cash Deficit Funding (a kind of viability gap funding [VGF] wherein the gap in debt service liability and the surcharge collection levied for servicing the debt is met by the concerned State Government) should be tried out for other sub-urban systems in Chennai, Kolkata, and Delhi. The first step would be to form a separate SPV for each of these sub-urban systems with the necessary mandate for modernization and upgradation of the existing system.

Physically Challenged and Senior Citizens

9.2.46 All mail and express trains would be provided with specially designed coaches which have separate

compartments and suitably designed toilets for the physically challenged and senior citizens. In addition, trains having air-conditioned accommodation would also be provided with air-conditioned compartments for physically challenged persons.

North East Region (NER)

9.2.47 Providing rail connectivity to all States in the NER is a national priority. It has been decided to create a dedicated fund for the National Projects of North East with 25% contribution from the GBS of Railways and the remaining 75% to be provided as additionality from the general revenues. With these scaled-up funds, Railways has been directed to ensure completion of all the sanctioned works within the Eleventh Plan period.

RESOURCE MOBILIZATION

9.2.48 For the economy to grow at 9% per annum over the Eleventh Plan period, it is targeted to increase the GCF in the infrastructure from 5% of GDP at the start of the Tenth Plan to around 9% at the end of the Eleventh Plan. For this to be achieved, private sector participation in a big way is imperative. The areas identified for private sector participation include new manufacturing units, multi-modal logistics parks, construction of high-speed passenger corridors, induction of privately owned rolling stock of container operators, commercial development of land and air spaces, port connectivity works of the private ports, ore lines for steel plants, upgradation of major freight and passenger terminals, construction of road over bridges (ROBs), and railway OFC network.

9.2.49 To garner additional internal resources for bridging the gap between the projected requirement and the availability of resources, Railways may consider levying a 'developmental surcharge' on passenger as well as freight traffic to fund the DFCs as also upgradation of existing network to run high-speed passenger trains.

9.2.50 The total projected outlay for the Eleventh Plan for the Ministry of Railways is Rs 194263 crore at 2006–07 price (Rs 219717.36 crore at current price) which includes Rs 44263 crore of GBS at 2006–07 price (Rs 50063.36 crore at current price) including Rs 3750

crore at 2006–07 price (Rs 4241.36 crore at current price) of cess accruals. The scheme-wise break up of the GBS at current prices is given in the Appendix (Volume III). In addition, the sector is expected to generate private sector investment of Rs 20000 crore during this period. Further, the additional GBS needed for the National Projects of J&K and North East during the Eleventh Plan period would be of the order of Rs 12000 crore and this would be made available during the course of the year, as in the past. This should meet the requirement of Railways. However, if there is a need to further enlarge the Plan size, this would be accomplished by mobilizing necessary additional IEBR and private investments during the course of implementation of the Plan.

9.3 ROADS

9.3.1 A good road network is a critical infrastructure requirement for rapid growth. It provides connectivity to remote areas; provides accessibility to markets, schools, and hospitals; and opens up backward regions to trade and investment. Roads also play an important role in inter-modal transport development, establishing links with airports, railway stations, and ports.

9.3.2 India has one of the largest road networks in the world, of 33.14 lakh km, consisting of (i) national highways (NHs), (ii) State highways (SHs), (iii) major district roads (MDRs), and (iv) RRs that include other district roads and village roads. NHs with a length of 66590 km comprise only 2.0% of the road network but carry 40% of the road-based traffic. SHs with a length of about 137000 km and MDRs with a length of 300000 km together constitute the secondary system of road transportation which contributes significantly to the development of the rural economy and industrial growth of the country. The secondary system also carries about 40% of the total road traffic, although it constitutes about 13% of the total road length. RRs, once adequately developed and maintained, hold the potential to provide rural connectivity vital for generating higher agricultural incomes and productive employment opportunities besides promoting access to economic and social services.

9.3.3 Despite its importance to the national economy, the road network is grossly inadequate in various

respects. It is unable to handle high traffic density and high speeds at many places and has poor riding quality. Besides speedy implementation of the Golden Quadrilateral (GQ) and the North–South and East–West (NS–EW) corridors, addressing the deterioration of large stretches of NHs and other improvements in the road network are, therefore, to be accorded high priority in the planning process.

REVIEW OF THE TENTH PLAN

9.3.4 Against an outlay of Rs 59490 crore in the Tenth Plan for the road sector, the expenditure was Rs 42577.43 crore (Rs 48593.95 crore at current price). The overall financial and physical performance is given in Annexure 9.3.1. The scheme-wise and year-wise outlay and expenditure are given in Annexure 9.3.2.

NATIONAL HIGHWAYS (NHs)

9.3.5 In absolute terms, there has been considerable growth in the NHs network since Independence. Table 9.3.1 details the various achievements over select periods and Annexure 9.3.3 provides Plan-wise details of increase in the NHs network.

9.3.6 The progress of four-laning, two-laning, strengthening of roads, and construction of bridges during the Tenth Plan period has been satisfactory, keeping in view the availability of funds. There has, however, been some shortfall in construction of bypasses, primarily due to the time-consuming process of land acquisition and shifting of utilities in the case of bypasses. A large number of deficiencies, however, remain in the network, in terms of inadequate

capacity, insufficient pavement thickness, weak, narrow and distressed bridges/culverts, ROBs, etc. Annexure 9.3.1 provides an overview of the physical targets and achievements of normal NH works, Border Roads Development Board (BRDB) works, and works by the NHAI during the Tenth Plan period.

9.3.7 Despite the progress reported above, the NHs are not what they should be. Only 12.5% of their total length is wider than two lanes (as on 31 March 2007), leading to heavy congestion. Shortfall in construction of bypasses, inadequate capacity, insufficient pavement thickness, and weak, narrow, and distressed bridges/culverts as well as ROBs are some of the other deficiencies. Upgradation of large segments of SHs to NHs under the NHDP during the Ninth and Tenth Plans, although impressive, has not kept pace with the demand for road transportation, besides spreading available resources too thinly across competing projects. The result is poor maintenance and riding quality of NHs network, particularly of the non-NHDP section. Also many of the NHs declared during the last two Plan periods were substandard, resulting in further aggravation of the problem.

NATIONAL HIGHWAY DEVELOPMENT PROGRAMME (NHDP)

9.3.8 The Committee on Infrastructure (CoI) has approved a massive phased programme for the improvement and development of NHs during the period 2005–12. This programme envisages an investment of Rs 236247 crore. Although, the NHDP envisages award of concessions/contracts by 2012, the completion of

TABLE 9.3.1
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)
1947–69	24000	14000*	Nil	Nil	169
1969–90	33612	16000	267	9000	302
1990–2002	58112	3457	1276	7000	87
Tenth Plan (2002–07)	66590	4177	6769**	8377	611***
Total	–	37634	8312	24377	1169

Note: # Length at the end of the period.

* Includes 6000 km which were already two-lane at the time of designation as NHs.

** Includes 216.62 km which have been six- or eight-laned upto the Tenth Plan.

*** This does not include the bridges constructed/rehabilitated by NHAI under the stretches of NHDP.

part of Phase III and Phases IV, V, VI, and VII is expected to be accomplished only by the middle of the Twelfth Plan.

9.3.9 NHDP Phase I consists of the GQ, port connectivity, and 962 km of NHs covered under NS–EW corridor of NHDP Phase II. All works on GQ have been awarded, but there have been some slippages in its completion. Against the total length of 5846 km of GQ, 5602 km, that is 95.82%, have been four-laned, thereby leaving a balance of 244 km for completion. Progress of various segments of the GQ is given in Table 9.3.2.

9.3.10 The port connectivity project envisages improvement of 380 km of NHs connecting 10 major ports. Till date, the works on Kandla, Mormugoa, Phase I; JNPT, Phase I; and Vizag ports have been completed. By end-August 2007, four-laning of about 159 km roads of port connectivity and 322 km of other NH had been completed. Improvement of about 215 km roads of port connectivity and 620 km of other NH is under implementation and the balance length of 6 km of port connectivity and 20 km of other NHs is yet to be awarded.

9.3.11 Under NHDP II, by end-August 2007, 1418 km of the NS–EW corridors had been four-laned out of a total length of 7300 km (7200 km at present), that is 19.42% of the total. Work is in progress over a length

of 4903 km, while work for the balance 821 km is still to be awarded. The target for substantially completing the NS–EW corridor project is December 2009.

9.3.12 The major reasons for shortfalls in fulfilling the targets fixed during the Tenth Plan period include, inter alia, delay in land acquisition, obtaining environment and forest clearances, getting clearance of Railways for ROB designs, shifting of utilities, local law and order problems, and poor performance by some contractors.

9.3.13 In respect of NHDP III, which initially envisaged four-/six-laning of about 10000 km (subsequently enhanced to 12109 km) on build, operate, and transfer (BOT) basis, the first phase covering 4815 km is expected to be completed in December 2009. Four-laning in a total length of 126 km road length has been completed in NHDP III, the work is in various stages of progress over an aggregate length of 1866 km, and work aggregating to 2823 km is yet to be awarded. The second phase of NHDP III, which has also been approved, involves preparation of DPR for the balance length of about 7294 km and is targeted for completion by December 2013.

9.3.14 Approval of NHDP IV for widening of 20000 km to two lanes with paved shoulders as well as for NHDP VII comprising construction of ring roads of major towns, bypasses, flyovers, etc. is pending.

TABLE 9.3.2
Corridor-wise Details of Progress on the Golden Quadrilateral as on 31 August 2007

Corridor	Four-laned Length (km)	Under Implementation		Total Length (km)
		Length (km)	No. of Contracts	
Delhi–Kolkata (NH-2)	1364 (92.15)*	89	13	1453
Kolkata–Chennai (NH-5, 6, and 60)	1568 (93.11)	116	6	1684
Mumbai–Chennai (NH-4, 7, and 46)	1251 (96.97)	39	6	1290
Delhi–Mumbai (NH-8, 76, and 79)	1419 (100)	–	–	1419
Total	5602 (95.82)	244	25	5846

Note: Figures in parenthesis denote percentages.

9.3.15 Under NHDP V, out of 6500 km to be six-laned, two projects covering 148 km have already been awarded, leaving a length of 6352 km still to be awarded as on 31 August 2007.

9.3.16 NHDP VI which has also been approved relates to construction of 1000 km of expressways with full access control on new alignment. The Vadodara–Mumbai corridor (400 km) on NH-8, the highest density corridor, has been prioritized and is likely to be awarded by 2008–09. The balance 600 km will be selected out of the other high density corridor routes identified on the basis of traffic volume. The status of physical parameters of NHDP and other roads, including port connectivity projects, is given in Table 9.3.3.

9.3.17 The approved Special Accelerated Road Development Programme for the North Eastern (SARDP-NE) Region, which envisaged improvement of about 7616 km of road length (3251 km NH and 4365 km of State roads (SRs)/roads of strategic importance), has been subsequently enhanced to 8737 km of road length (3846 km of NHs and 4891 km of SRs/roads of strategic importance). This is to be undertaken in two phases. Implementation of Phase A of SARDP-NE aggregating to 2304 km as also initiating action for preparation of DPRs under Phase B for 6433 km has been approved. A High Powered Inter-Ministerial Committee (HPC) has been set up for co-ordinating the programme, ensuring avoidance of overlapping of various proposals, and sanctioning of individual sub-projects under SARDP-NE. The HPC has so far approved proposals in an aggregate length of 571 km at an estimated cost of Rs 1424 crore covering mainly Assam, Manipur, and Sikkim. The DPRs for the other

stretches are under preparation. A provision of Rs 9562 crore (Rs 10814.83 crore at current price) has been made during the Eleventh Plan for this important initiative of road connectivity in the North East.

9.3.18 Regular monitoring of financial and physical progress of works is carried out at various levels with a view to removing bottlenecks. Several initiatives have been undertaken to expedite the implementation of contracts and make improvements in its internal processes, some of which are detailed in Box 9.3.1.

STATE HIGHWAYS (SHS) AND MAJOR DISTRICT ROADS (MDRS)

9.3.19 The present condition and stage of development of the secondary network varies widely across States. Though reasonable in terms of size, the quality of SHs and MDRs is particularly worrisome. This is mainly because the funds for the development of this secondary system are very inadequate. The NHs and RRs are provided with reasonable funds for their development at the Central level, while the RRs also receive some share at the State level. In the process, the secondary system of roads is neglected.

9.3.20 The result is that there are several deficiencies in the existing SHs and MDRs as a result of (i) inadequate width of carriageway in relation to traffic demand; (ii) weak pavement and bridges; (iii) congested stretches of SHs and MDRs passing through cities/towns; (iv) poor safety features and road geometrics, and inadequate formation width in hilly and mountainous region; (v) missing links and bridges, and (vi) several railway level crossings requiring urgent replacement with ROB/road under bridge (RUB).

TABLE 9.3.3
Status of NHDP and Other NHA I Projects as on 31 August 2007

Project	Length (km)	Already Four-laned (km)	Under Implementation		Yet to be Awarded
			Length (km)	No. of Contracts	
Golden Quadrilateral	5846	5602	244	25	–
North–South/East–West	7300	1418	4903	148	821
Port Connectivity	380	159	215	8	6
Others	962	322	620	16	20
NHDP IIIA	4000	126	1866	31	2008
NHDP V	6500	–	148	2	6352
Total	24988	7627	7996	230	9207

Box 9.3.1**Initiatives taken to Expedite Completion of Quality Road Projects**

- Standard format for acquisition of land approved by Ministry of Law, based on which Department of Road Transport and Highways (DoRTH) are to take action on specific proposals for land acquisition.
- For resolving problems in pre-construction activities, regular follow-up meetings are being held with senior officials and specifically designated nodal officers of State Governments.
- In pursuance of decision of CoI, an Empowered Committee of Secretaries has been constituted under the Cabinet Secretary to address Inter-Ministerial and Centre-State issues regarding land acquisition, utility shifting, environmental clearance, etc.
- MOU signed with M/s IRCON for speedy construction of ROBs.
- Works Manual incorporating the Guidelines for procurement of works and consultancy services, compiled by NHAI in July 2006, will guide procurements and management of contracts, including under PPP Projects.
- Action has been taken against defaulting civil contractors: 14 contracts terminated and 17 contractors declared non-performers.
- For ensuring preparation of quality DPRs for civil works, provisions made for peer review, 10% performance guarantee, and penalty for delays and variation of quantities of more than 15%.
- DPR Consultants are now required to co-ordinate at field level with Project Implementation Units (PIUs), NHAI, local officers, and local residents at every stage of preparation of DPR. Proof Consultants are to review the DPR to ensure full compatibility with project requirements, timelines, and detailed guidelines.
- DPR contracts to provide for mandatory continuation of certain key personnel of DPR consultants for a period of at least three to four months after award of civil contracts for technical co-ordination.
- JV partners to compulsorily submit performance security separately from each partner's bank account to the extent of their participation in JV.
- Steps taken to improve cash flow problems of contractors by granting interest bearing discretionary advance at the request of contractor, release of retention money against bank guarantee of equal amount, deferment of recovery of advances (on interest basis), and relaxation in minimum Interim Payment Certificate amount.

9.3.21 The existing road network is under severe strain due to traffic growth, overloading of vehicles, and paucity of funds for road maintenance. A broad assessment shows that over 50% of SHs and MDRs network have poor riding quality. According to one assessment, losses due to poor condition of these roads would be around Rs 6000 crore per annum.

9.3.22 Although, efforts have been made by several States to encourage and attract private sector financing in augmenting capacity of roads and provision of bridges, ROBs, and bypasses, the resources have remained a major constraint in the execution of the programmes for SRs during the Tenth Plan. Other constraints include, inter alia:

Thin Spreading of Resources

- More projects are sanctioned than can be undertaken within the available resources, leading to spreading of available funds thinly and resulting in time and cost overruns.

Delay in Pre-construction Activities

- Work has at times been awarded without acquiring full land for the project. This has affected obtaining the environmental clearance and shifting/removal of utilities.

Weak Management by Contractors

- Although, several measures have been taken by the contracting industry to acquire state-of-art equipment and procure good technical and managerial staff, considerable scope exists for improvement in achieving project management excellence, proper scheduling of human resources, and equipment resources.

Poor Implementation Capacities

- The State Public Works Departments (PWDs) are required to be reoriented for the current needs of modern technology and commercial management principles. There is a need to improve the capacity for planning, designing, and execution of works to

meet the transport demand of users in many States. Considerable scope also exists for enhancing the training arrangements of engineering personnel. Side-by-side contracting industry and consultancy sector also need to grow on healthy lines.

RURAL ROADS (RRS)

9.3.23 To boost the rural connectivity, a rural roads programme, the PMGSY was launched as a 100% CSS. It aims to provide all-weather roads by 2003 to habitations with a population of 1000 and above, and by 2007 to those with a population of 500 and above. In respect of hilly/desert/tribal areas, it aims to link habitations with a population of 250 and above.

9.3.24 However, despite all efforts about 35% of all habitations still remain to be connected by all-weather roads. Table 9.3.4 details the progress made in physical parameters of PMGSY by end-March 2007. As may be seen, only 21% of the habitations have been actually connected so far, although 24% were targeted during the Tenth Plan period. To address this slippage, the PMGSY has been re-phased to achieve time-bound targets of rural connectivity by folding it into the Bharat Nirman Programme (initiated in 2005–06). It aims to connect all 1000-plus habitations in rural areas (500-plus for hilly and tribal areas) by 2009. The Bharat Nirman Programme also envisages a massive scaling up of the programme in terms of habitation, connectivity coverage, construction targets, and financial investment.

TABLE 9.3.4
Connectivity Status under PMGSY
(as on 31 March 2007)—Targets versus Achievements

Population Category	No. of Eligible Habitations	Target up to Tenth Plan	No. of Habitations Connected
1000 and above	60030	25371	20478
500 and above	79208	14854	13193
250 and above	39530	2511	3816
Total	178768	42736	37487

Issues in the Construction and Maintenance of Roads

ROAD MAINTENANCE

9.3.25 The road network built at a huge cost needs to be maintained properly to prevent disintegration and

deterioration, ensure its continuous utilization in an optimum manner, and ensure road safety to users. However, maintenance of roads, being a non-plan activity, has tended to be neglected in the face of available financial resources. A study by the World Bank estimated that US\$ 45 billion invested in main roads in 85 countries had been eroded over the previous 20 years. In India too, some of the excellent roads, constructed with International Development Association loan four decades back, have been reduced to a very poor condition. As the Twelfth Finance Commission has observed, ‘...it is far more important to ensure that assets already created are maintained and yield services as originally envisaged than to go on undertaking commitments for creating more assets...’. What is important is that repair activities, if required, on the road are to be taken up at an appropriate time, as the rate of progression of deterioration of roads increases rapidly once the deterioration starts. The vehicle operating cost on highways, which is a major component of the total transport cost, is entirely dependent on the condition of the roads. A rupee spent on maintenance saves two to three rupees in vehicle operating cost, besides providing a very cost-effective option to improving traffic flow. Although attention has been given to maintenance work in the Tenth Plan period, there is compelling need to give it overriding priority with increased emphasis on higher standards so as to reduce the frequency of reconstruction.

9.3.26 The maintenance requirement of the high density corridor of NHs under construction and post-implementation is provided by NHAI. However, the non-NHDP NH sections, which are maintained by State PWDs, are poorly managed, primarily because the funds made available to them for maintenance are well short of the requirement as per norms. For NHs, the DoRTH gets only 40% of the total funds required for maintenance of NHs, as per the specified norms. The year-wise details of shortfall are given in Table 9.3.5.

9.3.27 Maintenance of SHs and MDRs has also been suffering from paucity of resources made available for the purpose. Keeping this in view, the Twelfth Finance Commission allocated Rs 15000 crore for maintenance of roads and bridges in the entire country during the period 2006–10. This amount is distributed to the

TABLE 9.3.5
Shortfall in Funds for Road Maintenance
in the Tenth Plan

(in Rs Crore)

Year	Requirement as per Norms	Amount Provided	Shortfall	Shortfall (%)
2002-03	2200.00	800.00	1400.00	63.64
2003-04	2200.00	731.74	1468.26	66.74
2004-05	2480.00	745.56	1734.44	69.94
2005-06	2480.00	868.10	1611.90	65.00
2006-07	2480.00	814.38	1665.62	67.16

States on the basis of their road length, with appropriate weights being assigned to different type of roads. For rural roads under PMGSY, there is provision for maintenance for five years following the completion of a project although the long-term issue of maintenance has not been addressed so far.

9.3.28 Besides inadequacy of resources, management of roads is unsystematic and inspections irregular. Maintenance work is done departmentally with disproportionate allocation spent towards the gang establishment. Modern mechanized equipments for road maintenance are not used to the desired degree. There is weak accountability and poor monitoring of the maintenance activities.

9.3.29 The first task is to ensure that the allocation for repair and maintenance is adequate. The Central Road Fund Act 2000, which gave statutory status to the Central Road Fund (CRF), clearly specifies that the fund be meant, inter alia, for development and maintenance of NHs. Despite the clarity in the statutory provision, the entire share meant for the NHs has been appropriated for the NHDP programmes for development and further upgradation of roads. Since maintenance of existing assets is more important than the creation of new ones, all alternatives for making resources available for maintenance must be considered, including possible earmarking of a fixed proportion, say one-third, of the NH share of road cess for maintenance. Likewise, State Governments may have to consider supplementing the allocation for road maintenance from the Twelfth Finance Commission with the State share of road cess. Beginning with the Eleventh Plan, but increasingly in future Plans, resources will have to be found for

maintaining the substantial road assets being created in the PMGSY, bearing in mind that the road cess share for rural roads has already been pre-empted for original construction for many years.

9.3.30 Additionally, in NH projects under BOT mode, maintenance is taken care of during the period of concession. For other tollable roads, the Model Concession Agreement (MCA) for Operation, Maintenance, and Tolling (OMT), published by Planning Commission, should be adopted. For non-tollable roads on NHs, SHs, and MDRs, long-term maintenance contracts should be introduced. Other steps to be taken include adoption of Pavement Management Systems (PMS), outsourcing of work, increased mechanization, corridor management, and enforcement of the Control of National Highways (Land and Traffic) Act 2002 (Box 9.3.2).

Modalities for Execution of a Road Project

9.3.31 The problems of development of road networks are diverse and future requirements are of a formidable magnitude. Therefore, the strategy for development of roads would have to vary keeping in view the nature of problem and the development. It has been decided to award all contracts for high-density corridors under NHDP III onwards only on BOT basis, with traditional construction contracts awarded only in specified exceptional cases. However, NHs characterized by low density of traffic and passing through far flung, remote, or strategically important areas would be developed primarily through budgetary resources.

9.3.32 During the Tenth Plan, the total quantum of private sector investment on NHDP has been Rs 6367.25 crore, as against a target of Rs 7580.27 crore. The shortfall in its achievement, especially during 2006-07 (Rs 1578 crore against a target of Rs 2243 crore) is attributable mainly to the teething problems encountered while establishing an appropriate policy and regulatory framework for the PPPs, including their institutional mechanism. However, given the complexity of the PPP contracts and the exposure of the government in such contracts, some standardized structures that provide predictability and mitigate risk to private capital have been put in place. Thus, MCA for BOT projects has been developed to facilitate

Box 9.3.2
Modernization of Maintenance Management

- PMS incorporating a rational method of assessment of distress and decision support system for maintenance activities needs to be introduced for productive use of limited resources. Inventorization programme, including the Road Information System, may be used for PMS.
- Use of machines for repair of distress in pavements and mobile inspection units for proper inspection/distress in bridges to improve maintenance culture should be encouraged.
- Maintenance works hitherto being done departmentally should be outsourced to the private sector to enhance efficiency. Concepts involving OMT contracts need to be extended to NHs with State PWDs.
- Corridor management, including engineering and non-engineering experts, is needed for the proper management and maintenance of NHs section. This would include:
 - Maintenance of roads and bridges to the desired standard.
 - Tackling safety hazards and traffic bottlenecks.
 - Traffic management.
 - Collection of users' fee.
 - Incidence management.
 - Land management.
- Steps need to be taken for enforcing the necessary provision of the Control of National Highways (Land and Traffic) Act 2002, which came into force from January 2005 for safe and speedy movement of traffic on NHs. The Highways Administration has already been established for its enforcement.

speedy award of contracts and the roll out of projects are being accelerated. Besides, MCA for OMT has been published by the Planning Commission. The MCA for Annuity Projects is presently under finalization. The initiatives taken in order to facilitate private sector investment are given in Box 9.3.3.

9.3.33 Although, private sector investment would show an increase during the Eleventh Plan, there would

undoubtedly be a limit to road stretches that can be awarded on BOT (Toll) basis. In this mode of delivery, the private sector takes a market risk as the concessionaire not only builds the road and maintains it during the concession period, but also charges toll to recover the cost of construction and maintenance. In view of the uncertainty of future traffic flows and in the cases where toll earning may not fully cover the capital cost, the concessionaire is allowed a VGF of upto

Box 9.3.3
Initiatives taken to Facilitate Private Sector Investment

- In order to maximize the volume of investments in the road sector, given the limited availability of public resources or the need to use them for development of roads in backward/remote areas, it has been decided that all the sub-projects in NHDP Phase III to Phase VII would be taken up on the basis of PPP on BOT mode.
- The government has announced several incentives such as tax exemptions and duty-free import of road-building equipment and machinery to encourage private sector participation.
- The MCA for NHs, which was approved by CoI in 2005, has now been adopted for implementation of PPP projects by Ministry of Shipping, Road Transport, and Highways (MoSRTTH)/NHAI; the MCA for SHs has been published by the Planning Commission.
- A review of tolling policy in respect of NHs has been concluded and the report, once finalized, would serve to impart greater certainty in revenue projections for concessionaires.
- Manuals of Standards and Specifications for four-laning and six-laning of NHs through PPPs are under finalization by DoRTH. Adoption of these manuals would reduce project preparation time as project specific manuals would no longer be needed.
- The substantial completion of NHDP Phase I, that is GQ, has called for a shift in emphasis to corridor management so as to deliver maximum throughput in terms of speed and traffic volume, while minimizing operational cost and enhancing road safety. In this regard, an MCA for O&M of Highways has been published by the Planning Commission.

40% of the project cost based on competitive bid for the lowest subsidy. Some projects can also be taken up on BOT (Annuity) mode of delivery basis, wherein tolling is not an integral part of the project and the project is, therefore, essentially a road construction and maintenance arrangement that involves deferred payment by the government. It may not be difficult to find concessionaires willing to take up the project on BOT (Annuity) basis. This mode of delivery, which is not classical PPP, is costlier, and should be the least preferred option.

EXPRESSWAYS

9.3.34 Traffic conditions on the stretches other than those that would be taken up under NHDP VI, whether of two-lane, four-lane, or six-lane, are substantially short of world standards. The mix of motorized and non-motorized traffic on these roads is a huge hurdle. These roads pass through habitations and pedestrians' traffic impedes vehicular traffic flow. Bypasses have been built for some cities but ribbon development and roadside eating establishments abound. In the absence of adequate roadside amenities, roads are also used for parking by trucks encroaching upon the ROW. Intersections have been provided on these highways to enable vehicles to take a U-turn at different places. Vehicles standing in the middle of the road, waiting for the oncoming traffic to stop before turning around constrain the traffic flow. Worse, since there is no restriction on access, it is a common practice all over the country for vehicles to move in the wrong direction in order to avoid driving to the next intersection and coming back.

9.3.35 Another impediment is the stoppage of vehicles at the check posts at State borders even when the vehicle is merely transiting the State. Vehicles moving on inter-state routes remain stationary about 40% of the time in the process of being thus inspected. The World Bank has estimated that truck delays at checkpoints costs the Indian economy anywhere between Rs 900 crore to Rs 2300 crore.¹

9.3.36 The cumulative result of all deficiencies is that even when the road surface is good and has adequate

width, vehicles move at a slow speed. Trucks (with one or two drivers and one helper) travelling from Delhi to Mumbai (1419 km) take three days and those from Delhi to Bangalore (2019 km) four to five days. According to the same World Bank study, 'US equivalent transit times, with one driver operating legally would be two and three days (actually second and third morning), respectively. If the US carrier used two-driver teams, a day would be cut from each movement.' On the average, Indian trucks are used for 60000 km to 100000 km a year, which is less than a quarter of those in developed countries.

9.3.37 A study group of the Ministry of Shipping, Road Transport, and Highways (MoSRTTH) set up during the Ninth Plan proposed a total expressways network of about 15600 km by the year 2020 with broad phasing as shown in Table 9.3.6.

TABLE 9.3.6
Phasing of Expressway by the
Study Group of MoSRTTH

Year	Cumulative Length (km)
2005	4900
2010	10500
2015	14100
2020	15600

More recently, the Tenth Plan Working Group on the road sector had observed 'It is strongly felt that segments of highways where traffic levels in the next five to seven years are assessed to be justifying a six-lane facility (considering both local and long distance inter-city traffic) say traffic exceeding 60,000 PCUs [Passenger Car Units] per day, it would be more prudent to think in terms of an Expressway than opting for widening of existing highway. The need of traffic in the interim period should be met by provision of paved shoulders along existing roads. Maharashtra State provides a good example of the initiative taken by them in going ahead with the construction of Mumbai-Pune expressway.' In 2005, the CoI approved a plan for the construction of NHs during the period 2005–12, which included the construction of 1000 km of expressways under NHDP Phase VI.

¹ *India Road Transport Service Efficiency Study*, World Bank, 2005.

9.3.38 In order to provide world-class road infrastructure during the Eleventh and Twelfth Plans, the NHDP Phase VI would need to be substantially scaled up. Access-controlled expressways best serve to overcome the deficiencies of NHs. Even checking on inter-state traffic can be minimized by requiring that the checks be carried out only at the time of entry into or exit from the expressway network. It is, therefore, necessary to formulate a comprehensive Master Plan for the construction of access-controlled expressways on new alignments and then proceed with land acquisition. Active participation and necessary financial support, especially for acquisition of land by the State Governments, would be essential for developing such expressways. A blueprint for the development of 15600 km of expressways, which may include the GQ and NS–EW corridors is required, using modern scientific methods to determine alignments and avoid habitations as far as possible. The establishment of an Expressways Authority of India to implement the scheme should be considered by the Ministry.

Need for Studying the Capacity of Existing Roads and Revision of Capacity Norms

9.3.39 The design service volume norms that have been developed quite some time back have been used for the purpose of planning. A study on updating of road user cost data (July 2001) carried out by Central Road Research Institute (CRRI) indicates that these norms, particularly those relating to four-lane, may be under-estimated. As a matter of fact, no systematic study has ever been undertaken to determine the capacity of multi-laned roads. The reduction in the difference of speed of various vehicles, change in the mix of traffic as well its pattern, etc., may also have favourable impact on the capacity of various categories of roads. Thus, there is a need to initiate a study on the capacity of highways depending upon the carriageway/roadway widths, etc.

Supply Side Constraints

9.3.40 Apart from the resource constraints, the limited absorptive capacity of certain States, inadequate institutional and implementing capacities, availability/capacity of local contracting and consulting services, and availability of raw materials and human resources are some of the important supply side constraints,

especially when a number of competing road projects are under implementation under various initiatives such as the Bharat Nirman Programme, RSVY, etc. The State Government may depute a dedicated team of officials to strengthen and expedite the land acquisition process for projects under NHDP.

9.3.41 The measures to strengthen institutions responsible for developing and maintaining roads, such as NHAI, State PWDs, and Border Roads Organization (BRO), are underway. These include restructuring the NHAI and training technical officers in BRO in project preparation, new specifications, and construction and maintenance technologies. State PWDs need to reorient themselves to meet the challenges from heightened emphasis on private sector participation and large-scale projects funded by multi-lateral agencies. Although, the account codes and works manuals in the State PWDs are well developed, these need to be reviewed and synchronized with upgraded systems adopted at the Central level.

9.3.42 Although, Programme Implementation Units (PIUs) have been established at the district level under PMGSY for planning and executing rural road projects, a single specialized nodal agency, for State-level co-ordination, with responsibility for overall policy, planning, and management of RRs is desirable. As ownership of RRs will rest with the PRIs eventually, capacity is required to be built at the grass-root level by qualified manpower and training.

9.3.43 For RRs, which are essentially low cost roads, use of local materials which are cheap and involve minimum haulage should be maximized. The use of non-conventional road construction material such as industrial wastes and by-products should also be promoted.

Integrated Development of Road Network

9.3.44 The State Governments should consider formulation of an integrated transport plan for development of their road network. The Centre is providing funds for the balanced development of the SRs from the CRF. In this context, it may be mentioned that the SARDP-NE is a major initiative, not only for improving connectivity in hilly/remote areas

but also for ensuring integrated development of road works.

Goals and Objectives for the Eleventh Plan

9.3.45 The main thrust is to create world-class road infrastructure, with the objective of improving mobility and accessibility while reducing the cost of transportation. The expanded NHDP when implemented will bring about a major improvement in the riding quality and capacity of around 46000 km of arterial roads out of a total of 66590 km of NHs, which carry around 40% of the road traffic. Some adjustment may be necessary in the NHDP programmes keeping in view the availability of resources. Out of the 20000 km originally envisaged under NHDP Phase IV, it may be possible to take up 6800 km through the BOT route during the Eleventh Plan. The remaining length of roads of 13200 km would be taken up in stretches, which have deteriorated so much that they have become virtually impassable, for Improvement of Riding Quality Programme (IRQP) and strengthening at the estimated cost ranging from Rs 50 lakh per km to Rs 1.75 crore per km. Furthermore, it is necessary to significantly up-scale the expressways project, initially by preparing a blueprint for 15600 km of access-controlled expressways, determining the alignments, and completing the acquisition of land for 6000 km within the Eleventh Plan period. Strict monitoring would be required in order to ensure that construction of 1000 km of expressways is expedited during the Eleventh Plan.

9.3.46 Ensuring a balanced development of the total road network across the country would continue to be an important objective of the Eleventh Plan, including thorough widening of roads, improvement in riding quality and strengthening, road safety measures, and providing world-class wayside amenities to cater to the growing demand for road services. In particular, 100% rural connectivity with all-weather roads to habitations with a population of 1000-plus (500-plus in hilly/tribal areas) is a priority objective under the Bharat Nirman Programme. Inter-modal issues such as road connectivity with airports, railways, ports, etc. are also crucial issues. The broad goals and objectives for road sector development in the Eleventh Plan are given in Box 9.3.4.

Mobilizing Resources

FUNDING FOR NHs

9.3.47 In the past, funds for development of NHs have essentially been provided through the Central Government budget. Fees/tolls levied by the Central Government on bridges on NHs and selected stretches are utilized for upgradation and improvement of roads. Of the Rs 2 per litre cess on petrol and high-speed diesel oil collected by the Central Government and accredited to the Central Road Fund, the cess amount of Rs 1.50 per litre is distributed for development and maintenance of NHs, SRs, RRs, and for the construction and development of ROB/RUB and other safety features, as provided in the CRF Act 2000, in accordance with the prescribed formula. The remaining cess of Rs 0.50 per litre is allocated solely for development and maintenance of NHs. The multi-lateral financing agencies such as the World Bank and the ADB have been providing loan assistance for highway projects and efforts need to be made to continue tapping this source.

9.3.48 Implementation of NHDP would leave a substantial part of non-NHDP NH network, which would also require development in the Eleventh Plan period. These sections are characterized by low density of traffic. Some of these stretches fall in backward and inaccessible areas, while others are of strategic importance. In fact, the substantial addition made to NH network during the last two Plan periods has led to an increased gap between availability of resources and requirements and thus contributed to poor maintenance and riding quality of the non-NHDP network. The development of these stretches of NHs would be financed primarily through budgetary resources. However, it would be essential to prioritize them in order to ensure that resources are not spread thinly among competing projects, which are responsible for time and cost overruns.

FUNDING FOR SHs

9.3.49 Although State Governments provide funds for SHs, besides allocations from the CRF (of, for instance, Rs 1566 crore during 2007–08), BOT projects are also being encouraged to meet the large financing requirements of SHs in the Eleventh Plan. For this purpose

Box 9.3.4
Road Sector Objectives for the Eleventh Plan

- Develop roads as an integral part of transport system, supplementing other modes, with high priority being accorded to balanced development of road network (primary, secondary and tertiary systems).
- Expedite implementation of enhanced NHDP:
 - Completion of balance work of GQ and North–South and East–West corridors.
 - NHDP Phases III through VII, with reduction in scope of NHDP IV from 20000 km to 6800 km.
 - Restructure NHAI, the main implementing agency of NHDP.
- Phased removal of deficiencies in existing NHs concomitant with development of traffic over the next 10–15 years:
 - Emphasis on augmentation of capacity of high-density corridors.
 - Greater attention to construction of missing links and missing bridges, rehabilitation and reconstruction of weak/dilapidated bridges for traffic safety.
- Formulate comprehensive Master Plan for development of 15600 km of access-controlled expressways:
 - Determine alignments.
 - Acquire land for about 6000 km.
 - Expedite and complete construction of 1000 km.
 - Consider establishing an ‘Expressways Authority of India’ to implement the Master Plan.
- Prioritize SARDP-NE:
 - Improve connectivity of all State capitals in North East with two- or four-lane NHs with paved shoulders.
 - Connect all district headquarters with two-lane NHs/SHs.
- Prioritize development of high-density corridors in SHs/MDRs.
- Promote private sector participation for development of the national and State roads networks:
 - Adopt BOT (Toll) for construction.
 - Adopt MCA for OMT for tollable roads.
 - Earmark sufficient funds for maintenance for non-tollable roads;
 - Adopt improved maintenance practices NHs/SHs/MDRs.
- Achieve Bharat Nirman time target of providing rural connectivity through all-weather roads to all habitations with a population of 1000-plus persons (500-plus in hilly/tribal areas) by 2009 and thereby improve the quality of life in rural areas and ensure balanced regional development.
- Focus on proper upkeep and maintenance of the existing road network and on attaining higher maintenance standards for optimum utilization of existing network capacity and preserving road assets already created. Adopt modern management techniques for scientific assessment of maintenance strategies/priorities.
- Improve capacities of implementing agencies: NHAI, State PWDs, and BRO.
- Prioritize road safety: prevent overloading of trucks, encroachments, unplanned ribbon development, etc. Focus on issues like energy conservation and environment protection.
- Provide world-class wayside amenities along highways.
- Reduce transportation costs: better riding surface, use of containers, multi-axle vehicles in the haulage of goods, etc.
- Ensure road connectivity where rail link is not possible.
- Integrate road development with railways and other modes of transport.
 - Identify feeder roads to important railway routes and undertake needed improvement including periodic maintenance.
 - Link minor important ports with minimum two-lane NHs/SHs/SRs.
 - Link all inland container depots/CFSs with minimum two-lane NHs/SHs.
- Develop a road data bank, computerize project monitoring system, promote use of information technology in the roads sector.

an MCA for the PPPs in SHs has been published by the Planning Commission and State Governments have been recommended to use it. Further, opportunities for providing VGF of up to 20% of project cost for

financing State sector schemes have been made available by the Central Government. Specific initiatives have been taken by some State Governments, in particular, State Governments of Gujarat, Rajasthan, and

Punjab in order to strengthen and upgrade SRs (Box 9.3.5). The possibility of tolling ROBs, constructed at level crossings where heavy traffic crosses the railway line, could be explored and success stories replicated across States. External funding could also be explored as a possible source of finance for the development of selected highways. Some States have established Road Construction Corporations which augment resources through market borrowings.

FUNDING FOR RURAL ROADS (RRS)

9.3.50 In order to augment funding for meeting the time targets of rural connectivity under the Bharat Nirman Programme, it is proposed to borrow Rs 16500 crore from the NABARD by leveraging cess accruals.

However, with loan repayments commencing in 2009–10, the amount of cess available (net of repayments) to finance the rural roads programme would be limited in the last two years of the Eleventh Plan. Options to continue leveraging cess, to increase budgetary support and various other strategies for mobilizing funds could be explored (Box 9.3.6).

PHYSICAL TARGETS FOR THE ELEVENTH PLAN

National Highways

9.3.51 High priority is accorded to expeditious completion of the balance works under NHDP Phases I and II and first phase of NHDP Phase III. The GQ is scheduled for substantial completion by December

Box 9.3.5

Innovations by some State Governments

- Crucial role being played by Madhya Pradesh Road Development Corporation and Gujarat State Road Development Corporation (GSRDC) in upgrading SRs using Central Government's VGF which extends subsidy of up to 20% of total project cost and an additional up to 20% financed by State Government. Contribution to GSRDC is also kept to defray expenditure on pre-construction activities.
- PPP (Annuity) model adopted by Gujarat since strengthening/widening of SRs does generate a commercially viable return despite 40% upfront subsidy.
- Adoption of a plan scheme for land acquisition for identified corridors by Punjab to reduce traffic congestion on major highways, with funds proposed to be released on the condition that these shall be recovered by PWD by imposing a cess on sale/purchase and any development activity carried out by the private parties on lands adjoining PWD roads.
- Creation of a Rajasthan State Road Development Fund, through a cess on sale of petrol and high speed diesel, towards extending interest free loan and share capital to the Road Infrastructure Development Company of Rajasthan for projects to upgrade SHs.

Box 9.3.6

Some Options of Resource Mobilization for Rural Roads

Independent Road Fund: There is practically no scope for private sector financing of rural roads since they carry very low volumes of traffic. Creation of an independent road fund in various States, as has been done by a few States such as Uttar Pradesh and Karnataka for maintenance, needs to be explored.

Market Committee Funds: Extension of the scheme of levying marketing fee and rural development cess on agriculture produce to all States with the support of the farmers' community could be explored.

Vehicle Fees: In addition to taxes on fuels, additional funds should be generated through special purchase tax on two wheelers, cars, and agricultural tractors. Part or whole of such funds so collected may be allocated for rural roads and provision of road transport services in rural areas.

Domestic Borrowings: Recently, NABARD in India has come up in a significant way to provide loan assistance for construction of rural roads in several States under RIDF programme. As the financial institution like NABARD may not have the requisite technical expertise, it may be worthwhile to consider providing NABARD loans with technical and management inputs of NRRDA. This would enhance the financial and technical discipline, as well as help in adoption of uniform standards for these roads, on the lines of the PMGSY. This can be channelized by transferring the total loan amount to a pool to be availed of by the States under guidelines similar to that of PMGSY.

2007. North–South, East–West corridors are expected to be substantially completed by December 2009. The other priorities include:

- Complete the first phase of NHDP Phase III by December 2009. Although, the second phase of NHDP Phases III, V (six-laning of 6500 km), and VI (expressways of 1000 km) are scheduled for completion in the Twelfth Plan, their implementation must be strictly monitored in the Eleventh Plan.
- Initiate work for two-laning 6800 km of identified stretches under NHDP Phase IV through the BOT (Toll) mode and construct ring roads of major towns and bypasses and flyovers under NHDP Phase VII.
- Consider establishing an Expressways Authority of India to formulate and implement a Master Plan for 15600 km of access-controlled expressways for high-density corridors and initiate action for determining the alignment and acquiring the land for 6000 km; simultaneously expedite construction of 1000 km of expressways under NHDP Phase VI to provide unhindered, high-speed, and safe movement of traffic.
- Complete SARDP-NE (Phase A) and initiate action to implement Phase B to catalyse development of the NER.
- To keep the balance non-NHDP section in reasonably good shape, earmark a proportion of the cess available for NH exclusively for maintenance.

9.3.52 The targets for stretches other than NHDP have to be prioritized according to their importance to the national economy so that the available resources are not spread thinly among competing projects. The major targets for non-NHDP components include:

- Accelerated efforts to bring NHs network (presently, 20644 km is single lane/intermediate lane) to a minimum of two-lane standard within the next 10 years and four-laning small segments of non-NHDP stretches.
- Removing existing deficiencies, such as inadequate capacity, insufficient pavement thickness, etc., in the road network by strengthening the NH network/improving riding quality.

State Roads (SRs)

9.3.53 Greater focus should be given to augment the capacity and quality of SRs rather than any large-scale expansion. There is a need to identify and develop a core network of major arterial routes covering SHs/MDRs, which are either already experiencing high volumes of traffic or have such potential in the light of industrial and other growth strategies by the public and/or the private sector.

9.3.54 The core network would include expressways, four-laned roads, strengthened pavements, and pavements with good riding quality, bypasses, bridges, etc. for a length of about 71500 km, with a financial outlay of about Rs 80000 crore covering the States. This network could be based on the ‘corridor concept’, such that a commercial vehicle can cover about 500 km on this network in one day (800 km or more on expressways) with adequate road safety.

9.3.55 Although, it is difficult to precisely estimate physical and financial requirements for upgrading SHs and MDRs without a detailed study of traffic forecasts and their existing conditions by concerned States, it is broadly estimated to amount to Rs 100000 crore for the construction of 300 km of expressways, four-laning 5000 km, and widening to two lanes 40000 km of the core network. For the non-core network in the NER, 2500 km length is to be upgraded for two-laning, and for the other States 10000 km length is to be upgraded to two lanes.

Rural Roads (RRs)

9.3.56 The physical targets set under the Bharat Nirman Programme till the end of 2008–09 are generally found to be beyond the capacity of the States to achieve them. Therefore, the leftover targets of the Bharat Nirman Programme (that is, about 33%) will be completed only in 2009–10. To achieve the targets of the Bharat Nirman Programme, 146185 km of rural roads are proposed to be constructed to benefit 66802 unconnected eligible habitations in the country. It is also proposed to upgrade nearly 1.94 lakh km of the existing rural roads which are identified in the core network. State-wise and year-wise targets for new connectivity, number of new habitations to be connected, and length to be upgraded under the

Bharat Nirman Programme are given in Annexure 9.3.4.

9.3.57 For the remaining two years of the Eleventh Plan, that is 2010–12, targets, both for new connectivity and upgradation, have been specified, leaving 42% of the balance PMGSY works to be completed in the Twelfth Plan, as given in Table 9.3.7.

9.3.58 As per the programme guidelines currently applicable in the plain areas, the eligibility of the habitations getting connected varies from 19% to almost 100% in different States. However, in some hilly States, for instance in Arunachal Pradesh, only 17% of the habitations (466 out of 2741) is eligible for new connectivity under PMGSY because of the very wide spread of smaller habitations. Efforts would, nevertheless, be made to initiate provision of connectivity to even lower order settlements as even such habitations need to have primary access to health, education, and market facilities. The issue of connecting habitations which are not eligible according to the current norms of PMGSY, therefore, will be tackled during the Eleventh Five Year Plan.

OUTLAY FOR THE ELEVENTH PLAN

9.3.59 The Eleventh Plan budgetary support for central sector roads is Rs 72530 crore (Rs 82032.97 crore at current price). The scheme-wise break up GBS at current prices for road sector is given in Appendix (Volume III). In addition, the sector is expected to generate IEBR amounting to Rs 34829 crore and private sector investment of Rs 86792 crore during this period.

ROAD TRANSPORT

Overview

9.3.60 The transport demand for freight and passenger movement within the country is met mainly through road transport and railways. Between these two modes, road transport has steadily expanded its scope of operation and is now not merely a mode for the last haul but is also handling freight over long distances. It also plays a complementary role to railways in moving freight from and to railheads vis-à-vis the Origin-Destination movements of cargo. Its inter-modal share in carrying freight, which was around 14% in 1950–51, had increased to around 61% in 2004–05. The share of road transport in passenger movement has also witnessed a quantum jump from 15% in 1950–51 to an estimated 87% of the total traffic by the end of the Tenth Plan.

9.3.61 However, the growth of vehicular traffic on roads has been greater than the growth of the highways, with capacity saturation in the main arteries. Between 1951 and 2004, the vehicle population grew at a CAGR of 10% compared to CAGR of 4.3% in the total road length.

REVIEW OF TENTH FIVE YEAR PLAN

9.3.62 The approved outlay for the Tenth Plan for Central Road Transport Sector was Rs 210 crore, out of which 73% was for road safety and the balance 27% for the Model Driving Training School, pollution testing equipment, and National Database Network. Against this, the total expenditure incurred was 85.41% of the total allocation for the Tenth Plan. Scheme-wise

TABLE 9.3.7
Estimated Targets for the Eleventh Five Year Plan

Period	No. of Habitations to be Covered	Length for New Connectivity (km)	Length for Upgradation (Funded under PMGSY) (km)	Length (km) for Renewal (to be borne by the State Governments)
Target up to the year 2009 as per the Bharat Nirman Programme	30200	62720	43220	51227
Target for 2010–12 [#]	30438	66987	57520	25759
Overall target for the Eleventh Plan	60638	129707	100740	76986

Note: [#] includes spill-over targets of the Bharat Nirman Programme.

financial and physical performance for the Tenth Plan is given in Annexure 9.3.5.

MODEL DRIVING TRAINING SCHOOL AS CENTRALLY SPONSORED SCHEME

9.3.63 The scheme, started in the Tenth Plan with the objective of imparting training to drivers in order to reduce the rate of accidents, envisages the Central Government assistance in the form of a one-time capital grant for building and other infrastructure of up to 70% of the project cost. The remaining cost, including maintenance and operational cost, is borne by the State Government. During the Tenth Plan, 11 such schools were sanctioned. Although the scheme has been dropped in the Eleventh Five Year Plan, it will need to be replaced by a more broad-based action plan. The State-wise and year-wise allocation and releases are given in Annexure 9.3.6.

PASSENGER SERVICES

9.3.64 Passenger road transport services in India are met by personalized and public transportation. Public transport is provided by the State Road Transport Undertakings (SRTUs) and by private operators. At the end of 2003–04, the country had about 73 million registered automobiles. The composition reveals a dominance of two-wheelers, with a share of more than 71%, followed by cars with 13%, and other vehicles (a heterogeneous category which includes three-wheelers, trailers, tractors, etc.) with 9.4%. The share of buses and trucks in the vehicle population is 1% and 5%, respectively. The share of the personalized modes of transport, viz. two-wheelers, cars, and jeeps increased from 60% in 1951 to 84% in 2004, at the expense of public transport, notably buses, whose share declined from 11.1% in 1951 to 1.1% by the end of 2003–04. Within the buses category, the share of SRTUs in total buses has declined from 37% in 1985–86 to 15.8% in 2002–03 and the share of private buses has risen from 63% in 1985–86 to a lion's share of 84.2% in 2002–03.

STATE ROAD TRANSPORT UNDERTAKINGS (SRTUs)

9.3.65 Of the 53 SRTUs operating in the country, 15 are operated by local bodies and 38 have been established by State Governments under the Road Transport Corporation Act 1950. These 38 SRTUs are estimated to

have a total of 1.13 lakh buses, with a total investment of Rs 18669.19 crore, and they provided direct employment to about 7.09 lakh workers during 2006–07.

Physical Performance of SRTUs

9.3.66 The overall productivity of SRTUs improved in the Tenth Plan. Fleet utilization improved from 78.72% in 2002–03 to 82.50% in 2006–07, while vehicle productivity increased from 210 km per bus per day to 229 km per bus per day, staff productivity from Rs 39.23 per worker per day to Rs 39.39 per worker per day, and fuel efficiency from 4.11 km per litre to 4.31 km per litre during the same period.

9.3.67 However, there is wide variation in the performance of physical parameters of various SRTUs. Efficiently run undertakings include those in Haryana, Tamil Nadu, Andhra Pradesh, Rajasthan, Maharashtra, and Karnataka, while the undertakings in Bihar, Jammu and Kashmir, North Eastern States, Punjab Roadways, and Delhi Transport Corporation have considerable scope for improvement. An action plan on Management Monitoring needs to be worked out by these undertakings for speedy improvement in performance of their physical parameters. The State-wise physical performance of SRTUs is given in Annexure 9.3.7.

Financial Performance of SRTUs

9.3.68 The financial performance of the SRTUs has been deteriorating year after year, with their net loss of Rs 1503.02 crore in 2002–03 having increased to Rs 2137.66 crore in 2006–07. Uneconomic passenger fares, high burden of taxes, operations on uneconomic but obligatory routes, concessions in fares provided to certain category of commuters, and high bus staff ratio, and of late, increase in interest burden due to larger institutional borrowings have all contributed to the losses.

9.3.69 Various initiatives taken by SRTUs to improve their physical and financial parameters include route rationalization, introduction of special services such as deluxe buses and night time services, better maintenance practices at depot level, introduction of electronic ticketing, and outsourcing of staff and services. However certain other measures such as providing SRTUs with full reimbursement of cost concessions,

allowing SRTUs to make required commercial fare adjustments, rationalization of motor vehicle and related taxes also need to be taken. It is also necessary to rationalize the procedures for award of transport routes to private operators. For commercial routes the private operator should be selected through the process of competitive tendering. As for non-commercial routes, instead of burdening the SRTUs with them, these too should be subjected to the competitive bidding process on the basis of alternatives such as universal service obligation (USO) or VGF models.

FREIGHT SERVICES

9.3.70 Freight movement on the road is predominantly carried out by the private sector truck operators. The volume of freight in BTKM carried by road grew annually at an average rate of 6.5% as compared to 3.6% for railway freight during the last 10 years. The road freight industry is mostly unorganized and highly fragmented with more than 85% of the truck operators owning less than five trucks. The population of goods vehicles has burgeoned from 82000 in 1951 to 8.63 lakh in 1986 (over 10-fold increase), and further to 37.49 lakh in 2004 (increase of 46 times from the 1951 level). This increase signifies the accelerating increase in the demand for road freight services faced by the industry and the subsequent challenges of improving service standards, rationalizing costs, enhancing productivity, and reorganizing the road freight services industry.

POLICY ISSUES

9.3.71 The expected future growth of road transportation for both passengers as well as freight movement is tremendous, due to substantial investments in improvement of reach, capacity, and quality of the NH network. However the sector is beset with low technology, low energy efficiency, high pollution, poor quality roads, and hindered movement of goods and passenger traffic. A number of policy aspects are to be addressed for gearing up the Indian road transport sector to meet the challenges of further growth.

Need to Strengthen the Public Transport System

9.3.72 Public transport causes lesser environmental damage in terms of air and noise pollution, optimization of road space, increased per unit throughput, and

reduction in traffic congestion, as compared to personalized vehicles. However, the composition of vehicle population in India is skewed towards personalized transport. The role of both public and private sector is crucial. Considering the advantage of public transport there is a need to strengthen the public transportation services through a policy regime, which fosters their financial viability and grants them more functional autonomy. They may be allowed to fix commercial fares based on a formula approved by the respective State Governments. The PSUs may also be reimbursed full cost of concessions provided to various categories of passengers.

Private Sector Participation

9.3.73 Almost all State Governments have facilitated entry of private sector in providing passenger transport services to ease pressure on the public sector. As on 31 March 2004, the share of private buses was 85%. Private bus operators have, however, exhibited deplorable quality of service, with disregard to traffic rules, unsafe driving practices, unscheduled operation, and usage of irrational cost cutting measures and tax evasion. The private sector has also adversely affected the performance of public sector by resorting to unfair competition.

9.3.74 A prerequisite is, therefore, to strictly enforce rules, for which specially designated regulatory bodies need to be set up, with powers to lay down minimum basic service standards, impose heavy fines, suspend or even cancel licenses, and launch and pursue prosecutions for accidents vigorously.

Pollution Control and Energy Conservation

9.3.75 Rapid growth of motorized vehicles in the country over last one decade has raised the demand for petroleum fuel, resulting in increased vehicle pollution. The Central Government has taken measures to bring down the existing sulphur content level of 0.5% in diesel to 0.10% in phases by introducing the following emission norms during the Tenth Plan:

- Bharat Stage II emission norms extended to entire country in respect of all categories of motor vehicles w.e.f. 1 April 2005 in respect of vehicles manufactured after 1 April 2005.

- Bharat Stage III emission norms have been introduced w.e.f. 1 April 2005 in respect of four-wheeled vehicles manufactured on and from 1 April 2005 in the National Capital Region (NCR) and cities of Mumbai, Kolkata, Chennai, Bangalore, Hyderabad, including Secunderabad, Ahmedabad, Pune, Surat, Kanpur, and Agra except for four-wheeled transport vehicles plying on interstate permits, national permits, or all-India tourist permits within the jurisdiction of these cities. The emission norms for tractors have also been upgraded. While Bharat (Trem) Stage II norms have come into force from 1 June 2003, the Bharat (Trem) Stage III norms have come into force from 1 October 2005.

9.3.76 The emission norms are being revised apace with international emission norms. Enforcement, however, is sadly lacking, and there may be improvements by accrediting private sector institutions to complement the responsible governmental agencies. Under the Motor Vehicles Act, the authorized testing stations issue certificate of fitness for transport vehicles. The State Governments are empowered to authorize any agency through a notification.

Barrier Free Movement of Freight and Passengers

9.3.77 Barriers to inter-state movement, through multiple checking by the police, sales tax department, transport department, and excise and custom, entailed huge economic costs in the range of Rs 3200 crore to Rs 4300 crore in 2004 which are estimated to progressively increase to Rs 60168 crore by 2017.

9.3.78 By way of remedy, apart from introducing online information network for registration and tax administration at national, regional, and local level, and different colour-codes for the number plate of trucks that move inter-state, the concept of 'Green Channel' may also be promoted, initially for high-value freight and perishable commodities, by certifying the consignment at the origin and transmitting the required documents to the authorities for an unhindered journey to their destination.

Motor Vehicle Taxation

9.3.79 The existing tax structure for CVs shows wide variations across States due to different classification

principles for the taxation of vehicles, variations in the application of lifetime and annual tax rates to vehicle categories, use of specific and ad valorem rates, and the multiplicity of rates. There is a need to study the economic implications of rationalization of the tax structure across the country in terms of its impact on the reduction of transaction costs. Vehicle taxation is road damage related, but levied on the basis of gross vehicle weight rather than on potential axle loads, resulting in under-taxation of two-axle trucks compared to multi-axle vehicles, and should be changed for goods vehicles from gross vehicle weight to axel loads.

Overloading

9.3.80 To check overloading, Weigh in Motion (WIM) bridges need to be installed at selected points on NHs, inter-state check posts, industrial areas, etc., with facilities for unloading and temporary warehousing of excess loads. The Honourable Supreme Court has held that the excess load needs to be variably off-loaded even if the offence is compounded. The Government of India has recently proposed to expand the area of overloading offence of the Motor Vehicles Act 1988 by introducing the Motor Vehicle Bill 2007. The proposed extension makes the common carrier and consignor also liable for overloading along with vehicle owner (who is already covered under the present Act) and would therefore discourage the extensive operation of illegal overloading on goods.

Road Safety

9.3.81 The number of accidents has quadrupled from 1.1 lakh in 1970 to 4.3 lakh in 2004, with 92618 persons killed in accidents (one fatality per 4.6 accidents) and 464521 persons injured in 2004. The social cost impact of road accidents is 3% of the GDP.

9.3.82 Road safety is a multi-dimensional issue, incorporating development and management of road infrastructure, provision of safer vehicles, legislation and law enforcement, mobility planning, provision of health and hospital services, child safety, and urban land use planning. The success of road safety strategies also depends upon a broad base of support and common action from all stakeholders. Its existing institutional set up is multi-tier, with MoSRTTH, National Road Safety Council, and the Transport Development

Council at the Centre, State Transport Department and State Road Safety Councils at the State level, and finally, organizations and agencies involved including the police, Indian Road Congress, CRRI, Central Institute of Road Transport (CIRT), NGOs, and academic institutes.

9.3.83 In order to assess the magnitude of road traffic injuries and fatalities in India and to suggest measures for rescue and relief of accident victims, an EC of India was constituted. The Committee has recommended setting up of a National Road Safety and Traffic Management Board to lay down standards and guidelines as well as to oversee and coordinate all activities pertaining to road safety at Centre as well as State level for promoting and improving traffic management in India. The Report is under active consideration.

9.3.84 With a view to reducing accidents, injuries, and deaths during the Eleventh Five Year Plan, some more measures need to be taken. Road safety audit on all NHs should be made mandatory at different stages of the projects, coupled with a stringent highway patrolling system. Trauma care centres need to be established, accident-prone spots need to be identified, and their road geometry improved. There is a need to upgrade all urban and rural roadside furniture standards to international best practices, coupled with review of road design, road maintenance, and traffic management. Strict enforcement of the Motor Vehicle Act to ensure adherence of traffic rules is vital.

Human Resource Development

9.3.85 The human resources requirement is estimated to grow from 12.83 million in 2007 to 17.64 million in 2012, out of which 66% will be drivers, four-fifth of which in turn would be absorbed in goods vehicle category. To substantially improve driving skills and enlarge the pool of drivers, institutions such as the ITIs and CIRT need to create competent driver training instructors with training of trainers by accredited institutions. Adequate infrastructure facility including driving tracks needs to be provided near the cities for use by driving schools. Many initiatives have been taken up both by the government and the private sector to promote road safety education and driving training

facility in India, which include the Institute of Driving Training and Research (IDTR) which is a joint venture between the Department of Transport, Government of Delhi, and Maruti Udyog Limited; Automobile Association of Upper India (AAUI) Driving School (which also provides electronic simulator based training facilities); Institute of Road Traffic Education and Driver Training Institute by Ashok Leyland in Burari, near Delhi, in partnership with the Government of Delhi. Such initiatives inviting automobile manufacturers and insurance companies for providing training to drivers of automobiles need to be encouraged. The minimum educational qualification for obtaining a driving license needs to be increased from the passing certificate of Class VIII to Class XII in the future.

Research and Development (R&D) to Improve Vehicle Efficiency

9.3.86 R&D efforts should be focused on bus body design, with emphasis on energy conservation and eco friendliness; propulsion technology for use of hybrid cells, bio fuels, etc.; and developing appropriate transmission systems for urban driving conditions.

Database

9.3.87 Motor Vehicles Act provides for maintenance of State registers of motor vehicles. An IT-based centralized vehicle registration system; depository of motor vehicle registration by assigning unique number similar to permanent account number; data on tax paying and non-tax paying vehicles; public surveys to measure freight/passenger movement by road, with time motion surveys of trucks to assess transaction costs are required to be established.

Non-motorized Transport (NMT)

9.3.88 The status of NMT needs to be studied and appropriate infrastructure created coupled with enactment of safety code for NMT to reduce the risks borne by cycles, walk trips, and the like. This will also help to free road space for motorized transport.

OUTLAY FOR THE ELEVENTH PLAN

9.3.89 The Central Sector outlay for road transport sector for the Eleventh Five Year Plan at current price is Rs 1131.00 crore, which would be budgetary support.

The scheme-wise details are given in the Appendix (Volume III).

9.3.90 The total projected outlay for the Eleventh Plan outlay for DoRTH is Rs 108359 crore at 2006–07 price (Rs 122557 crore at current price) which includes Rs 73530 of GBS at 2006–07 price (Rs 83164 crore at current price) and Rs 34829 crore of IEBR at 2006–07 price (Rs 39393 crore at current price).

9.4 SHIPPING

SIGNIFICANCE OF SHIPPING

9.4.1 The recent accelerated growth in Indian economy and trade underscores the increasing criticality of the shipping sector for India, as the bulk of the country's Export-Import trade takes place through the maritime route. One of the objectives of the Foreign Trade Policy 2004–09 is 'to double our percentage share of global merchandise trade within the next five years' taking it to 1.5%. With 8.42 million gross tonnages (GT), India stands at the 20th rank among maritime nations, in terms of fleet size, with a share of 1.19% of the world fleet.

9.4.2 Indian tonnage was practically stagnant till 2004–05, but reforms introduced in that year stimulated a burst of growth in 2005–06. The Shipping Corporation of India (SCI), a PSU under the Department of Shipping, has a major share in India's shipping tonnage. A feature of recent experience in India's shipping sector is the sharp decline in the share of Indian ships in the carriage of India's overseas trade

from 31.5% in 1999–2000 to 13.7% in 2004–05. Indian shipping fleet is characterized by the predominance of oil tankers and bulk carriers. While oil tankers account for 60.6% of the total tonnage, bulk carriers account for 29.6%, with the other vessel types such as liner vessels, OSVs accounting for a mere 9.8%.

REVIEW OF THE TENTH PLAN

9.4.3 During the Tenth Plan, shipping tonnage witnessed a rise from 560 vessels carrying 6.82 million GT to 787 vessels amounting to 8.60 million GT. A total of 227 vessels of 1.78 million GT were added to the fleet as against a target of 156 vessels of 3.26 million GT.

9.4.4 The main reason for the fleet growth in 2005–06 was the change in fiscal regime applicable to the sector. Tonnage Tax was introduced in 2004–05 and was further extended to dredgers in 2005, as an alternative to regular corporate tax, thereby reducing tax to a nominal rate and making profits from shipping exempt from tax if they were used for creating an investment fund for acquisition of new tonnage. Expansion of cargo volumes due to rapid growth of the economy and the increased availability of low cost capital due to liberalized policy governing external commercial borrowings also boosted acquisitions.

9.4.5 An outlay of Rs 7753.85 crore was provided in the Tenth Plan for the shipping sector. Against this, the expenditure was Rs 2991.62 crore, accounting for 38.6 % of the total outlay. The scheme-wise details are given in Table 9.4.1.

TABLE 9.4.1
Financial Performance of the Shipping Sector in the Tenth Plan

S No.	Scheme/Programme	Financial Performance—Tenth Plan		
		Approved Tenth Plan Outlays	Approved Annual Plan Outlays	Actual Expd.
1.	SCI	5800.00	6378.95	2380.94
2.	DG (S)	288.84	58.03	59.91
3.	DG (LL)	185.00	132.00	67.41
4.	IWT	903.00	615.57	475.87
5.	Information Technology	—	7.49	7.49
6.	Unallocated	577.01	—	—
	Total	7753.85	7192.04	2991.62

Note: Expd.= Expenditure

(In Rs Crore)

STRATEGIES FOR ELEVENTH PLAN

9.4.6 As recognized in the Report of the EC to Review Indian Shipping headed by Dr Rakesh Mohan (2002), 'Shipping is not a stand-alone industry and has got collateral linkages with several other industrial activities of considerable economic consequence', the Report goes on to give the assessment, 'Having regard to the combined impact of the mother industry i.e. Shipping and its satellites, the net aggregate contribution to the national economy could well be of the order of 2.5–3% of the national GDP.' In light of this and in order to maximize gains from the growth of merchandise trade, it is imperative that the shipping tonnage grows steadily along with trade. Retained earnings from the shipping sector are as important as export earnings from important service sectors such as IT and ITES.

9.4.7 A national shipping fleet commensurate with our overseas cargo needs would help in reducing the freight costs of Indian cargo. Transchart and 'right of first refusal' policy also help to discourage undue freight increases. A thriving shipping sector encourages the growth of associated industry and services providers required for servicing this industry, accounting to over 75% of the shipping sector's national contribution. Most importantly, national tonnage is decisive in maintaining the supply line of essential cargo during international emergencies, as was also demonstrated during the Iraq war, when every drop of crude imports from the Middle East came on Indian Ships.

Increase in Tonnage

9.4.8 During the Eleventh Plan, it would be possible to achieve a tonnage target of 10 million GT. An environment conducive to the growth of Indian shipping can be fostered by fiscal rationalization, strengthening of regulatory mechanism, and increased focus on maritime training. If supportive policy measures as detailed below are taken, acquisition of vessels up to 12 million GT and 15 million GT may be achieved. These scenarios are given in Table 9.4.2, along with their required investments.

Fiscal Regime Rationalization

9.4.9 Ship owners can shift registrations easily and consequently they move to regimes where the tax

TABLE 9.4.2
Increase in Tonnage

	Tonnage Target	Additional Ships		Investment (in Rs Crore)
		Numbers	Tonnage	
Scenario 1	10 m GT	279	4.6 m GT	35000
Scenario 2	12 m GT	404	6.2 m GT	55000
Scenario 3	15 m GT	609	9.2 m GT	80000

regime is least onerous. The favourable effect in India of the introduction of the Tonnage Tax as seen initially, quickly evaporated because of the lower taxation in other regimes, estimated by the industry to be of the order of 5%–6%. There is an urgent need to study the cumulative incidence of taxes on ships registered in India vis-à-vis the incidence in other jurisdictions so that necessary measures can be taken to reduce or eliminate the disparity in tax treatment. Another aspect, which translates itself into a tax-related disadvantage for the ships with Indian flags, is that national manning is compulsory for them. The company has to make withholding tax payments for Indian seafarers since they are not exempt from income tax. As this obligation does not devolve on ships registered in other jurisdictions and employing Indian seafarers, the result is that the Indian ships have to pay a higher salary. It is critical for the growth of shipping in India that a level playing field is created as compared to other regimes in respect of taxes.

Cargo Support

9.4.10 The continuation of the policy with respect to government owned and controlled cargo to be imported on FOB basis and shipping arrangements to be channelized through the Department of Shipping's Chartering Wing, Transchart would be advisable. This policy, which is similar to that followed in some developing countries, has proved to be advantageous not only by providing cargo support to Indian ships, but also by enabling the buyers/receivers to retain control over shipping arrangements and shipment schedules according to their import requirements. The assurance of cargo support encourages new entrants and mitigates the risks of tonnage and fleet expansion for existing companies.

Maritime Human Resource Development and Training

9.4.11 India has positioned herself as a major human resources-supplying nation to the maritime industry. As a result of the initiatives taken by the government in encouraging private participation in maritime training, the number of maritime training institutes under the assurance of quality training by the Directorate General of Shipping DG(S) rose to 128 in 2005. India's share of global maritime human resources rose to 26950 officers and 75650 ratings, comprising an estimated 6% of the world's seafarers. The Eleventh Plan target for the marine training programme is to retain our 6% share of the global workforce and additionally supplying 20% of the current estimated shortages.

9.4.12 By virtue of income tax applicable to Indian seafarers, Indian ship owners are at an inherent disadvantage as foreign flag vessels become the first choice for Indian seafarers and the best talent is denied to the local shipping industry. Moreover, it is mandatory for Indian ships to employ Indian seafarers compounding the problem further. It would be necessary to review this restriction so that the Indian shipping industry may not face human resources shortage.

9.4.13 Policy initiatives are required to retain and build talent. In the area of maritime training, although the intake capacities at all training institutes for officers have risen from 2185 in 2000 to 5263 in 2006 and for ratings to 4726 in 2006 to reach the necessary targets, there is a shortage of sea-time berths to absorb the number of pre-sea officers and ratings trainees. Thus, there is a need to shift the focus in strategy from increasing cadet intake at pre-sea levels to more sea-time training slots. Initiatives for this could include the co-option of the member lines of the INSA into allocating 10% of each ship's manning scales exclusively for sea training berths at the cost of these future employers.

9.4.14 With the objective of providing world-class training opportunities for the shipping sector, the government would be establishing an Indian Maritime University (IMU) at Chennai, with campuses at Kolkata, Mumbai, and Vishakhapatnam, through an Act of Parliament. IMU would play the role of a

centralized nodal agency for co-ordinating, monitoring, and controlling maritime training in India, through nation-wide rating, consolidation, and reorganization of training systems under IMU. This would facilitate and promote maritime studies and research in emerging areas such as marine science and technology and marine environment. The aim of IMU would be to become a centre of excellence in the content and quality of maritime training and also seek affiliation to the World Maritime University.

9.4.15 There is also a need for capacity building in the DG(S), with greater technological tools, training, human resources availability, and greater autonomy for authorizing surveyor movement to ships on foreign shores and deciding on the delegation of powers to Mercantile Marine Department.

Other Issues

9.4.16 In view of the increasing traffic in territorial waters, and with a growing fleet, marine disaster and emergency response system should be established. For the protection of the environment, it is also necessary to develop a 'Ballast Water Management System' in accordance with the requirements of International Convention for the Control and Management of Ships as adopted by the IMO in 2004, along with the development of waste disposal facilities in ports. Further, in the interest of safe operations of OSVs, a regulatory mechanism should be developed for this sector.

COASTAL SHIPPING

9.4.17 Coastal shipping serves as an integral part of the supply chain in the domestic and overseas trade of merchandise. It is a viable, eco-friendly alternative to the already stretched rail and road infrastructure with low socio-economic cost. Apart from their substantial contribution to the nation's trade and economy, shipping services also play a crucial role as the major source of income for the population in many of the coastal States and act as the lifeline especially for places such as Andaman & Nicobar Islands and Lakshadweep Islands. During 2004–05, the coastal traffic at major ports was 109.80 mt, accounting for 28.6% of the total major ports traffic and growing at 5.81% CAGR. India's coastal traffic is estimated to increase from 116 mt in

2002–03 to 220 mt by the end of the Eleventh Plan period (2012). A total of 497 vessels of 8.17 lakh GT comprised the Indian coastal vessels tonnage as on 31 March 2006. During the last decade, coastal shipping has exhibited significant growth in smaller size vessels such as liners, passenger-cum-cargo launches, tugs, ro-ros, dredgers, pilot/survey launches, etc. At present, coastal shipping also includes activities like offshore supply and multi-purpose support for the oil and gas exploration and production, port and harbour services, and dredging.

9.4.18 With a view to encouraging the growth of Indian coastal shipping, during the Plan period the government had accorded various concessions and initiatives to this sector such as certain relaxations in customs procedures, benefit of tonnage tax, lower vessel and cargo related charges at ports, and provision of dedicated terminals for coastal shipping. In addition to its economic advantages coastal shipping also eases traffic congestions which occur frequently in road transport. Despite the inherent advantages, coastal shipping is hampered by inadequate port and landside infrastructure, the burden of customs duties, cumbersome procedures, and poor port productivity. Considering the positive externalities of coastal shipping, there is a need to consider fiscal incentives for registered multi-modal transport operators, shippers, trade/industries that prefer transporting sizeable domestic cargoes through coastal shipping.

9.4.19 For improving infrastructure facilities for coastal shipping, it is important to provide adequate rail and road connectivity to each port along with the development of required infrastructure for encouraging emerging areas with promising potential in coastal shipping sector. Berthing capacities at Indian ports may be developed to address the needs of coastal shipping and berth space at all terminals may be reserved for coastal shipping vessels, if so required.

9.4.20 Other policy initiatives relate to manning requirements, training initiatives, and surveying. Although the manning scale of coastal vessels has been reviewed in the last few years with an objective to simplifying the same, yet it requires further rationalization. Adequate facilities may be instituted for training

the floating staff to ensure that the operating standards are upheld and adequately trained hands are available. It is suggested that a Special Training Programme may be designed specifically for coastal shipping to produce and retain more cadet officers for employment only on Near Coastal Voyages. Since there is a shortage of surveyors, with a view to avoiding delays to vessels, the work of surveying may be assigned to classified surveyors.

MULTI-MODAL TRANSPORTATION

9.4.21 The growth of multi-modalism globally, fuelled by increasing trade, containerization, and reducing logistics costs, has impacted the Indian shipping scenario. The physical infrastructure required to propel the multi-modal movement in India is being addressed in terms of investments in port capacities and infrastructures, port to hinterland connectivity, and port–rail–road interfaces. However, there is also a need to simultaneously address policy issues such as regulation of services, co-ordination in planning, and simplification of processes and procedures in customs. The multi-modal transportation in India is governed by the Multimodal Transportation of Goods Act 1993 which needs to be strengthened in order to address issues such as liability regime, setting of service standards, registration of service providers, etc. in order to provide transparency in operations.

SHIPPING CORPORATION OF INDIA (SCI)

9.4.22 An outlay of Rs 5800 crore was provided in the Tenth Plan for SCI. This included a sum of Rs 1290 crore as internal resources and Rs 4510 crore as external borrowings. Against this outlay, the expenditure was Rs 2381 crore or 41.1% of the total outlay. Due to the speculation regarding its disinvestment, the SCI could only acquire 9 vessels of 0.79 million GT against the target of acquisition of 39 vessels of 2.10 million GT.

9.4.23 The profitability of SCI increased during the Plan. The net profit increased from Rs 241.6 crore to Rs 1042.2 crore and the fixed assets increased from Rs 3463.6 crore to Rs 5729.8 crore. As a result, net worth of the SCI rose from Rs 2095.6 crore to Rs 4355.4 crore during the same period, reflecting a rise in the level of reserves and surplus from Rs 1852.1 crore to Rs 4077.8

crore. The dividend payment also increased from Rs 98.8 crore in 2001–02 to Rs 239.9 crore in 2005–06.

9.4.24 The SCI plans to acquire 62 vessels of various categories during the Eleventh Plan period.

DIRECTORATE GENERAL OF SHIPPING, DG(S)

9.4.25 The DG(S), a statutory authority under the Merchant Shipping Act 1958, is responsible for implementing the Act. During the Tenth Plan, the approved outlay for DG(S) was Rs 288.84 crore for the implementation of e-governance, execution of civil works, etc., including an IEBR component of Rs 200 crore for acquisition of simulators under grant-in-aid from the Government of Japan for the maritime training institutes under Indian Institute of Maritime Studies. However, this did not materialize and against the remaining amount of Rs 88.84 crore under GBS, the total anticipated expenditure is Rs 63.94 crore.

9.4.26 In the Eleventh Plan period, DG(S) proposes to carry out activities for strengthening the Mercantile Marine Department, procuring modern survey instruments for Minor Ports Survey Organization (MPSO), and establishing the IMU.

LIGHTHOUSES AND LIGHTSHIPS

9.4.27 The Directorate General of Lighthouses and Lightships, DG(LL) provides marine aids to navigation along the Indian coast. At present, there are 169 lighthouses, 1 lightship, 22 differential global positioning systems (DGPS), 48 racons, and 22 deep sea lighted buoys available as aids to marine navigation. DGLL also earns revenue, deriving its income from light dues from ships entering and leaving Indian ports.

9.4.28 During the Tenth Plan, the anticipated revenue earning by DGLL is Rs 507 crore. Against the Plan outlay of Rs 185 crore, the expenditure in this sector is expected to about 45.9% of the outlay at Rs 85 crore. The major achievements are placement of work order for establishment of Vessel Traffic Service for Gulf of Kachch, installation of racons, and introduction of DGPS. To a certain extent, the progress of projects got affected due to tsunami damages along the East Coast and Andaman and Nicobar Islands, entailing priority restoration work.

9.4.29 In the Eleventh Plan, the Directorate would be taking up new projects such as visual aids, radio aids, development of information technology, replacement of assets and flotilla, along with new initiatives such as rendering assistance for improvement of local lights, beautification of lighthouses for attracting tourists, establishment of the National Automatic Identification System network, and the Vessel Traffic Service in the Gulf of Khambat.

INLAND WATER TRANSPORT (IWT)

9.4.30 India has about 14500 km of navigable waterways which comprises rivers, canals, backwaters, creeks etc. About 45 million tons of cargo (2.5 BTKM) is being moved annually by IWT. Inland Waterways Authority of India (IWAI) was constituted in 1986 for the development and regulation of inland waterways for shipping and navigation. However, most waterways suffer from navigational inadequacies such as shallow waters, narrow width, siltation, and bank erosion. Consequently, its operations are currently restricted to about 5200 km of major rivers and 485 km of canals suitable for mechanized craft operations. Today, there are three waterways that have been declared as National Waterways (NWs), namely Ganga from Haldia to Allahabad (1620 km); Brahmaputra from Dhubri to Dadiya (891 km); and West Coast Canal from Kottapuram to Kollam, including Champakara and Udyogmandal canals (205 km), with the declaration of three more waterways being considered. At present, organized cargo transportation is spread over the Ganga river in NW-I, the Brahmaputra river in NW-II, West Coast Canal in NW-III, and Goa and Mumbai waterways. The States covered are Uttar Pradesh, Bihar, Jharkhand, and West Bengal under NW-I; Assam under NW-II; and Kerala under NW-III. A number of private operators provide their services in all the three NWs whereas the public sector Central Inland Water Transport Corporation operates on NWs I and II.

9.4.31 The cargo movement by IWT increased from 197.65 lakh tonnes (1 BTKM) in the Ninth Plan to 504.13 lakh tonnes (2.82 BTKM) by 2005–06. An outlay of Rs 903 crore was approved for IWT in the Tenth Plan, against which an expenditure of Rs 275 crore or 30% of the outlay has been made. The

approved Plan outlay for IWAI was Rs 626.73 crore against which an expenditure of Rs 386.74 crore or 62% of the outlay was made. The expenditure was mainly incurred on the maintenance of fairway including procurement of vessels for channel development (dredgers, survey launches, etc.), setting up of terminals, provision of navigational aids, procurement of cargo vessels for demonstration purpose, techno-economic feasibility studies on other waterways, assistance to States under CSS, and Inland Vessel Building Subsidy Scheme to entrepreneurs for procurement of IWT vessels.

9.4.32 With a view to providing an impetus to the development of IWT mode, the Government of India had approved the Inland Water Transport Policy which includes several fiscal concessions and policy guidelines for the development of IWT, including encouraging private sector participation in the development of infrastructure and ownership and operation of inland vessels. IWAI is also authorized for establishing joint ventures and undertaking equity participation in BOT projects.

9.4.33 The CIWTC was earlier also engaged in activities of ship-building and ship repair, apart from operating a fleet of vessels. Following continuous losses since its inception and the decision to restructure CIWTC, Rajabagan Dockyard has been transferred to Garden Reach Ship Builders and Engineers on 1 July 2006 on outright sales basis. In respect of decision on writing off interest and conversion of outstanding principal amount into equity, a suitable provision has been made in the Supplementary Budget 2006–07 by the Minister of Finance. Regarding disinvestment of CIWTC and Voluntary Retirement Scheme (VRS), the government is in the process of assessing viability of disinvestment with different sets of employee number.

POLICIES AND PROGRAMMES IN THE ELEVENTH PLAN

9.4.34 The focus in the Eleventh Plan would be to put requisite infrastructure on the existing waterways to make them fully functional, along with the development of new waterways. By the end of the Eleventh Plan, three waterways, namely, canal system from

Kakinada to Pondicherry integrated with Godavari and Krishna rivers (1095 km), East Coast Canal integrated with Brahmani river and Delta of Mahanadi river (623 km), and Barak river in Assam (152 km) are to be added to the existing three NWs, taking the coverage up to 4500 km.

9.4.35 For IWT to play a more meaningful role in multi-modal transportation, the planning and development process for IWT requires a structured and scientific approach. The investments required for augmenting the existing IWT infrastructure need to consider overall, end-to-end traffic movement and the requisite phasing of the project for holistic growth. The entire process of project formulation and approvals need to be systemized. IWAI may prepare a comprehensive proposal for each waterway for approval of Expenditure Finance Committee/Public Investment Board (EFC/PIB) and funds may be released according to the phasing as approved for these projects. The IWAI needs to identify some viable stretches and their development may be accorded high priority. Ministry of Shipping needs to formulate the development programme on the above lines.

9.4.36 During the Eleventh Plan, emphasis would be laid on co-operation with Bangladesh for achieving higher exports and better connectivity to NER, by adding more protocol routes, more ports of call, and improved cargo handling facilities on protocol routes. Uniformity in the legal regime and conducive, hassle-free inter-state IWT operations must also be fostered. Amendments in the Indian Vessels (I.V.) Act 1917 may be considered along with formulation of model IV rules framed by IWAI, for State Governments to follow.

OUTLAY FOR THE ELEVENTH PLAN

9.4.37 The Eleventh Plan outlay for the shipping sector is Rs 1000 crore at 2006–07 price (Rs 1131 crore at current price). The scheme-wise break-up of GBS at current prices is given in the Appendix (Volume III). The sector is also expected to generate IEBR amounting to Rs 12285 crore at 2006–07 price. In addition, the budgetary support for ship-building and repairs is Rs 150 crore (Rs 170 crore at current price). The IEBR for this sector is Rs 550 crore at 2006–07 price.

9.5 PORTS

9.5.1 Ports constitute the inter-modal interface between maritime and road and rail transport. India has a coast line of around 7517 km with 12 major ports and 187 notified non-major (minor/intermediate) ports along the coast line and sea islands. Almost 95% by volume and 70% by value of India's global merchandise trade is carried through the sea route. In 2006–07, the 12 major ports handled about 73% of the maritime cargo of the country. The balance 27% was handled by the non-major ports. Overseas cargo accounts for about 77% of the total cargo handled at Indian ports. Of the 12 major ports, 11 are administered by the respective Port Trusts and Ennore Port, the 12th major port, which started functioning in February 2001, is corporatized.

REVIEW OF THE TENTH PLAN

Traffic and Capacities

9.5.2 The projected traffic for the Tenth Plan period was 415 million tonnes for the major ports and 150 million tonnes for the minor ports, making an overall target of 565 million tonnes. The achievements have been more than the targets in the case of major ports and are likely to exceed the targets in the case of non-major ports also. Major ports have handled 463.84 million tonnes and non-major ports are expected to have handled around 171.92 million tonnes during 2006–07. The actual traffic handled as on 31 March 2006 is 423.42 million tonnes at major ports and 151.14 million tonnes at non-major ports. The commodity-wise traffic handled in the terminal year of the Tenth

Plan is given in Table 9.5.1 and year-wise details are given in Annexure 9.5.1. Year-wise and port-wise (major ports) physical achievements are given in Annexure 9.5.2.

9.5.3 The increase of about 70 million tonnes over the target is primarily due to the increase in quantum of iron ore exports to countries such as China, Japan, and South Korea. The traffic in fertilizer (including FRM), break bulk cargo, and containers also exceeded the projections. On the other hand, there was a shortfall in POL, since the port facilities of Nagarjuna Oil Refineries Ltd and LNG handling facilities at Ennore and Cochin expected to be commissioned during the Plan period did not materialize. There is also a shortfall in coal traffic against the projections as the new power plants expected to come up at New Mangalore and Mumbai have not materialized.

9.5.4 The actual capacity of major ports at the start of the Tenth Plan was 343.95 million tonnes which was targeted to go upto 470.60 million tonnes by the end of the Tenth Plan. However, the actual capacity of major ports at the end of the Tenth Plan is likely to have gone upto 504.75 million tonnes by 31 March 2007, showing an increase of 160.80 million tonnes during the Plan period. Such capacity addition was achieved as a result of implementation of spill-over schemes of the Ninth Plan as well as new schemes during the Tenth Plan and improvement in productivity. Thus, the capacity of 504.75 million tonnes of major ports at the end of the Tenth Plan was a little over the actual traffic of 463.84 million tonnes. There has to be

TABLE 9.5.1
Tenth Plan Cargo Traffic Targets and Achievements

(Million Metric Tonnes)

Commodity	Tenth Plan Target	Actual in 2006–07		
		Major Ports	Non-major Ports (Prov.)	Total
POL	235.30	154.35	81.87	236.22
Iron ore	65.50	80.56	29.21	109.77
Coal	88.30	60.22	14.05	74.27
Fertilizers, incl. FRM	18.45	14.11	7.05	21.16
Containers	66.10	73.47	5.0	78.47
Other cargo	91.35	81.13	34.74	115.87
Total	565.00	463.84	171.92	635.76

Note: Prov.= Provisional.

greater cushion for making allowance for bunching of traffic. The details of the capacity addition of 160.80 million tonnes are given in Table 9.5.2.

TABLE 9.5.2
Tenth Plan—Capacity Added to Major Ports
(Million Metric Tonnes)

Commodity	Capacity as on 31 March 2002	Addition during the Tenth Plan	Capacity as on 31 March 2007
POL	135.35	39.35	174.70
Iron ore	43.60	13.90	57.50
Coal	44.20	2.05	46.25
Containers	37.00	51.08	88.08
Other cargo	83.80	54.48	138.22
Total	343.95	160.86	504.75

Productivity

9.5.5 The average turnaround time for all major ports has improved from 4.24 days during the last year of the Ninth Plan to 2.58 days during the last year of the Tenth Plan. Among the ports, Chennai, Tuticorin, Mumbai, Jawaharlal Nehru Port Trust (JNPT), and Kandla have shown appreciable improvement. The pre-berthing detention, which showed substantial improvement and reduced to 4.9 hours in 2003–04 as compared to 11.5 hours during the last year of the Ninth Plan, slipped down slightly in the last two years of the Tenth Plan (but was still better than the Ninth Plan performance). Among the ports, improvement has been noticed in Paradeep, Chennai, Tuticorin, Ennore, and New Mangalore. The output per ship berth day has also shown consistent improvement during the Plan period as detailed in Table 9.5.3.

9.5.6 The major factors contributing to deterioration in average pre-berthing retention time in the last two years were priority berthing and ousting priority to vessels carrying foodgrains and fertilizers notably in the ports of Kandla, Haldia Dock System in Kolkata Port, and Vishakhapatnam Port; bunching of vessels; and lack of mechanized cargo handling equipment for certain dry bulk commodities. Though the cargo handled was within the total capacity of the ports, there was shortfall in the capacity of certain commodities in some specific ports. Inadequate port capacity leads to congestion, thereby leading to ship detention, etc. Most of the ports are not equipped with latest navigational aides and facilities such as Vessel Traffic Management System, sophisticated marine crafts, etc., channel restrictions in width leading to unidirectional movements, number of dedicated berths available being limited leading to bunching of vessels and calling of larger vessels combined with inadequate cargo handling equipments are the other factors contributing to increase in detentions.

Private Sector Participation

9.5.7 The government has put in place a scheme for private participation in major ports mainly in container terminals, specialized cargo berths, warehousing/storage facilities, etc. on BOT basis with a concession period not exceeding 30 years. The scheme also includes formation of joint venture by the ports with the private operators selected on the basis of competitive bidding. The scheme did not take off as expected during the Tenth Plan. Necessary policy initiatives in respect of management control, etc., are required to be evolved for facilitating the formation of joint ventures. In case of non-major ports, the VGF

TABLE 9.5.3
Tenth Plan—Productivity Parameters of Major Ports

Year	Average Turnaround Time (Days)	Average Pre-berthing Detention (Hours)	Average Output per Ship Berth Day (Tonnes)
2001–02 (Ninth Plan)	4.24	11.53	7158
2002–03	3.69	6.90	8455
2003–04	3.45	4.90	9079
2004–05	3.41	6.03	9298
2005–06	3.41	8.73	9586
2006–07	2.58	9.94	12612

scheme of the GoI will have to be made compatible with the requirements and the operational imperatives of the sector so as to enable the non-major ports to access these funds. During the Tenth Plan period, private sector schemes costing Rs 11257 crore were identified, eight schemes costing Rs 2435 crore have been completed with incremental capacity addition of 44.40 million mt, another six schemes costing Rs 3818 crore have already been awarded to private operators which are expected to create an additional capacity of 45.50 million mt.

Sethusamudram Channel Project (SSCP)

9.5.8 SSCP, sanctioned in June 2005 with the objective of creating a navigable channel from Gulf of Munnar to Bay of Bengal/Palk Bay, would save up to 424 nautical miles of navigation and up to 30 hours sailing time for ships plying between the east and west coasts. For the project with an estimated cost of Rs 2427.40 crore, an SPV, the Sethusamudram Corporation Ltd was formed with equity participation of Rs 495 crore by the government.

Tsunami Rehabilitation Programme

9.5.9 The Tsunami Rehabilitation Programme initiated after the severe earthquake and tsunami waves severely damaged the 56 ports, harbours, jetties, wharfs, and allied structures, especially in the southern islands of Hut Bay, Car Nicobar, Nan Cowry group of islands, and Great Nicobar, at an estimated cost of Rs 897.31 crore, is to be completed by March 2009.

Tenth Plan Outlay and Expenditure

9.5.10 An outlay of Rs 5418.29 crore had been approved for the port sector, comprising Rs 972 crore as GBS and Rs 4446.29 crore through IEBR. However, year-wise allocations were aggregated to Rs 5954.84 crore (details are given in Annexure 9.5.3) of which Rs 2892.65 crore or 48.58% was utilized. The acute shortfall in expenditure, particularly in respect of major ports, is due to failure of project formulation leading to delays in implementation and savings on account of schemes dropped/deferred.

EMERGING SCENARIO IMPACTING THE PORT SECTOR

9.5.11 In the backdrop of doubling of India's share in the world trade in the next five years, efficiency and

speed in the movement of cargo through ports are vital. Shipping and cargo technologies are changing rapidly; ships are bigger and faster with large-sized container vessels drawing 14.5 m draft and moving at speeds of 25 knots; and containerization of traffic is growing steadily and significantly.

9.5.12 To meet such challenges, initiatives taken include Electronic Data Interchange (EDI)-based single window clearance in many ports and development of an International Container Transshipment Terminal at Cochin. Non-major and private ports have seen spectacular growth. Notably, non-major ports increased their share of cargo traffic from 23.58% in 2000–01 to 27% in 2006–07 while their traffic volume grew by 11.74% (CAGR) in the last five years against 8.54% for major ports. However, the growth of traffic in non-major ports was skewed across coastal States, with Gujarat handling more than 60%.

9.5.13 Nevertheless, much more needs to be done by the Indian ports to improve their operational efficiency through enabling policies, regulatory and institutional mechanisms adopted to raise port efficiency, productivity, human resource planning, and equipment, initially to achieve the benchmarks of efficient ports in the region and to eventually become world class.

ISSUES AND STRATEGIES FOR THE ELEVENTH PLAN

Capacity Augmentation

9.5.14 To meet the overall projected traffic of 1008.95 million tonnes by 2011–12, of which the share of major ports would be 708.09 million tonnes, adequate port capacity is required to be created, the details of which are given in Table 9.5.4.

Dredging

9.5.15 In this crucial component of port capacity, only 11% of the target for capital dredging could be achieved during the Tenth Plan period. The requirement of capital dredging in the Eleventh Plan has increased more than two-fold, to 298.28 million cubic metres (MCuM) for major ports and SSCP and 367.18 MCuM for non-major ports, besides maintenance dredging of 380.06 MCuM and 33.89 MCuM, respectively. During the Eleventh Plan, dredging capacity of ports would

TABLE 9.5.4
Capacity Creation and Projected Traffic in Major Ports in the Eleventh Plan

(Million Metric Tonnes)

Port	Projected Traffic in 2011–12	Existing Capacity 2006–07	Capacity Addition by 2011–12	Total Capacity in 2011–12
Kolkata	13.43	13.40	18.85	32.25
Haldia	44.50	43.50	21.20	64.70
Paradeep	76.40	56.00	55.00	111.00
Vishakhapatnam	82.20	58.50	52.40	110.90
Ennore	47.00	13.00	51.20	64.20
Chennai	57.50	50.00	23.50	73.50
Tuticorin	31.72	20.55	43.43	63.98
Cochin	38.17	20.15	35.40	55.55
New Mangalore	48.81	41.30	22.50	63.80
Mormugao	44.55	30.00	37.46	67.46
Mumbai	71.05	44.65	48.16	92.81
JNPT	66.04	52.40	43.90	96.30
Kandla	86.72	61.30	58.80	120.10
Total	708.09	504.75	511.80	1016.55

be 29.73 MCuM per annum and that of the Dredging Corporation of India (DCI) 168 MCuM per annum.

9.5.16 To enable this capacity creation, a more liberal dredging policy has been brought into force which allows ports to charter foreign flag dredgers after granting the Indian companies the ‘first right of refusal’. It is necessary to consider the policy option of procuring the required dredgers from private dredging companies on a long-term basis, with appropriate guarantees and risk-sharing with the terminal operator incorporated in the concession agreement. Joint Ventures should be preferred for projects with a substantial dredging component.

9.5.17 Cargo traffic in general and container traffic in particular is concentrated in western ports leading to congestion and delays. Western ports are typically used even for much of the East Sea lane traffic, which is about 40% of total container traffic. The development of dredging facilities to handle container vessels requiring deeper drafts at the eastern ports should be prioritized in the Eleventh Plan.

DREDGING CORPORATION OF INDIA (DCI)

9.5.18 The capacity of the DCI, established in 1976, to provide integrated dredging services to major and minor ports at the beginning of the Tenth Plan was

73.60 MCuM of Trailer Suction Dredgers (TSDs) and 6.25 MCuM of Cutter Suction Dredgers (CSDs). Due to delays in finalization of procurement orders for the dredgers, there was no capacity addition during the Tenth Plan. The expenditure for the Tenth Plan is Rs 206.12 crore as against the outlay of Rs 365 crore.

9.5.19 During the Eleventh Plan, DCI proposes to acquire 10 TSDs of 5000–9000 CuM hopper capacity and 5 CSDs of 2000–3000 CuM hopper capacity in addition to other auxiliary equipment.

DEVELOPMENT OF NEW DEEP DRAFT PORTS

9.5.20 In order to meet the expected growth in traffic at ports of 10% and more, necessary feasibility and locational studies for developing some more ports, especially on the East Coast, are being undertaken.

PRODUCTIVITY

9.5.21 Improvement of labour productivity through enhanced training and redeployment of surplus human resources is a major area to be addressed during the Eleventh Plan. Equally important, ports would need to pay greater attention to selection, deployment, and operation as well as maintenance of the cargo handling equipment, with on-time replacement of obsolete equipment with state-of-art multi-tasking flexible equipment guided by specified procedures for disposal

of surplus/obsolete equipment. Competition from private operators is already showing some improvements in productivity of public berths.

DWELL TIME

9.5.22 The dwell time of cargo in Indian ports is high on account of many constraints. The workflow in Indian ports is manual with low level of IT penetration. For container handling, adequate electronic environment with Enterprise Resource Planning (ERP), which enables the resources of ports to be used in an even and efficient manner, is yet to be established in a full-fledged manner. The EDI, which ensures flow of data electronically between port, customs, shipping lines, and users, resulting in greater accuracy, speed, and efficiency of the total maritime logistic chain, is yet to be commissioned on a common platform. This information bottleneck is estimated to contribute to about 40% of the documentation. At present, EDI is minimal and consists of the proprietary message exchange format formulated by customs. To maximize the benefits of EDI and move towards a paperless regime, necessary steps have been already initiated to implement centralized web-based Port Community System (PCS), which would ultimately achieve seamless integration of the port community. Besides the above, there are other constraints such as inadequate infrastructure, absence of seamless connectivity with other modes, etc. A Committee of Secretaries has gone into these issues and made suitable recommendations indicating time frames ranging from December 2007 to June 2010. After implementation of these recommendations, the expected reduction in terminal dwell time for dry bulk, break bulk, and containers, respectively, would go down from the existing 3.23, 5.62, and 1.88 days to 1.60, 1.50, and 1.00 days in the case of imports and from 3.57, 6.60, and 3.78 days to 1.70, 3.30, and 1.50 days in the case of exports.

RISK MANAGEMENT SYSTEM (RMS) OF CUSTOMS

9.5.23 Two main customs components of detention of cargo at ports are assessment and examination at ports. Implementation of RMS is expected to bring about significant reduction in detention to cargo at ports. The basic approach of the RMS is to 'trust the accredited trade partners' and involves self-appraisal and use of minimal and appropriate intervention to

address perceived risks. The scheme of the RMS incorporates an Accredited Clients Programme which envisages assured facilitation to clients who meet specified criteria in terms of amount of duty paid, volume of imports, and a clean compliance record. Their imports will be subject to a small percentage of system-generated random checks in order to monitor their continuing compliance and to retain an element of surprise. In respect of non-accredited clients' imports, the RMS will determine the treatment to be given to individual transactions on the basis of an assessment of risks associated with such transactions. The purpose is to ensure that the department's resources are focused on high risk areas so that the threats to revenue and restriction/prohibitions on imports are effectively tackled. A large number of low risk bills of entry are cleared on the basis of self-appraisal mode, without any assessment and examination by officers.

PRIVATE SECTOR PARTICIPATION

9.5.24 The bulk of capacity augmentation would be undertaken through the PPPs and captive users. New berths at major ports would be constructed through PPP mode, except where operational exigencies necessitate taking up development of new berths through the ports' own resources. In addition to the areas already identified, possibilities for inviting private investment in maintenance dredging operations and pilotage would also be explored during the Eleventh Plan period. For providing stable policy and regulatory framework, the existing model bid documents including the concessions agreement are being refined on the basis of the experiences gathered from the existing PPP projects. A new MCA is being developed taking into account all the experience from existing private terminals and the concerns of all stakeholders.

NON-MAJOR PORTS

9.5.25 Traffic at non-major ports and private ports is growing at 11.74% (CAGR) and its share is expected to grow from 26.30% in 2005–06 to 30% in 2011–12. During the Eleventh Plan, non-major ports are expected to more than double their capacity, from 228.31 million tonnes upwards to 575 million tonnes. The total value of the developmental schemes to be taken

up during the Eleventh Plan amounts to around Rs 36000 crore, with contribution predominantly from private entities.

9.5.26 A holistic and integrated development perspective of major and non-major ports is necessary as they would complement and compete with each other. Suitable policies need to be devised so that non-major ports also act as centres of growth with appropriate coordination among the maritime States and the Central agencies.

TARIFF REGULATION

9.5.27 Increasing induction of private players in port operations is resulting in the gradual emergence of a competitive environment. The multiplicity of port operators has brought into focus the pressing need for an institutional mechanism that provides a level playing field for all port operators. Areas such as navigational safety, security, and conservancy in ports; safety and occupational health; disaster management; and pollution control measures would also need to be regulated by a national authority. The jurisdiction of Tariff Authority for Major Ports is restricted to the levy of tariffs for services rendered by major ports or by private operators authorized by them. A suitable regulator and a regulatory framework to address issues specific to the ports should be put in place.

INSTITUTIONAL REFORMS

9.5.28 To make port management more responsive to the dynamic and growing needs of port users, it would

be necessary to impart (i) financial and operational autonomy to them, (ii) separate regulatory and management functions with a view to commercialize the latter, (iii) improve access to long-term capital and project finance, and (iv) unbundle various services and privatize identified areas.

CORPORATIZATION

9.5.29 Corporatization of Ports Trusts would provide better accessibility to funds, create a board-managed corporate entity, and facilitate disinvestment. On the other hand, corporatization with revaluation of assets could merely push up tariffs without the port users seeing any change in the quality of service, if such a move is not supported by other reforms. The provisions of the Major Port Trusts Act can be purposefully invoked to serve the desired purpose in tandem with judicious privatization of the port services with the Ports Trusts playing a landlord's role. Where a particular service does not generate a sufficient stream of revenue and is thus non-viable for total privatization, the JV route for attracting private investment and management expertise should be encouraged.

9.5.30 For improving productivity, quality of service, and enhancing their competitiveness, the existing structure in the major ports would be reoriented for rendering port services, consistent with the practices followed in the Landlord Port Model.

IT IN PORTS

9.5.31 So far, from amongst the two basic IT systems, namely, Application Software to manage the operation of ports and EDI to facilitate appraisal and payment of duty without any human interface, the port-user interface has been achieved in some of the ports, while EDI has been introduced and port-customs interface achieved in all major ports, except Paradeep. Now, all activities across the maritime transport chain have to be integrated through one common standard PCS. It is expected that PCS in major ports would be implemented in the first year of the Eleventh Plan. The ports should draw up their IT Policy with the objective to develop and deploy state-of-art information and communication technologies to maximize the port's efficiency and effectiveness.

Box 9.5.1 Tariff Setting Mechanism

The present 'cost plus' tariff setting mechanism combined with the revenue sharing model for the PPP projects has certain inconsistencies. The Task Force, set up under the chairmanship of Anwarul Hoda, Member, Planning Commission, to examine the tariff setting mechanism and bidding parameters for PPP projects has noted that tariffs to be charged by port operators would be determined by market forces once adequate capacity is developed and sufficient competition introduced. However, in the interim the berths should be bid out after determining the tariff caps up front on the basis of norms to be developed for the purpose. As at present the revenue share would continue to be the sole bidding parameter.

9.5.32 In sum, the thrust of IT in port sector in the Eleventh Plan would be: (i) to implement centralized web-based EDI-PCS at major ports and to further extend this to supply chain management system and to bring other ports into its ambit, (ii) to gear up ports to have Radio Frequency Identification (RFI) device reader to capture the data from RFI device tags on shipments, and (iii) to implement centralized ERP covering all major ports.

HINTERLAND CONNECTIVITY

9.5.33 Apart from other deficiencies, port efficiency is impeded owing to the port's inability to handle additional traffic because of slow evacuation of cargo from ports or slow turnaround of ships. This undermines the competitiveness of Indian ports vis-à-vis other ports in the region, and vitiates the environment for investment in manufacturing in the country. Therefore, it is important that connectivity of major ports with the hinterland is augmented not only to ensure smooth flow of traffic at the present level but also to meet the requirements of projected increase in traffic.

9.5.34 The recommendations of the Committee of Secretaries constituted to address hinterland connectivity include construction of a four-lane road as well as double railway line connectivity for each major port, consideration of projects less than minimum prescribed IRR on case to case basis, and consideration of budgetary assistance and also the assistance under VGF scheme for such projects. The Committee further recommended that 10 road projects of value Rs 2036 crore and 8 rail projects of value Rs 2014 crore, which had already been sanctioned, should be completed in a time-bound manner. All approved recommendations are to be implemented within a period of three years, that is, by 2009.

ANDAMAN LAKSHADWEEP HARBOUR WORKS (ALHW)

9.5.35 ALHW was set up in 1965 for planning, execution, and maintenance of port and harbour facilities in the Andaman and Nicobar Islands and Lakshadweep Islands. During the Tenth Plan, construction of breakwaters at Mus in Car Nicobar and extension of wharf at Hut Bay in Little Andamans were completed. Embanking facilities at Agathi, Amini, and Minicoy and

Kawaratti in Lakshadweep, and development works of Junglighat Harbour in Port Blair and deep water wharf in Campbel Bay have been taken up. Against the Tenth Plan outlay of Rs 200 crore, expenditure incurred till 31 March 2007 was Rs 144.20 crore.

OUTLAY FOR THE ELEVENTH PLAN

9.5.36 The Eleventh Plan budgetary support for Central sector ports is Rs 3315 crore at 2006–07 price (Rs 3749 crore at current price). The scheme-wise break up of GBS at current prices is given in the Appendix (Volume III). In addition, the sector is expected to generate IEBR of Rs 26574.11 crore at 2006–07 price and private sector investment of Rs 36868.00 crore during this period. Further, a public investment of Rs 3627.00 crore is expected in the State sector.

9.5.37 The total projected outlay for the Eleventh Plan for the Department of Shipping (including Ports) is Rs 43874 crore at 2006–07 price (Rs 49623 crore at current price) which includes Rs 4465 crore of GBS at 2006–07 price (Rs 5050 crore at current price) and Rs 39409 crore of IEBR at 2006–07 price (Rs 44573 crore at current price).

9.6 CIVIL AVIATION

OVERVIEW

9.6.1 Air transport is the preferred mode of transport especially for long-distance travel, business travel, accessing difficult terrains, and for transporting high-value and perishable commodities mainly on account of the speed of travel and saving of time. With the opening up of domestic skies to private carriers in the second half of the Tenth Plan, air services have become affordable and are now effectively competing with other modes of transport. Propelled by growth of the economy and liberalization, the sector experienced an unprecedented growth during the Tenth Plan, accelerating particularly in its last three years.

REVIEW OF THE TENTH PLAN

9.6.2 During the Tenth Plan an outlay of Rs 12928.00 crore was provided to the Ministry of Civil Aviation (MoCA), out of which Rs 7792.09 crore or 60% of the outlay was spent by them. However, against a sum of Rs 672.73 crore provided as GBS, the expenditure

incurred was to the tune of Rs 546.10 crore or 81%. Details of outlay and anticipated expenditure are given in Annexure 9.6.1.

9.6.3 Important developments in the airline and airport sector included: (i) modernization and restructuring of Delhi and Mumbai airports launched through JV companies; (ii) development of greenfield air-ports at Bangalore and Hyderabad on a Build–Own–Operate–Transfer basis with PPP; (iii) approval of modernization of 35 non-metro airports and 13 other airports to world-class standards in phases; (iv) liberalization of FDI limit upto 100% through automatic route for setting up greenfield airports; (v) acquisition of modern and technologically advanced aircraft for Air India (AI) Ltd, Air India Charters Ltd (AICL), and Indian Airlines Ltd; (vi) liberalization of bilateral air services agreement in line with the contemporary developments in international civil aviation sector; (vii) adoption of a limited Open Sky Policy in international travel to meet the traffic demand during peak season; and (viii) adoption of trade facilitation measures in custom procedures to facilitate speedy clearance of air cargo.

ELEVENTH PLAN

Objectives

9.6.4 The main objectives of the Civil Aviation Sector for the Eleventh Plan would be to provide (i) world-class infrastructure facilities; (ii) safe, reliable, and affordable air services so as to encourage growth in passenger and cargo traffic; and (iii) air connectivity to remote and inaccessible areas with special reference to north eastern part of the country.

Strategies

9.6.5 The realization of above objectives would call for capacity building that will include modernization and expansion of major international and domestic airports, construction of new greenfield airports including that of the NER, enhancement of cargo handling facilities at all airports, and upgradation/modernization of Air Traffic Management (ATM) System.

9.6.6 Similarly, in the airline sector, acquisition of modern fuel-efficient aircraft fitted with the latest

equipment would be encouraged. The capacity building process in both airlines and airports would be mainly through increased private sector participation. While a decision has been taken to modernize the non-metro airports through the Airports Authority of India (AAI), the city side development at these airports would be done through PPP. Two major metro airports (Delhi and Mumbai) and two greenfield airports (Bangalore and Hyderabad), which would be completed during the Eleventh Plan, are already being developed through PPP. A similar strategy is envisaged for the Navi Mumbai airport for which in-principle clearance has been given. While the existing airports at Kolkata and Chennai would be developed by AAI, the greenfield airports at these locations will need to be taken up through PPP.

9.6.7 Acute shortage of technical and operating manpower would be addressed by upgrading the existing training institutes and opening new world-class flying training institutes.

Traffic Projections

9.6.8 Both domestic and international traffic witnessed a boom during the last three years of the Tenth Plan, that is 2004–05, 2005–06, and 2006–07, with growth in passenger traffic of 21.5%, 23.7%, and 31.38%, respectively, resulting in overall growth (CAGR) of 19.23% (13.58% in international passenger and 21.78% in domestic traffic) during the Tenth Plan. The main factors contributing to this growth include the growth of the economy, falling fares, and increasing capacities of domestic private airlines. It is estimated that international and domestic passengers are forecast to grow at the rate of 15.9% and 19.9%, respectively, resulting in overall increase of 18.8% during the Eleventh Plan. All the Indian airports taken together, passenger traffic is forecasted at 2054.00 lakh (540.37 lakh international and 1513.63 lakh domestic passengers) and cargo traffic at 2683.47 thousand metric tonnes (TMTs) (1822.69 TMTs international and 860.78 TMTs domestic cargo) by 2011–12.

9.6.9 Additional capacities of about 296.95 lakh international and 1035.74 lakh domestic passengers would require to be created at 45 major airports by 2011–12, as the total international passengers and

domestic passengers projected would be 539.39 lakh and 1489.70 lakh, respectively.

9.6.10 Similarly, during the Tenth Plan, cargo traffic grew (CAGR) by 12.70% (12.75% international and 12.61% domestic cargo). During the Eleventh Plan, international and domestic cargo traffic is expected to grow at the rate of 12.1% and 10.1%, respectively, resulting in overall increase of 11.4%.

9.6.11 To take care of above growth in respect of cargo terminal, additional capacity would require to be created to the tune of 800.00 TMTs of international cargo traffic and about 300.00 TMTs of domestic cargo traffic by 2011–12.

POLICY FRAMEWORK

Air Transport

9.6.12 The main advantage of civil aviation lies in its speed particularly over long distances and difficult terrain. A major disadvantage is the high cost of transportation on account of high Aviation Turbine Fuel (ATF) cost, which is further aggravated by taxes. Viewed in inter-modal context, it is desirable to rationalize ATF pricing and to review the tax structure.

Multi-modal Connectivity

9.6.13 The major airports in India are mostly at considerable distance from the city centre. Apart from causing inconvenience to the passengers, this also adversely affects the comparative advantage in terms of saving in time otherwise enjoyed by air transport vis-à-vis other modes of transport. These airports need to be connected to cities by metros and expressways to get full advantage of air transportation by reducing the total travel time.

Foreign Equity Participation

9.6.14 The Domestic Air Transport Policy approved by the government provides for foreign equity participation up to 49% and investment by non-resident Indians (NRIs) up to 100% in the domestic air transport services. Foreign airlines are, however, not permitted to participate in equity directly or indirectly. With a view to attracting new technology and management expertise, this policy needs to be reviewed.

Air Cargo

9.6.15 Today, about 40% of the world's cargo business, in terms of value, moves by air. Although cargo traffic is growing steadily in recent years it has not kept pace with the passenger traffic growth because of shortcomings such as lack of facilities for transshipment of imports and exports; absence of integrated cargo infrastructure; deficiencies in gateway and hinterland connectivity through rail and road; complexities in custom procedures in air cargo; and need for technological upgradation and performance-based service standards. To address these shortcomings, during the Eleventh Plan, steps will be taken including (i) streamlining/simplification of procedures by various regulatory agencies; (ii) provision of infrastructural facilities relating to cargo handling; (iii) promoting and developing India as a Regional Air Cargo Hub; and (iv) setting up of 'Cargo Villages' at key international airports.

Maintenance, Repair, and Overhaul (MRO)

9.6.16 Owing to the availability of skilled manpower, India has the potential to emerge as an MRO hub in Asia Pacific region. Currently, the two merged National Airlines, viz., Indian Airlines and AI, have in-house aircraft maintenance facilities, but at times they too have to outsource maintenance to foreign companies. At present, there is virtually no credible third-party MRO facility in India to support the requirements of the rapidly expanding aircraft fleets of private operators. The current growth phase provides India an ideal opportunity to develop into an MRO hub. Investment by the private sector including foreign direct investment would be encouraged to this end.

Regional Airlines

9.6.17 In order to tap the vast potential of growth of traffic and to encourage balanced growth of civil aviation, regional airlines need to be promoted. The promotion of regional airlines would, however, be through more liberal policy and provision of better infrastructure facilities. The rules and procedures governing the entry may also be simplified.

Route Dispersal Guidelines (RDG)

9.6.18 According to the RDG laid down in 1994, all scheduled operators are required to deploy a certain

percentage of their capacity on trunk routes (Category-I routes) to the North Eastern and other inaccessible areas (Category-II) and within Category-II regions. In view of the vital changes that have taken place in civil aviation sector since the policy was laid down, it is desirable to review the RDG to bring them in line with these developments. One way to make the RDG workable will be to make the obligation tradable. Another alternative could be to provide direct subsidies to operators willing to operate in inaccessible and isolated areas and require the operators on trunk routes to contribute towards the subsidy.

Air Connectivity in NER and Other Remote/Inaccessible Areas

9.6.19 In view of the hilly terrain with uneasy access through the land link, improvement of air connectivity and development of airport infrastructure in NER and other remote areas such as the hill States of Jammu and Kashmir, Himachal Pradesh, Uttarakhand, and island territories of Andaman and Nicobar and Lakshadweep need to be accorded top priority.

9.6.20 During the Eleventh Plan, three greenfield airports, one each at Pakyong in Sikkim, Itanagar in Arunachal Pradesh, and Chiethu in Nagaland, would be constructed. In addition, some existing airports in NER would also be taken up for expansion/modification so as to make them operational for scheduled flights. Airports in other crucial areas such as Jammu, Dehradun, Agatti, and Port Blair would be taken up under the scheme for modernization and upgradation of 35 non-metro airports.

Air Transport Security

9.6.21 Security issues, particularly arising out of the terrorist-related activities, have assumed even greater importance in the international environment in recent decades. The legal and institutional framework for civil aviation security needs to be strengthened by evolving appropriate technology, training, and equipments.

Role of the Private Sector

9.6.22 The private sector is now playing a crucial role in the development of both airline and airport sector. Its market share in the domestic traffic during 2006 reached 78.5%, which includes the 29% traffic of low

cost airlines. Jet Airways has emerged as the market leader with a share of 31.2%, followed by Indian Airlines (21.5%), Air Deccan (18.3%), Air Sahara (8.8%), Kingfisher (8.7%), Spice Jet (6.9%), Go Air (2.8%), Indigo (1.3%), and Paramount (0.7%). The private sector share is likely to increase during the Eleventh Plan with an estimated further acquisition of additional fleet by them of about 258 aircraft through a mix of lease/purchase involving an investment of as much as Rs 71863.00 crore.

9.6.23 The total private investment envisaged for this sector, including Rs 1500.00 crore for city side development 35 non-metro airports, would be to the tune of Rs 93493.00 crore during the Eleventh Plan.

NEW INITIATIVES

9.6.24 In order to sustain the spectacular growth registered by the civil aviation sector in the last few years through the Eleventh Plan, the following initiatives have been taken:

- Model Concession Agreement (MCA) is being evolved to help attract private investments and also facilitate smooth execution of air transport projects.
- Airports Economic Regulatory Authority (AERA) is being established in order to create a level playing field and healthy competition amongst all major airports (handling more than 1.5 million passenger per annum); encourage investment in airport facilities; regulate tariffs of aeronautical services; protect reasonable interest of users; and operate efficient, economic, and viable airports.
- Merger of AI and Indian Airlines to optimize fleet acquisition, to leverage the asset base, to strengthen the network, and to achieve economy of scale, with estimated cost and synergy benefits (net) of Rs 600.00 crore at the end of the third year of merger.
- Human Resource Development (HRD) to mitigate the acute shortage of qualified personnel, especially pilots and flying instructors. The following steps are being taken in this regard:
 - Training facilities at Indira Gandhi Rashtriya Uran Akademi (IGRUA) would be upgraded/augmented.
 - A new Flying Training Institute would be set up at Gondia, Maharashtra.

- Flying clubs and schools would be encouraged to improve equipment and infrastructure.
- Revamping of AAI in light of the strain on aviation infrastructure resulting in traffic congestions and delays at some of the airports resulting from the high growth in the sector. It would be revamped with multidisciplinary staff and expertise along with independent directors. The framework for revamp of AAI would be worked out during the Eleventh Plan.

ORGANIZATIONS OF MINISTRY OF CIVIL AVIATION (MOCA)

Air India (AI)

9.6.25 During the Tenth Plan, AI Ltd has incurred an expenditure of Rs 2388.27 crore as against the approved outlay of Rs 2661.39 crore, which works out to about 90% of the approved outlay. The shortfall was mainly due to appreciation of Indian rupee and deferment of non-aircraft capital expenditure to subsequent years due to resource constraints. The financial performance of AI during the Tenth Plan is given in Table 9.6.1.

9.6.26 The net profit of AI Ltd has declined from Rs 133.86 crore during 2002–03 to Rs 12.50 crore

during 2006–07 due to its fall in share of the traffic due to increased competition. Absence of an adequate fleet of new aircrafts was a major contributory factor for the decline in competitiveness of the airline.

9.6.27 AI has been successful in increasing its capacity as is evident from Table 9.6.2. During the Eleventh Plan, AI Ltd would acquire 50 new long-range aircrafts comprising 8 Boeing 777–2000 LR, 15 Boeing 777–300 ER, and 27 Boeing 787 aircraft. With these acquisitions, its targeted capacity would increase to 10484 million in terms of available tonne kilometres (ATKMs) and 7092 million in terms of revenue tonne kilometres (RTKMs) by the end of the Eleventh Plan.

Indian Airlines

9.6.28 During the Tenth Plan, Indian Airlines could spend only Rs 1431.54 crore as against the approved outlay of Rs 4240.50 crore, a shortfall of 66%, mainly attributed to the appreciation of Indian rupee, less outgo towards new aircraft project, and taking up of operationally essential projects only under ‘other supporting facilities’ on account of resource constraint. Indian Airlines has improved its financial performance as given in Table 9.6.3.

TABLE 9.6.1
Financial Performance of Air India

		(Rs in Crore)				
S. No.		2002–03	2003–04	2004–05	2005–06	2006–07
1.	Total revenue	5689.88	6331.78	7676.39	9251.02	8887.00
2.	Total expenses	5545.87	6238.07	7579.85	9232.52	8874.50
3.	Net profit/loss before tax	144.01	93.71	96.54	18.50	12.50
4.	Net profit/loss after tax	133.86	92.33	96.36	14.94	12.50

TABLE 9.6.2
Growth in Capacity and Traffic during the Tenth Plan

		(in Million)		
Year	Capacity Available (ATKMs)	Capacity Utilized (RTKMs)	Load Factor (%)	
2002–03	2415.9	1561.0	64.6	
2003–04	2897.5	1774.0	61.2	
2004–05	3600.4	2218.0	61.6	
2005–06	4193.2	2363.7	56.4	
2006–07 (Prov.)	4152.9	2204.20	53.1	
Total	17259.9 (13711.00)#	10120.90 (9185.80)#	58.6 (67.0)#	

Note: # Targets for the Tenth Plan.

TABLE 9.6.3
Financial Performance of Indian Airlines

(Rs Crore)

S. No.		2002–03	2003–04	2004–05	2005–06	2006–07 (BE)
1.	Total revenue	4173.51	4725.67	5362.57	5788.82	7944.00
2.	Total expenses	4370.07	4677.50	5290.96	5725.82	7847.50
3.	Net profit/(loss) before tax	(–)196.56	48.17	71.61	63.00	96.50
4.	Profit/(loss) after tax	(–)196.56	44.17	65.61	49.50	43.00

Note: BE= Budget Estimate.

9.6.29 Indian Airlines started earning net profit of Rs 44.17 crore in 2003–04, mainly due to increase in domestic fares and various cost-cutting measures initiated by the company. However, increase in ATF price and fall in passenger yields as a result of intense competition in domestic aviation market made the financial performance erratic.

9.6.30 During the Tenth Plan, the physical performance of Indian Airlines, in terms of capacity produced and utilized, indicates that it has not been able to achieve the targets, mainly due to delay in acquisition of aircrafts and intense competition from other domestic airlines, as given in Table 9.6.4. In order to increase its capacity and expand network during the Eleventh Plan, Indian Airlines would acquire 43 new Airbus aircrafts, the order for which was placed during the Tenth Plan. In addition to these aircrafts, Indian Airlines proposes to lease 12 wide-body aircrafts and 8 Turbo Prop aircrafts (50-seater), among others, thereby enlarging the total fleet size to 117 by the end of the Eleventh Plan. At the same time, it proposes to phase out 11 Boeing 737–200, 3 Airbus A 300, and 2 Dornier. As a result, the capacity of Indian Airlines is expected to grow from 1686 million ATKMs to 4238

million ATKMs by the end of the Eleventh Plan. Similarly, the capacity in terms of RTKMs is expected to grow from 1233 million RTKMs during 2006–07 to 3093 million RTKMs during the same period.

Airports Authority of India (AAI)

9.6.31 Against the approved budget of Rs 5404.21 crore including budgetary support of Rs 250 crore, AAI spent Rs 3534.62 crore including budgetary support of Rs 150.67 crore during the Tenth Plan. The short-fall in expenditure of 35% was mainly due to deferment of projects at Delhi and Mumbai airports due to their restructuring through PPP, delay in finalization of certain projects for non-metro airports, and delay in procurement of communication/surveillance and distance measuring equipment.

9.6.32 The net profit of AAI has increased from Rs 282.05 crore during 2002–03 to Rs 793.71 crore during 2006–07, thus earning an appreciable total profit of Rs 2433.71 crore during the Tenth Plan, as indicated in Table 9.6.5.

9.6.33 During the Eleventh Plan, AAI would be undertaking development of 35 non-metro airports and 13

TABLE 9.6.4
Growth in Capacity and Traffic during the Tenth Plan

(In Million)

Year	Capacity Available (ATKMs)	Capacity Utilized (RTKMs)	Load Factor (%)
2002–03	1308.018	845.097	64.6
2003–04	1334.069	877.475	65.8
2004–05	1472.062	1017.284	69.1
2005–06	1592.642	1140.947	71.6
2006–07 (Prov.)	1686.29	1232.67	73.1
Total	7393.081 (8384.00)#	5113.473 (5793.00)#	69.2 (69.1)#

Note: # Targets for the Tenth Plan.

TABLE 9.6.5
Financial Performance of Airports Authority of India

		(Rs Crore)				
S. No.		2002–03	2003–04	2004–05	2005–06	2006–07
1.	Total revenue	2384.49	2630.59	2999.65	3490.46	3431.86
2.	Total expenses	1887.44	2086.63	2314.83	2281.85	1948.15
3.	Net profit/loss before tax	497.05	543.96	684.82	1208.61	1483.71
4.	Provision for tax	215.00	229.00	359.45	490.99	690.00
5.	Profit after tax	282.05	314.96	325.37	717.62	793.71

other airports; development of Chennai and Kolkata airports; construction of new greenfield airports, including three in NER; expansion of five airports in NER and other crucial areas; up-gradation of technology from ground-based Communication, Navigation, and Surveillance-Air Traffic Management (CNS-ATM) to satellite-based CNS-ATM facilities; installation of new facilities including security equipment at various airports; installation of safety and facilitation equipment; development of airspace capacity enhancement; and development of IT.

Pawan Hans Helicopters Ltd (PHHL)

9.6.34 PHHL has incurred an expenditure of Rs 281.95 crore as against an approved outlay of Rs 458.90 crore, which is 61% of approved outlay for the Tenth Plan. The shortfall was due to delay in acquisition of new helicopters.

9.6.35 In spite of ever increasing ATF price, PHHL could increase its profit to Rs 49.00 crore in 2006–07 from Rs 15.39 crore during 2002–03, as per the details given in Table 9.6.6.

9.6.36 During the Eleventh Plan, PHHL would add 20 more helicopters to expand its present fleet including five medium class helicopters with longer range and higher pay-load capabilities for deep water exploration.

The provision of helicopter support services would also be extended, beyond servicing ONGC, National Hydro-electric Power Corporation Ltd (NHPC), Ministry of Home Affairs, and State Governments, especially of North Eastern States and other remote and inaccessible States/UTs, to new areas such as tourism, medical evacuation, law enforcement, news gathering, intra-city transportation, and corporate travel. Besides, possibility would also be explored to expand its repair and overhaul business by offering repair services to other operators as well as by creating a new state-of-art maintenance centre at Mumbai.

Hotel Corporation of India (HCI)

9.6.37 An outlay of Rs 15.00 crore was approved for HCI during the Tenth Plan, against which the expenditure incurred was Rs 26.27 crore, or 75% more than the allocation, mainly on the maintenance and operation of hotels due to delay in their disinvestment.

9.6.38 HCI is expected to earn a profit of Rs 2.19 crore during 2006–07 after incurring losses for the first four years of the Tenth Plan.

9.6.39 The hotels of HCI were recommended for disinvestment and, accordingly, the disinvestment in two hotels, viz., Centaur Hotels at Mumbai airport and Juhu Beach in Mumbai, was completed during 2002–03. The

TABLE 9.6.6
Financial Performance of Pawan Hans Helicopters Ltd

		(Rs Crore)				
S. No.		2002–03	2003–04	2004–05	2005–06	2006–07(RE)
1.	Total revenue	205.02	224.00	241.85	199.08	211.50
2.	Total expenses	145.54	158.78	173.90	163.98	177.86
3.	Net profit/loss before tax	24.37	77.84	83.86	64.60	40.30
4.	Profit after tax	15.39	52.69	49.58	47.39	49.00

Note: RE= Revised Estimate.

process of disinvestment was, however, discontinued following a change in the government policy under which it has been decided to run Centaur Hotel at Srinagar and Flight Kitchens at Mumbai on a long-term management contract. The two other hotels, viz., Centaur Hotel and Flight Kitchen at Delhi airport will be run by the HCI till the Commonwealth Games and a decision would be taken thereafter. During the Eleventh Plan these hotels would need renovation so as to make them competitive.

Air India Charters Limited (AICL)

9.6.40 AICL is a subsidiary of AI Ltd. It used to provide manpower for allied services at airports. However, there has been a metamorphosis in the role of the company from being merely a service provider of ground handling and security to the first international low cost, no frill 'budget' airline from India. Its low cost airline, viz., AI Express has commenced operations on 29 April 2005. Since then it has incurred plan expenditure of Rs 59.01 crore. The net profit earned by AICL has increased to Rs 2.50 crore in 2006–07 showing an increase of about 85% over the net profit of Rs 1.35 crore earned during 2005–06, as per the details given in Table 9.6.7.

9.6.41 With the objective of increasing capacity and modernizing its fleet, it had placed an order for 18 Boeing 737–800 aircrafts during the Tenth Plan, of which 6 were delivered. The remaining 12 would be delivered during the Eleventh Plan period. With these acquisitions, capacity enhancement in terms of ATKMs and RTKMs would be 1107.00 million and 883.00 million, respectively, by 2011–12.

Indira Gandhi Rashtriya Uran Akademi (IGRUA)

9.6.42 The approved outlay of IGRUA during the Tenth Plan was Rs 10.00 crore, against which an

expenditure of Rs 37.88 crore was incurred mainly on account of upgradation/modernization of the institute to increase its capacity to meet the growing demand for pilots due to entry of new airlines and expansion of fleet by the existing airlines.

9.6.43 IGRUA, as the premier institute for imparting flying training to commercial pilots, would need to increase its capacity during the Eleventh Plan by upgrading and augmenting its existing facilities so as to increase the number of pilots to be trained from the existing capacity of 30 pilots per annum to 100 pilots per annum. A project for upgradation/strengthening of IGRUA including augmentation of training facilities such as acquisition of 11 aircrafts (10 single engine and 1 multi-engine aircraft) was approved during the Tenth Plan. However, during the Eleventh Plan two more aircrafts, one King Air Simulator (Glass Cockpit) and one TB-20 CPT (Glass Cockpit) would be acquired. Further, in order to bring professionalism in the management of the Akademi and to make the institute self-sustaining, the possibility of entrusting the management of IGRUA to a private sector partner on a management lease basis would be explored.

Aero Club of India (ACI)

9.6.44 During the Tenth Plan, ACI spent Rs 11.00 crore as against the approved outlay of Rs 5.00 crore which is 120% more than the approved outlay.

9.6.45 ACI being the apex body of all the flying clubs, gliding clubs, and aero sports organizations in India encourages them to improve equipment and infrastructure by providing support to them. During the Eleventh Plan, ACI would acquire trainer aircraft, simulator, and training aids for distribution among the member flying clubs. Besides, it would also explore the possibility to develop aero-sports facilities including an aero-sports complex.

TABLE 9.6.7
Financial Performance of Air India Charters Ltd

		(Rs Crore)				
S. No.	Particulars	2002–03	2003–04	2004–05	2005–06	2006–07 (RE)
1.	Revenue	–	–	–	432.38	736.50
2.	Expenses	–	–	–	427.54	734.00
3.	Net profit/(loss) before Tax	–	–	–	4.84	2.50
4.	Net profit/(loss) after Tax	–	–	–	1.35	2.50

Directorate General of Civil Aviation (DGCA)

9.6.46 During the Tenth Plan, an outlay of Rs 19.00 crore was provided to DGCA, against which it could spend only Rs 12.03 crore. The shortfall was due to the acquisition of lesser number of trainer aircrafts from National Aerospace Laboratories (NAL).

9.6.47 With the objective of ensuring safety in air transport, the existing training programmes of DGCA such as Safety Oversight Programme of ICAO, Co-operative Development of Operational Safety and Continuing Airworthiness Programme (COSCAP) and European Union Training Programme will be continued during the Eleventh Plan. The other programmes which DGCA would be taking up will be procurement of trainer aircrafts (light helicopters/simulators for restructuring of flying/gliding clubs/institutions), purchase of machinery and equipment for aircraft accident investigation laboratories, and modernization of examination system and civil works at DGCA headquarters and their field offices.

9.6.48 Keeping in view the acute shortage of technical and operating manpower, it is proposed to establish a new world-class state-of-the-art National Flying Training Institute at Gondia, Maharashtra. The main objective of the institute is to provide flying training to trainees for acquiring Private Pilot Licence, Commercial Pilot Licence, Airline Transport Pilot Licence, Micro Pilot Licence, etc. The institute would also be utilized for R&D in the field of flying training, aviation-related innovative and practical courses.

Bureau of Civil Aviation Security (BCAS)

9.6.49 During the Tenth Plan, BCAS could spend only Rs 9.52 crore as against the approved outlay of

Rs 114.00 crore, which works out to about 8%. The huge shortfall in utilization of funds was mainly due to non-finalization of schemes, such as restructuring of BCAS, construction of additional Regional Deputy Commissioner of Security Office, setting up of additional Bomb Detection and Disposal Squad (BDDS)/dog squads, and also due to delay in commencing work on setting up the Civil Aviation Security Academy.

9.6.50 Security in airlines operations has assumed greater importance especially after the incident of 9/11 and threats arising out of other terrorist-related activities. It would be necessary to undertake measures to strengthen and restructure BCAS, its training methods and training infrastructure, etc. Other measures would include electronic perimeter surveillance and protection, automated smart card access control at airports, setting up of additional BDDS and dog squads at the identified hyper-sensitive airports, and setting up of Civil Aviation Security Training Academy during the Eleventh Plan period.

OUTLAY FOR THE ELEVENTH PLAN

9.6.51 The total projected outlay for the Eleventh Plan for MoCA is Rs 43560 crore at 2006–07 price (Rs 49267 crore at current price) which includes Rs 1680 crore of GBS at 2006–07 price (Rs 1900 crore at current price). The scheme-wise break up of GBS at current prices is given in the Appendix (Volume III). In addition, the sector is expected to generate private sector investment of Rs 93493 crore during this period. The IEBR may go up by Rs 2226.68 crore at 2006–07 price on account of higher generation and utilization by AAI to fund their projects.

ANNEXURE 9.2.1
Resource Mobilization for the Tenth Five Year Plan

(In Rs Crore at Current Price)

Year	Internal Resources		Market Borrowings		Gross Budgetary Support		Total
	Amount (Rs crore)	Share (%)	Amount (Rs crore)	Share (%)	Amount (Rs crore)	Share (%)	Amount (Rs crore)
2002-03	3113	27	2517	22	5778	51	11408
2003-04	3475	26	2837	21	7081	53	13393
2004-05	3712	24	3041	20	8669	56	15422
2005-06	7033	37	3731	20	8074	43	18838
2006-07 (RE)	12233	49	4794	19	7914	32	24941
Total (Provisional)	29567	35	16920	20	37516	45	84003
Tenth Plan Outlay			33000 (54.5%)		27600	45.5	60600

ANNEXURE 9.2.2
Gross Budgetary Support

(In Rs Crore at Current Price)

Year	Capital		Special Railway Safety Fund		Diesel Cess		Total	
	Amount (Rs Crore)	Share (%)	Amount (Rs Crore)	Share (%)	Amount (Rs Crore)	Share (%)	Amount (Rs Crore)	Share (%)
2002-03	4264	37.6	1350	11.9	164	1.5	5778	51
2003-04	5315	39.8	1600	12.0	166	1.2	7081	53
2004-05	5493	35.5	2975	19.2	201	1.3	8669	56
2005-06	5312	28.3	2499	13.3	262	1.4	8073	43
2006-07	6189	24.8	1365	5.5	360	1.4	7914	33
Total (Provisional)	26573	31.6	9789	11.5	1154	1.4	37516	45

ANNEXURE 9.3.1
Financial and Physical Performance

(In Rs Crore)

S. No.	Schemes/Programmes	Financial Performance Tenth Plan			
		Outlay	BE	RE	Actual Exp.
1	2	3	4	5	6
1.	Externally aided projects	13990.00	13050.70	10007.90	9495.18
	(i) Externally aided (RW)	2560.00	403.10	99.16	7.53
	(ii) Counterpart funds (RW)	640.00	126.00	28.54	4.66
	EAP Ministry	3200.00	529.10	128.00	15.53
	(iii) Externally aided (NHAI)	8712.00	10015.72	7893.62	5182.70
	(iv) Counterpart funds (NHAI)	49.50	0.00	0.00	0.00
	(v) Loan to NHAI	2028.00	2504.88	1986.28	1346.78
	EAP—NHAI	10789.50	12520.90	9879.98	9479.48
	(vi) Strengthening of PIC	0.50	1.00	0.85	0.47
2.	Other schemes—NH (O)	8664.00	7443.60	7789.67	7560.85
3.	Works under BRDB	950.00	1564.00	1508.00	1525.43
4.	Travel expenses (domestic)	20.00	5.27	3.47	3.05
5.	Other charges		2.90	1.18	0.53
6.	Development of Information Technology	20.00	24.00	14.50	9.44
7.	Strategic roads under RW	50.00	1.50	1.50	0.00
8.	Strategic roads under BRDB		192.17	202.42	178.30
9.	R&D Plg. studies	20.00	24.75	22.75	11.50
10.	Training	10.50	17.50	15.50	13.60
11.	Machinery and equipment	15.00	37.72	37.72	34.67
12.	Charged expenditure	50.00	25.00	25.00	17.79
13.	NHAI (investment)	10500.00	15518.19	15518.19	15518.19
14.	E&I for States from CRF	500.00	716.11	626.11	374.55
15.	E&I for UTs from CRF		31.09	31.09	8.55
16.	NHDP-III, two-laning expressways and six-laning		1510.00	810.00	810.00
17.	SARDP-NE		1000.00	1000.01	550.01
18.	Strategic Roads in Arunachal Pradesh under Ministry of Defence		100.00	100.00	0.00
19.	Provision for NER		0.00	0.00	0.00
	Total (BS)	34790.00	41264.70	37715.00	36112.05
20.	IEBR	24700.00	25500.00	17782.00	12481.90
	Grand Total	59490.00	66764.70	55497.00	48593.95

Note: The outlays include provisions for NER also whereas in BE and RE figures the provisions for NER have been segregated and shown separately under item no. 19; Exp. = Expenditure; RW = Road Wing; Plg. = Planning; E&I = Roads of Economic and Interstate Importance; NH (O) = National Highways (Original); BS = Budgetary Support.

(Annexure 9.3.1 contd.)

(Annexure 9.3.1 contd.)

NH (O)

S. No. Schemes/Programmes (Normal NH Works)	Physical Performance Tenth Plan	
	Targets	Achievements
1. Widening to two lanes (km)	4000	3420.88
2. Widening to four lanes (km)	800	157.01
3. Strengthening of weak two lanes (km)	2000	3346.14
4. Bypasses (nos)	25	13
5. Major bridges/minor bridges including ROBs (nos)	300	548
6. IRQP	10000	15326.62

BRDB

S. No. Schemes/Programmes (Normal NH Works)	Physical Performance Tenth Plan	
	Targets	Achievements
1. Widening to two lanes (km)	528.92	755.94
2. Widening to four lanes (km)	0.00	0.00
3. Strengthening of weak two lanes (Kms)	200.82	164.12
4. Bypasses (nos)	LS	3
5. Major bridges/minor bridges including ROBs (nos)	LS	56
6. IRQP	613.03	923.70

NHAI

S. No. Schemes/Programmes (Normal NH Works)	Physical Performance Tenth Plan	
	Targets	Achievements
1. Widening to two lanes (km)	Completion of GQ	
2. Widening to four lanes (km)		6612.00
3. Strengthening of weak two lanes (km)		4867.00
4. Bypasses (nos)		10
5. Major bridges/minor bridges including ROBs (nos)		7
6. IRQP		

ANNEXURE 9.3.2
Central Road Sector Outlay and Expenditure—At Current and Constant Price for the Tenth Plan

(In Rs Crore)

S. No.	Schemes	Tenth Plan (2002-07)		AP (2002-03)		AP (2003-04)		AP (2004-05)		AP (2005-06)		AP (2006-07)		Total Outlay for Tenth Plan	Total Exp. at Current Prices
		Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15
1.	Externally aided projects	13990.00	2158.00	1512.64	2390.90	1448.90	3323.70	1602.30	3200.30	2953.34	1978.00	1978.00	13050.70	9495.18	
	(i) Externally aided (RW)	2560.00	123.80	4.88	39.30	0.00	80.00	2.65	160.00	0.00	0.00	0.00	403.10	7.53	
	(ii) Counterpart funds (RW)	640.00	31.00	4.66	21.50	0.00	33.50	0.00	40.00	0.00	0.00	0.00	126.00	4.66	
	EAP Ministry	3200.00	154.80	9.54	60.80	0.00	113.50	2.65	200.00	3.34	0.00	0.00	529.10	15.53	
	(iii) Externally aided (NHAI)	8712.00	1602.00	1202.00	1863.52	1159.12	2568.00	1239.08	2400.00	0.00	1582.20	1582.50	10015.72	5182.70	
	(iv) Counterpart funds (NHAI)	49.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	(v) Loan to NHAI	2028.00	401.00	301.00	466.38	289.78	642.00	360.50	600.00	0.00	395.50	395.50	2504.88	1346.78	
	EAP—NHAI	10789.50	2003.00	1503.00	2329.90	1448.90	3210.00	1599.58	3000.00	2950.00	1978.00	1978.00	12520.90	9479.48	
	(vi) Strengthening of PIC	0.50	0.10	0.10	0.10	0.00	0.20	0.07	0.30	0.00	0.30	0.30	1.00	0.47	
2.	Other Schemes—NH (O)	8664.00	1440.00	1425.17	1544.00	1474.57	1482.00	1503.88	1427.30	1570.34	1550.30	1586.89	7443.60	7560.85	
3.	Works under BRDB	950.00	145.00	210.04	210.00	256.00	210.00	210.00	415.00	321.39	584.00	528.00	1564.00	1525.43	
4.	Travel expenses (domestic)	20.00	1.00	0.40	1.02	0.33	0.50	0.37	1.00	0.70	1.75	1.25	5.27	3.05	
5.	Other charges	1.00	1.00	0.03	0.50	0.0045	0.40	0.00	1.00	0.00	0.00	0.50	2.90	0.53	
6.	Dev. of Information Technology	20.00	4.00	2.48	5.00	1.81	3.00	0.29	6.00	1.86	6.00	3.00	24.00	9.44	
7.	Strategic roads under RW	50.00	1.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.00	
8.	Strategic roads under BRDB	20.00	8.50	10.25	19.00	24.50	19.50	19.50	71.00	49.88	74.17	74.17	192.17	178.30	
9.	R&D Pkg. studies	10.50	3.00	1.75	3.00	0.19	7.90	0.61	4.85	2.95	6.00	6.00	24.75	11.50	
10.	Training	15.00	1.50	0.43	12.00	10.61	1.00	1.00	1.50	1.06	1.50	1.50	17.50	13.60	
11.	Machinery and equipment	15.00	2.00	1.50	7.00	6.29	3.00	3.00	15.72	13.88	10.00	10.00	37.72	34.67	
12.	Charged expenditure	50.00	5.00	5.00	5.00	3.71	5.00	0.03	5.00	4.05	5.00	5.00	25.00	17.79	
13.	NHAI (investment)	10500.00	2000.00	2000.00	1993.00	1993.00	1848.00	1848.00	3269.74	3269.74	6407.45	6407.45	15518.19	15518.19	
14.	E&I for States from CRF	500.00	95.00	25.00	95.00	64.52	92.00	16.88	162.05	86.09	272.06	182.06	716.11	374.55	
15.	E&I for UTs from CRF	0.00	5.00	0.00	5.00	0.00	4.00	0.00	8.54	0.00	8.55	8.55	31.09	8.55	
16.	NHDP-III, two-laning expressways and six-laning														
17.	SARDP-NE														
18.	Strategic Roads in Arunachal Pradesh under Min. of Defence														
	Total (BS)	34790.00	5870.00	5194.79	6290.92	5284.44	7000.00	5204.86	10539.00	8975.28	11564.78	11452.68	41264.70	36112.05	
19.	IEBR	24700.00	6200.00	5592.90	4000.00	0.00	3300.00	0.00	8500.00	3389.00	3500.00	3500.00	25500.00	12481.90	
	Grand Total	59490.00	12070.00	10787.69	10290.92	5284.44	10300.00	5204.86	19039.00	12364.28	15064.78	14952.68	66764.70	48593.95	

ANNEXURE 9.3.3
Plan-wise Addition to NH Length

Period	Length Added in km	Total Length in km
As on 1 April 1947		21440
Pre First Plan (1947–51)	815	22255
First Plan (1951–56)	–	22255
Second Plan (1956–61)	1514	23769
Third Plan (1961–66)	179	23948
Interregnum Period (1966–69)	52	24000
Fourth Plan (1969–74)	4819	28819
Fifth Plan (1974–78)	158	28977
Interregnum Period (1978–80)	46	29023
Sixth Plan (1980–85)	2687	31710
Seventh Plan (1985–90)	1902	33612
Interregnum Period (1990–92)	77	33689
Eighth Plan (1992–97)	609	34298
Ninth Plan (1997–2002)	23814	58112
Tenth Plan (2002–07)	9008 [#]	66590
	Tenth Plan (2002–07)	
2002–03	–	58112
2003–04	7457	65569
2004–05	–	65569
2005–06	556 [#]	66125
2006–07	995	66590

Note: [#] Excluding 530 km of NHs denotified in 2006.

ANNEXURE 9.3.4
Bharat Nirman—Targets for New Connectivity

(Length in km, Habitations in Numbers)

S. No	Name of the State	2005–06		2006–07		2007–08		2008–09		Total	
		Length	Habs	Length	Habs	Length	Habs	Length	Habs	Length	Habs
1.	Andhra Pradesh	0	0	0	0	0	0	0	0	0	0
2.	Arunachal Pradesh	162.5	22	637.5	85	646.875	86	671.875	105	2118.75	298
3.	Assam	605.852	421	2864.063	1988	3889.845	2701	5793.46	4022	13153.22	9132
4.	Bihar	1665.831	896	3928.75	2062	6121.425	3214	7230.306	3784	18946.312	9956
5.	Chhattisgarh	1501.365	478	4367.606	1310	6450.644	2007	8255.181	2514	20574.796	6309
6.	Goa	0	0	0	0	0	0	0	0	0	0
7.	Gujarat	402.955	230	429.723	246	438.675	251	438.675	251	1710.028	978
8.	Haryana	0	0	0	0	0	0	0	0	0	0
9.	Himachal Pradesh	464.583	127	795.833	209	638.542	166	479.167	123	2378.125	625
10.	Jammu and Kashmir	169.972	57	1059.49	352	1781.869	593	1405.099	466	4416.43	1468
11.	Jharkhand	1051.779	526	2594.39	1295	1812.298	901	2319.31	1155	7777.777	3877
12.	Karnataka	0	0	0	0	0	0	0	0	0	0
13.	Kerala	0	0	0	0	0	0	0	0	0	0
14.	Madhya Pradesh	2602.139	768	6162.451	1760	8326.848	2399	10470.17	2905	27561.608	7832
15.	Maharashtra	0	0	0	0	0	0	0	0	0	0
16.	Manipur	100	11	460.714	48	464.286	48	719.048	74	1744.048	181
17.	Meghalaya	123.609	35	135.971	39	140.091	40	144.211	41	543.882	155
18.	Mizoram	82.746	12	274.819	39	277.884	39	306.498	43	941.947	133
19.	Nagaland	93.318	9	104.529	10	109.507	10	114.485	11	421.839	40
20.	Orissa	1055.95	493	1985.609	874	2524.021	1087	4427.774	1993	9993.354	4447
21.	Punjab	0	0	0	0	0	0	0	0	0	0
22.	Rajasthan	2153.615	743	3629.519	1252	3554.217	1225	2123.494	732	11460.845	3952
23.	Sikkim	75.031	22	104.042	30	108.043	31	132.053	37	419.169	120
24.	Tamil Nadu	0	0	0	0	0	0	0	0	0	0
25.	Tripura	94.774	66	261.74	183	354.701	248	447.661	313	1158.876	810
26.	Uttar Pradesh	1966.416	1236	2390.632	1504	2059.213	1295	1378.701	867	7794.962	4902
27.	Uttarakhand	380.609	95	422.008	106	1025.641	257	1020.299	255	2848.557	713
28.	West Bengal	739.378	787	2572.767	2738	3265.307	3473	3643.359	3876	10220.811	10874
Total		15492.42	7034	35182.16	16130	43989.93	20071	51520.83	23567	146185.34	66802

(Annexure 9.3.4 contd.)

(Annexure 9.3.4 contd.)

(Length in km)						
S. No	Name of the State	2005–06 Length	2006–07 Length	2007–08 Length	2008–09 Length	Total Length
1	2	3	4	5	6	7
1.	Andhra Pradesh	1821.494	2258.652	2258.652	2258.652	8597.45
2.	Arunachal Pradesh	0	0	0	0	0
3.	Assam	0	2005.71	2269.808	2219.843	6495.361
4.	Bihar	0	2393.617	3510.638	3390.958	9295.213
5.	Chhattisgarh	0	1986.063	3240.418	3222.996	8449.477
6.	Goa	190.114	190.114	190.114	190.114	760.456
7.	Gujarat	0	1557.971	1557.971	1413.043	4528.985
8.	Haryana	229.358	1146.789	1146.789	1238.532	3761.468
9.	Himachal Pradesh	0	1515.923	1694.268	1503.185	4713.376
10.	Jammu and Kashmir	0	1007.584	920.91	1007.584	2936.078
11.	Jharkhand	0	2108.433	2123.494	1987.952	6219.879
12.	Karnataka	2573.529	2573.529	2573.529	2573.529	10294.116
13.	Kerala	524.109	628.931	524.109	524.109	2201.258
14.	Madhya Pradesh	0	5189.543	6614.379	6823.53	18627.452
15.	Maharashtra	4334.365	4334.365	4334.365	4334.365	17337.46
16.	Manipur	0	0	0	0	0
17.	Meghalaya	0	587.583	587.583	665.189	1840.355
18.	Mizoram	0	257.998	257.998	216.718	732.714
19.	Nagaland	0	246.914	246.914	370.371	864.199
20.	Orissa	0	4438.574	4663.144	5059.445	14161.163
21.	Punjab	423.729	1483.051	1483.051	1680.791	5070.622
22.	Rajasthan	0	4764.543	4653.74	3656.51	13074.793
23.	Sikkim	0	196.85	137.795	98.425	433.07
24.	Tamil Nadu	1297.71	2824.427	2824.427	4167.939	11114.503
25.	Tripura	0	373.737	383.838	414.141	1171.716
26.	Uttar Pradesh	0	7158.962	6956.031	14408.12	28523.113
27.	Uttarakhand	0	889.454	1283.354	1270.648	3443.456
28.	West Bengal	0	2549.942	2878.965	4054.053	9482.96
Total		11394.408	54669.259	59316.284	68750.742	194130.693

ANNEXURE 9.3.5
Tenth Five Year Plan (2002–07)—Financial and Physical Performance of Road Transport

S. No.	Schemes/Programmes	Financial Achievement (in Rs crore)				Physical Achievement
		Outlay	BE	RE	Actual Exp.	Achievements
1	Road Safety	153.00	156.95	154.16	137.19	
(i)	Refresher training to drivers in unorganized sector	12.00	15.85	15.55	13.81	192218 drivers trained.
(ii)	Publicity measures and awareness campaigns	60.00	59.80	62.35	59.97	686 video spots and 4326 radio spots were broadcast/tecast. Publicity material on road safety printed and distributed to States/UTs. Funds released to 499 NGOs for road safety awareness programme.
(iii)	Human Resource Development including training	2.00	1.40#	1.40#	1.38#	75 training programmes for State Transport Department Personnel conducted at ARAI, CIRT, Pune, IIP Dehradun, and ESCI Hyderabad.#
(iv)	Road Safety Equipment and Programme Implementation	10.00	8.60	8.56	5.14	22 interceptors provided to States of Uttarakhand, MP, Sikkim, Haryana, UP, Kerala, Rajasthan, Himachal Pradesh, Punjab, Chhattisgarh, Gujarat, and Karnataka.
(v)	National Highway Accident Relief Service Scheme	69.00	71.30	66.30	56.89	268 ambulances and 200 cranes were provided to States/NGOs.
2	Pollution Testing and Control	10.00	6.55*	4.05	3.32*	*
3	National Database Network	13.00	12.61	11.28	9.41	Physical progress cannot be quantified.
(i)	Computer Systems and National Database	8.00	7.70	7.59	7.58	
(ii)	Data Collection Research and Development transportation studies	5.00	4.91	3.69	1.83	
4	Model Driving Training School and Public Transport System	34.00	33.89	35.26	29.45	Against the target of 4, 13 schools have been sanctioned, and out of these 2 are operational.
Grand Total		210.00	210.00	204.75	179.37	

Note: # During 2006–07, HRD has been merged with refresher training to drivers. Therefore, actual expenditure is for first four years of the Tenth Plan. * During 2006–07, Pollution Testing and Control has been merged with Road Safety Equipment and Programme Implementation. Therefore, actual expenditure is for first four years of the Tenth Plan.

ANNEXURE 9.3.6
State-wise Sanctions and Releases of Central Share in Respect of Model Driving Training School—Status as on 31 March 2007

(in Rs Lakh)

S. No.	Name of the State/NGO	Central Assistance	Amount Sanctioned							Total Amount Released	Balance
			2002-03	2003-04	2004-05	2005-06	2006-07	8	9		
1.	Assam (Betkuchi) RT-25036/2/2001-RSC	394.00	45.00 (25.3.03)	150.00 (11.3.04) 25.00 (31.3.04)	—	150.00 (19.05.05)	20.00 (14.02.07)	390.00	4.00		
2.	M/s KDLOA (Vijayawada) RT-25036/2/2001-RSC	400.00	50.00 (25.3.03)	125.00 (18.3.04)	150.00 (14.10.04)	60.00 (20.6.05)	12.81 (30.3.07)	397.81	NIL [Out of 15.00 (Interest Rs 2.19 Lakhs on Rs 385 Lakhs)]	4.00	
3.	Karnataka (Hagaribommanahalli) RT-25036/2/2001-RSC	269.00	100.00 (25.3.03)	—	100.00 (28.6.04)	50.00 (20.6.05)	15.00 (30.3.07)	265.00	53.00		
4.	West Bengal (Jessore Road) RT-25036/2/2001-RSC	328.00	100.00 (25.3.03)	50.00 (11.12.03) 125.00 (31.3.04)	—	—	—	275.00			
5.	Himachal Pradesh (Jassur) RT-25036/2/2004-RSC	181.00	—	—	75.00 (6.8.04)	80.00 (31.3.06)	—	155.00	26.00		
6.	Kerala (Edappal) RT-25036/2/2004-RSC	299.00	—	—	100.00 (6.8.04)	—	—	100.00	199.00		
7.	IDTR (Sarai Kale Khan) RT-25036/2/2004-RSC	325.00	—	—	100.00 (6.8.04)	150.00 (14.11.05)	40.00 (24.08.06)	290.00	35.00		
8.	Uttarakhand (Dehradun) RT-25036/2/2004-RSC	325.00	—	—	125.00 (17.2.05)	—	—	125.00	200.00		
9.	Uttar Pradesh (Allen forest at Kanpur) RT-25036/2/2004-RSC	339.00	—	—	—	101.70 (27.03.06)	—	101.70	237.30		
10.	Orissa (Chandikhole) (joint venture with TATA Motors and All Orissa Truck Owners Federation) RT-25036/2/2004-RSC	336.00	—	—	—	100.80 (27.03.06)	200.00 (30.3.07)	300.80	35.20		
11.	Nagaland at Dimapur RT-25036/2/2005-RS	354.00	—	—	—	—	106.20 (23.10.06) 200.00 (30.3.07)	306.20	47.80		
12.	Madhya Pradesh (Indore) RT-25036/2/2006-RS	393.96	—	—	—	—	118.18 (13.2.07)	118.18	275.78		
13.	Haryana at Bahadurgarh RT-25036/5/2007-RS	400.00	—	—	—	—	120.00 (30.3.07)	120.00	280.00		
	Grand Total (As on 31 March 2007)	4343.96	295.00	475.00	650.00	692.50	832.19	2944.69	(Rs 1397.08 + Interest Rs 2.19)	Rs 1399.27	

ANNEXURE 9.3.7
Physical Performance of State Road Transport Corporations/Undertakings

SRTU	% Fleet Utilization		Vehicle Productivity— Rev. Earning per bus per km		Staff Productivity— Rev. Earning km per worker per day		Fuel Efficiency KMPL	
	2002-03	2006-07	2002-03	2006-07	2002-03	2006-07	2002-03	2006-07
Andhra Pradesh	99.24	99.50	320	339	48.00	55.00	5.24	5.27
Arunachal Pradesh	65.00	77.00	125	99	24.56	25.51	3.1	3.10
Assam	68.00	78.00	123	141	13.00	14.00	4	4.00
Bihar	12.00	67.00	29	176	7.52	30.83	4.1	4.03
DTC (Delhi)	79.85	85.65	171	179	17.99	27.48	3.78	3.96
Goa (Kadamba)	79.00	83.00	206	214	39.00	44.00	4.26	5.1
Gujarat	83.50	84.50	302	313	47.91	57.02	5.3	5.25
Haryana	97.00	96.00	311	338	57.50	62.79	4.54	4.93
Himachal Pradesh	97.00	98.00	223	235	45.79	46.95	3.57	3.64
Jammu and Kashmir	64.00	75.00	95	112	15.14	23.90	3.81	4.2
Karnataka								
KSRTC	95.30	95.00	343	368	62.20	57.30	4.97	5.22
NWKRTC	96.10	95.00	336	333	57.54	55.13	4.97	5.6
BMTC	95.00	95.00	216	218	42.20	37.10	4.6	4.75
NEKRTC	92.30	96.00	285	315	56.70	58.00	4.97	5.55
Kerala	78.00	82.00	335	329	45.66	52.96	3.89	4
Madhya Pradesh	83.00	0.00	245	0	42.00	0.00	4.06	0
Maharashtra	93.96	95.00	293	309	45.32	48.79	4.76	4.9
Meghalaya	72.00	68.00	85	154	7.45	3.67	3.66	3.67
Mizoram	53.00	63.00	60	138	5.92	6.26	3	3
Nagaland	61.00	63.00	90	89	13.61	19.84	3.5	3.7
Orissa	91.00	90.00	275	230	45.50	57.24	4.2	4.45
Punjab Roadways	85.10	88.40	238	206	41.40	47.80	4.29	4.42
PEPSURTC	95.00	95.00	267	318	57.90	60.82	4.39	5.12
Rajasthan	93.00	96.00	319	364	63.37	75.25	4.94	5.12
Sikkim	80.00	68.00	67	65	17.53	10.56	3.25	2.8
Tamil Nadu	91.72	93.02	379	404	52.06	58.31	4.37	4.8
Tripura	61.00	55.00	76	79	9.27	12.52	3.57	3.63
Uttar Pradesh	90.00	97.00	262	322	42.79	62.61	4.79	5.2
Calcutta STC	66.88	59.00	150	128	20.77	22.26	3.7	3.9
North Bengal STC	61.00	57.00	147	141	21.19	22.61	3.94	3.95
South Bengal STC	77.00	85.00	206	222	34.54	38.41	3.85	4.3
Calcutta Tramways	63.00	67.00	136	157	20.20	22.70	3.3	3.5
Uttarakhand	0.00	94.00	0	300	0.00	43.00	0	4.79
All-India Average	78.72	82.50	210	229	39.23	39.39	4.11	4.31

ANNEXURE 9.5.1
Year-wise Physical Targets and Achievements during the Tenth Plan—Major Ports (Commodity-wise)

(Million Metric Tonnes)

S. No.	Name of Commodity	Tenth Plan Target	2002–03 Ach.	2003–04 Ach.	2004–05 Ach.	2005–06 Ach.	2006–07 Ach.
1.	POL	154.30	109.63	122.16	126.44	142.09	154.35
2.	Iron ore	52.50	50.56	58.81	76.20	79.17	80.56
3.	Fertilizers and Fertilizer Raw Material (FRM)	13.45	8.55	7.54	9.68	12.19	14.11
4.	Thermal and Coking Coal	71.30	48.19	48.80	52.56	58.76	60.21
5.	Container	61.10	43.67	51.00	54.76	61.98	73.48
6.	Other cargo	62.35	52.95	56.49	64.11	69.38	81.13
	Total	415.00	313.55	344.80	383.75	423.57	463.84

Note: Ach. = Achievement.

ANNEXURE 9.5.2
Year-wise Physical Targets and Achievements during the Tenth Plan—Major Ports (Port-wise)

(Million Metric Tonnes)

S. No.	Port/Organization	Tenth Plan Target	2002–03 Ach.	2003–04 Ach.	2004–05 Ach.	2005–06 Ach.	2006–07 Ach.
1.	Kolkata	21.40	7.20	8.69	9.95	10.81	12.60
2.	Haldia	33.40	28.60	32.56	36.26	42.33	42.45
3.	Paradeep	28.90	23.90	25.31	30.10	33.11	38.52
4.	Vizag	60.00	46.01	47.74	50.15	55.80	56.39
5.	Chennai	40.00	33.69	36.71	43.81	47.25	53.41
6.	Tuticorin	18.70	13.29	13.68	15.81	17.14	18.00
7.	Cochin	17.20	13.02	13.57	14.09	13.89	15.31
8.	New Mangalore	32.70	21.43	26.67	33.89	34.45	32.04
9.	Mormugao	26.30	23.65	27.87	30.66	31.69	34.24
10.	Mumbai	30.40	26.80	30.00	35.19	44.19	52.36
11.	JL Nehru	34.50	26.84	31.19	32.81	37.83	44.82
12.	Kandla	51.00	40.63	41.52	41.55	45.91	52.99
13.	Ennore Port Ltd	20.50	8.49	9.28	9.48	9.17	10.71
	Grand Total	415.00	313.55	344.79	383.75	423.57	463.84

ANNEXURE 9.5.3
Tenth Plan—Outlays and Expenditure in Ports Sector

(in Rs crore)

S. No	Name of the Port/Organization	Tenth Plan Outlay	2002-03		2003-04		2004-05		2005-06		2006-07		Tenth Plan Act. Exp
			Approved Outlay	Actual Exp.	Approved Outlay	Actual Exp.	Approved Outlay	Actual Exp.	Approved Outlay	Actual Exp.	Approved Outlay	Actual Exp.	
1.	Kolkata#	789.42	199.92	6.85	210.30	10.48	46.22	47.55	54.04	59.66	50.04	71.99	196.53
2.	Mumbai	880.20	109.05	100.76	54.21	57.81	56.15	44.49	74.53	19.23	59.86	14.55	236.84
3.	JNPT	262.75	146.36	40.26	143.02	12.73	102.14	58.85	96.84	65.77	106.14	40.74	218.35
4.	Chennai	326.70	95.99	85.50	36.69	29.21	16.75	22.68	46.71	25.11	35.00	26.07	188.57
5.	Cochin	366.51	-	10.02	18.88	10.86	85.41	9.52	53.12	24.76	73.84	72.89	128.05
6.	Vizag	240.84	49.06	51.30	51.00	55.65	54.44	27.68	27.00	17.68	27.33	43.79	196.10
7.	Kandla	416.71	94.78	55.89	66.71	41.50	92.98	52.89	93.30	91.29	94.66	80.19	321.76
8.	Mormugao	348.06	30.86	26.53	87.14	43.06	53.85	11.05	33.50	17.92	28.06	20.77	119.33
9.	Paradip	222.70	59.00	41.42	53.40	14.56	87.16	28.99	116.00	44.02	83.40	23.15	152.14
10.	New Mangalore	147.40	37.00	24.41	25.00	5.14	20.00	29.60	26.00	18.09	18.00	18.02	95.26
11.	Tuticorin	230.0	76.10	36.02	17.54	21.84	25.81	5.48	43.67	13.56	52.31	29.12	106.04
12.	Ennore Port Ltd	300.00	1.00	-	150.00	0.99	95.00	2.32	76.00	13.40	70.00	9.57	26.28
	Total (A)	4531.29	899.12	478.96	913.89	303.83	735.91	341.1	740.71	410.49	698.64	450.85	1985.25
13.	Sethusamudram	-	-	-	-	-	10.00	-	107.00	150.00	304.00	334.66	484.66
14.	Web-based EDI PCS	-	-	-	-	-	-	-	6.00	0.34	7.83	1.66	2.00
15.	Others*	587.00	214.88	53.98	237.00	44.06	221.04	19.87	260.04	79.13	333.78	214.77	411.81
	Total (B)	587.00	214.88	53.98	237.00	44.06	231.04	19.87	373.04	229.47	645.61	551.09	898.47
	Total (A+B)	5118.29	1114.00	532.94	1150.89	347.89	966.95	360.97	1113.75	639.96	1344.25	1001.94	2883.70
16.	Survey Vessels	300.00	45.00	8.95	50.00	-	100.00	-	50.00	0.00	20.00	0.00	8.95
	Grand Total	5418.29	1159.00	541.89	1200.89	347.89	1066.95	360.97	1163.75	639.96	1364.25	1001.94	2892.65

Note: # includes Haldia and RR Schemes. * includes DCI, ALHW, R&D studies, Post-tsunami works, and Minor Port studies.

ANNEXURE 9.6.1
Financial Progress of the Civil Aviation Sector during the Tenth Plan

(in Rs crore)

S.No.	Organization	Tenth Plan		2002-03		2003-04		2004-05		2005-06		2006-07		Tenth Plan	
		Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Total Exp.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14		
1.	Air India Ltd	2661.39 (1.00)	858.70 (1.00)	743.07	600.81 (1.00)	479.57	471.40 (1.00)	358.07	468.74 (1.00)	443.33	486.70	364.23	2388.27		
2.	Indian Airlines Ltd	4240.50 (1.00)	510.00 (1.00)	418.93	280.00 (1.00)	248.78	226.00 (1.00)	221.70	911.73 (325.00)*	192.13 (325.00)*	706.00	350.00	1431.54 (325.00)		
3.	Airports Authority of India	5404.21 (250.00)	996.05 (53.12)	445.66 (33.59)	800.00 (34.96)	566.22 (22.08)	795.08 (30.00)	606.49 (30.00)	892.30 (30.00)	876.08 (36.00)	1506.44 (42.91)	1040.17 (29.00)	3534.62 (150.67)		
4.	PHHL	458.90	133.80	53.01	81.45	19.60	109.50	60.92	90.70	41.52	175.00	106.90	281.95		
5.	Indira Gandhi Rashtriya Uran Academy	10.00 (10.00)	2.09 (2.09)	0.98 (0.98)	3.50 (3.50)	0.50 (0.50)	3.00 (3.00)	3.00 (3.00)	3.85 (3.85)	2.30 (2.30)	40.30 (40.30)	31.10 (31.10)	37.88 (37.88)		
6.	Directorate General of Civil Aviation	19.00 (19.00)	3.10 (3.10)	2.54 (2.54)	4.15 (4.15)	2.86 (2.86)	4.00 (4.00)	3.06 (3.06)	5.00 (5.00)	1.83 (1.83)	29.00 (29.00)	1.74 (1.74)	12.03 (12.03)		
7.	Bureau of Civil Aviation Security	114.00 (114.00)	7.69 (7.69)	3.87 (3.87)	7.00 (7.00)	4.24 (4.24)	10.00 (10.00)	0.28 (0.28)	5.00 (5.00)	0.98 (0.98)	5.00 (5.00)	0.15 (0.15)	9.52 (9.52)		
8.	Hotel Corporation of India Ltd	15.00	8.76	8.76	1.00	0.51	1.00	1.00	1.00	1.00	15.00	15.00	26.27		
9.	Air India Charters Ltd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.83	70.70	42.18	59.01		
10.	Aero Club of India	5.00 (5.00)	1.00 (1.00)	0.00 (0.00)	1.27 (1.27)	1.00 (1.00)	1.00 (1.00)	1.00 (1.00)	1.00 (1.00)	0.00 (0.00)	12.79 (12.79)	9.00 (9.00)	11.00 (11.00)		
	Total	12928.00 (400.00)	2521.19 (69.00)	1676.82 (40.98)	1779.18 (52.88)	1323.28 (30.68)	1620.98 (50.00)	1255.52 (37.34)	2379.32 (370.85)	1576.00 (366.11)	3046.93 (130.00)	1960.47 (70.99)	7792.09 (546.10)		

Note: Figures in brackets indicate Gross Budgetary Support.

* During 2005-06, budgetary support of Rs 325 crore was released to Indian Airlines for purchase of new aircrafts, out of which the company utilized Rs 47.61 crore during 2005-06 and balance amount of Rs 277.39 crore was utilized in April 2006.