

Roads

9.59 Indian roads carry 85 per cent of the passenger and 70 per cent of the freight traffic of the country. The highways, even though they make up only 2 per cent of the road network by length, carry 40 per cent of this traffic. For many years, India lagged behind many countries of the world which built expressways capable of sustained speeds of over 100 kilometer per hour (kph). In recent years, a concerted effort has been undertaken, through new institutional arrangements and improved highway engineering, founded on a revenue model comprising tolls and a cess on fuel, to build roads which deliver 80 kph sustained performance. Under the National Highways Development Project (NHDP) - the largest highway project ever undertaken by the

country and with the shortest timespan for completion - 14,279 kilometer of National Highways are to be converted to 4/6-lanes, at a total estimated cost of Rs. 65,000 crore (at 2004 prices). The NHDP consists of the following components:

- (i) The Golden Quadrilateral (GQ-5,846 kilometer) connecting the four major cities of Delhi, Mumbai, Chennai and Kolkata.
- (ii) The North-South and East-West Corridors (NS-EW – 7,300 kilometer) connecting Srinagar in the North to Kanyakumari in the South and Silchar in the East to Porbandar in the West.
- (iii) Port connectivity and other projects – 1,133 kilometer.

Table 9.16 : Progress of NHDP (As on January 31, 2005) <i>(Kilometers)</i>				
Length	GQ	NS-EW	Port Connec- tivity & other Projects	Total
Total	5,846	7,300	1,133	14,279
Completed	4,480	675	263	5,418
Under implementation	1,366	857	455	2,678
Balance length to be awarded	Nil	5,768	415	6,183
Cumulative expenditure (in Rs. crore)	20,115	2,131	1,928	24,174

9.60 Current estimates suggest that the cost of a four-lane highway works out to roughly Rs.4.5 crore per kilometer, and the cost of a protected access, six-lane expressway works out to roughly Rs.8.5 crore per kilometer. Hence, great care is required in designing a framework for investment which avoids unnecessary strain on government finances. The funding of NHDP is based on a fuel tax and on tolls. A cess of Rs. 1.50 per litre is

charged on the sale of petrol and diesel. A part of this (Rs.0.43 per litre against sale of high speed diesel oil and Rs.0.86 per litre against sale of petrol) goes to fund the NHDP.

9.61 As of January 31, 2005, 5,418 Kilometer of NHDP has been completed, the bulk of which (4,480 km) lie on the GQ (Table 9.16). The expenditure so far has amounted to Rs. 24,174 crore. There are 2,678 km. under construction. Contracts for 6,183 km are yet to be awarded. It is expected that the GQ would be substantially completed by December 2005, and the NS and EW corridors would be completed by December, 2007. There are constraints faced in timely completion of NHDP which include (i) delays in land acquisition and removal of structures, (ii) law and order problem in some States and (iii) poor performance of some contractors. With the completion of more than 75 per cent of the GQ, a substantial impact upon the economy is already visible. At this stage there is a need to focus attention on corridor management and road safety and NHAI has put in place a corridor management policy (Box 9.6).

Box 9.6 : Corridor management

Many parts of NHDP have been commissioned, and the focus needs to now shift from construction to "corridor management", i.e. the process of managing the highway so as to deliver maximal throughput in terms of velocity and number of vehicles, while minimizing the cost to the economy of accidents. Road safety is a particularly important area of focus, particularly given India's lack of experience with high velocity roads.

The maintenance of completed sections of the National Highways is being carried out by NHAI through short term improvement and road maintenance contracts and long term performance based maintenance contracts. The scope of work includes road maintenance, road property management, incident management, engineering improvement of toll-fee collection, traffic management, facility management, planning of operation and maintenance (O & M) center, training and road safety provisions.

In order to make the journey safe, under the corridor management policy, various safety measures are being provided on the National Highways:

- (i) Provision of thermoplastic line marking on carriageway;
- (ii) Provision of crash barriers at location of high embankments;
- (iii) Provision of informatory, cautionary and mandatory sign boards;
- (iv) Provision of declinators, studs and railing at the central median; and
- (v) Provision of shrubs and plantation in the central median.

The annual expenditure of such safety measures is about Rs. 1 – 1.5 lakh per kilometer. About 1600 kilometer of highways are being maintained with an annual expenditure of about Rs. 20 crore for safety measures.

Table 9.17 : Financial structure of NHAI*(Rs. in crore)*

Year	Cash flow		Expenses Including Maintenance Highways	Bonds/ Loans	
	Fuel Cess	Tolls		Issuance (Receipts) U/s 54 EC of Income tax Act, 1961	Service (Outgo) Repayment of Loan to GOI
1999-00	1,032	85	871	nil	nil
2000-01	1,800	134	1,404	657	nil
2001-02	2,100	192	4,189	804	nil
2002-03	2,000	252	6,785	5,593	450
2003-04	1,993	371	9,800	nil	115
2004-05*	1,848	360	5,604	nil	662

Source : NHAI. * Upto January 31, 2005.

9.62 NHAI's main source of finance is the fuel cess which is being leveraged for borrowings in the domestic market. There has been a rapid growth in tolls, from Rs.85 crore in 1999-2000 to Rs.371 crore in 2003-04, which is likely to rise to Rs.434 crore in 2004-05 (Table 9.17).

9.63 The capital expenditure undertaken through NHAI rose sharply, from Rs.746 crore in 1999-00 (0.04 per cent of GDP) to Rs.9,525 crore in 2003-04 (0.33 per cent of GDP). As an example, the total expenditure of NHAI in 2003-04 was Rs. 9,800 crore (Table 9.17) of which Rs. 9,525 crore was capital expenditure (Table 9.18). If highway construction is to achieve a capital expenditure of 0.5 per cent of GDP, then by 2005-06, the annual capital expenditure will need to cross Rs.18,000 crore.

Table 9.18 : Capital Expenditure through NHAI

Year	Capital expenditure (Rs. crore)	Percent to GDP
1999-00	746	0.04
2000-01	1,261	0.06
2001-02	3,997	0.18
2002-03	6,584	0.21
2003-04	9,525	0.33
2004-05 (Projected)	9,000	0.29

Source : NHAI.

9.64 NHAI has exploited a variety of con-tractual structures in moving towards 'public-private partnerships'. Projects costing over Rs.5,797 crore are being implemented through such contracts, which include Rs.2,354 crore in Build, Operate and Transfer (BOT) annuity projects and Rs.3,443 crore in toll-based annuity projects. In Phase II of NHDP, public-private partnership projects would account for around Rs.7,000 crore.

9.65 One of the approaches adopted to finance highways construction is through establishment of Special Purpose Vehicles (SPVs). 12 projects covering a length of 407 kilometer at an estimated cost of Rs. 2,266 crore have been identified under SPV funding. Out of these, 5 projects amounting to Rs. 923 crore have been completed and 7 projects amounting to about Rs. 1,343 crore are in progress.

Rural roads

9.66 The Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched in December 2000 as a 100 per cent Centrally Sponsored Scheme to provide rural connectivity to unconnected habitations with population of 500 persons or more (250 in case of hilly, desert and tribal areas) in the rural areas by the end of the Tenth Plan period. It is funded by the diesel cess in the Central Road Fund, and

through borrowing from domestic financial institutions and multilateral funding agencies. Augmenting and modernizing rural roads has been included as an item of the NCMP. Thus, the scope of PMGSY has been expanded to include both construction of new links and upgradation of existing through routes associated with such link routes to form one complete sub-network, for providing connectivity between the village and the market.

9.67 A survey undertaken to identify the “core network” as part of the PMGSY showed that over 1.70 lakh unconnected habitations needed to be taken up under the PMGSY. This would require new construction of 3.69 lakh kilometer and upgradation of 3.68 lakh kilometers of rural roads, at a total cost of Rs.1,33,000 crore as against earlier estimates of Rs.60,000 crore. This does not include the cost of 5 - year maintenance of link routes and 10 - year maintenance of through routes taken up under PMGSY.

9.68 Project proposals amounting to Rs.14,789 crore have been cleared upto November, 2004 for 35,296 road works covering 103,010 kilometers. Rs.10,207 crore have been released to States/UTs. In terms of outcomes, 22,930 road works adding up to 60,024 km of roads have been completed, and expenditure of Rs.7,866 crore has been incurred by States/UTs up to October 2004. The National Rural Roads Development Agency (NRRDA), an agency of the Ministry of Rural Development registered under the Societies Registration Act, provides operational and technical support for the programme.

9.69 The World Bank supports the Rural Connectivity Programme through a series of tranches of IBRD loans/IDA credit. An agreement for the first tranche of US \$400 million was signed on November 8, 2004. The beneficiary States for the first tranche of World Bank funding are Rajasthan, Uttar Pradesh, Jharkhand and Himachal Pradesh with the option of adding Bihar, once implementation arrangements are put in place. This is to be the first in a series of loans and the Project Appraisal Document provides for a second loan/credit for US \$500 million. The Asian Development Bank (ADB) has agreed to support the Rural Roads Sector Development Programme; the States of Madhya Pradesh

and Chhattisgarh have been identified as recipient States for the first tranche of the ADB loan of US \$400 million, for which the loan agreement was signed on November 19, 2004. Three other States, namely Assam, Orissa and West Bengal have been identified for the second tranche of ADB assistance, which is likely to be around US \$ 500 million. The overall ADB assistance is likely to be of the order of US \$1.15 billion in three tranches.

9.70 In order to improve the absorption capacity of the States where the performance has been poor, initiatives have been taken for special interventions like involving Central Agencies for implementation of PMGSY, on the request of such States.

Next steps for NHDP

9.71 Under NHDP Phase-III, it is proposed to take up rehabilitation and upgradation of about 10,000 kilometers of existing national highways to 4 - lane dual carriageway configurations under a BOT basis. The programme generally comprises stretches of national highways carrying a high volume of traffic, connecting State capitals with the NHDP Phase I & II network and providing connectivity to places of economic, commercial and tourist importance. Preparation of Detailed Project Reports for these segments has begun. During the remaining period of the Tenth Plan, about 7,000 km will be taken up.

9.72 Accelerated North-East Road Development Project is being proposed for the development of the roads in this region, mainly to provide connectivity to all the State capitals and district headquarters in the North-Eastern Region including 4 –laning of the 315 kilometers of National Highways between Nagao and Dibrugarh and 2/4 laning of 288 kilometers of National Highways in Meghalaya, Nagaland and Sikkim. The proposal includes upgradation of other stretches of national highways and State-highways considered critical for economic development of the North-East region.

9.73 NHDP Phase IV is a new initiative proposed with a view to provide balanced and equitable distribution of improved/widening highway network throughout the country by upgrading 21,000 kilometer of single - lane roads to 2-lane roads with paved shoulders, and for strengthening of 17,000 kilometer of the existing 2-lane highways and construction of paved shoulders.