Road and road transport

9.49 Roads now carry 85 per cent of passenger traffic and 70 per cent of freight traffic. While highways make up only 2 per cent of the overall road network by length, they account for around 40 per cent of this traffic. A series of initiatives have been undertaken in recent years, to set the stage for a quantum leap in India's road system. These initiatives combine new institutional arrangements, highway engineering of international standards, founded on a self-financing revenue model comprising tolls and a cess on fuel. Three initiatives in the road sector were begun in recent years: The National Highway Development Project (NHDP), Pradhan Mantri Bharat Jodo Pariyojana (PMBJP) and Pradhan Mantri Gram Sadak Yojana (PMGSY). NHDP dealt with building high quality highways. The PMBJP dealt with linking up major cities to the NHDP Highways. The PMGSY addressed rural roads.

9.50 Owing to the delays of project construction, the full economic impact of these projects are yet to come. However, the revolutionary improvements in velocity and safety on India's roads, owing to the early stretches that have been modernised under these initiatives, are already manifestly visible. Under NHDP, 13,146 km of National Highways will be converted to high quality 4-lane or 6-lane highways, at an estimated cost of Rs.54,000 crore at 1999 prices. These highways are generally designed to support velocities of roughly 100 kph. The NHDP consists of two components. The Golden Quadrilateral (GQ), of 5,846 km, connecting the four major cities of Chennai, Delhi, Kolkata and Mumbai. The North-South and East-West Corridors (NS-EW), of 7,300 km, connect Srinagar to Kanyakumari and Silchar to Porbandar. NHDP constitutes one of the largest single highway projects in the world, and stipulates one of the shortest times to completion. Apart from NHDP, 10 major ports are being connected to the National Highways with 4-lane roads (356 km). In addition, 777 km of other important stretches spread over various States are being 4-laned.

9.51 The implementation of NHDP included important innovations in the institutional mechanisms, in the form of the agency National Highway Authority of India (NHAI), an autonomous statutory organisation operating under the Ministry of Road Transport and Highways. Road construction is capital intensive. 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 kilometre. 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.1.5 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.

9.52 As Table 9.13 shows, as of March 31, 2004, 3,200 km of NHDP has been completed, the bulk of which lie on the GQ. The expenditure so far has amounted to Rs.18,638 crore. There were 3,709 km. under construction. Contracts for 6,211 km. were yet to be given out. It is expected that the GQ would be substantially completed by December 2004, and the NS&EW corridors would be completed by December, 2007.

9.53 The first 2,000 km of NHDP have generated significant learning for engineering firms and government, in terms of technology, contractual structures, etc. This learning will be beneficial in the next steps of highway construction in the country. This learning may also lead to fresh opportunities for Indian firms to compete in international markets in road construction projects.

9.54 NHAI has exploited a variety of contractual structures in moving towards 'public-private partnerships'. Projects costing over Rs.5,669 crore are being implemented through such contracts, which include Rs.2,354 crore in BOT-annuity projects and Rs.3,314 crore in toll-based annuity projects. In Phase II of NHDP, public-private partnership projects would account for around Rs.7,000 crore.

9.55 If we treat 1998-99 as the first year of the project, then capital expenditures by NHAI had built up to 0.33 per cent of GDP by year 6 (Table 9.14). This illustrates the lags that may separate policy decisions to create new institutional mechanisms, and their full impact on the investment/GDP ratio. The table also shows projections of roughly Rs.25,000 crore of capital expenditure over the period 2004-05 and 2005-06 at NHAI. While NHAI led to a *rise* in the investment/GDP ratio in 2001-02 and 2003-04, and thus played an expansionary role in those years, a comparable impact on investment is unlikely in 2004-05 and 2005-06.

9.56 NHAI revenues are derived from the fuel cess and from tolls (Table 9.15). There was a rapid growth in tolls, from Rs.85 crore in 1999-2000 to Rs.371 crore in 2003-04. The funding model of NHAI was once viewed as being dominated by the fuel cess. However, in 2003-04, tolls were roughly one-fifth of the income from the fuel cess.

9.57 The outlook for further growth in user charges in the form of tolls is bright, given the steady completion of NHDP, and the nationwide acceptance of the principle of tolling as the necessary price of high quality roads. These developments mark an important new phase in Indian infrastructure. The road sector demonstrates that significant revenues can be obtained through user charges to improve infrastructure and benefit the consumer.

9.58 The PMGSY, which was launched in December 2000, seeks to provide road connectivity to about 1.6 lakh rural unconnected habitations with a population of 500 persons or more (250 in case of hilly, desert and tribal areas) by the end of the Tenth Plan period. It is being executed in all the States and six UTs. Although initial estimates indicated a requirement of Rs. 60,000 crore for the program, present indications are that about Rs.1,32,000 crore will be needed for achieving the intended connectivity. Since the inception of the program, project proposals for Rs. 14,417 crore have been cleared and about 88,685 km of rural roads benefiting about 30,269 habitations have been taken up under the program. Of these, 20,740 road works have been completed till March 2004, and an expenditure of over Rs.6,457 crore has been incurred. The National Rural Roads Development Agency (NRRDA) provides Operations and Management support for the program.

9.59 The Asian Development Bank (ADB) has agreed to support the development of rural roads in Madhya Pradesh and Chhattisgarh through a loan of $400 million which helps fund projects worth $571 million. The States of Assam, Orissa and West Bengal have been identified for the second tranche of ADB assistance. World Bank is likely to provide funding for projects in Jharkhand, Himachal Pradesh, Rajasthan and Uttar Pradesh. In addition, domestic financial institutions, like Life Insurance Corporation (LIC) have agreed to lend funds for the PMGSY to the tune of approximately Rs.10,000 crore.

9.60 The recent Pradhan Mantri Bharat Jodo Pariyojana involves development of 10,000 kms of roads. Under this program 10,000 km of National Highways are to be widened to 4 lane essentially through Public Partnership. It also includes connecting such State capitals to the NHDP as were not otherwise getting connected. It will address the problem of cities like Thiruvananthapuram or Dehra Dun, which are important high-traffic destinations in their own right, but not reached by the NHDP. The estimated total project cost is around Rs. 55,000 crore. Of these, preliminary project work has taken place for seven stretches covering 622 km.

9.61 In an important and pioneering recent development, the Mumbai-Pune section of National Highway 4 was privatised in February

Table 9.13 : Progress of NHDP

(As on March 31, 2004) *(in kilometers)*

LENGTH	GQ	NS-EW	Total
Total	5,846	7,300	13,146
Completed	2,612	588	3,200
Under implementation	3,234	475	3,709
Balance length to be awarded	Nil	6,211	6,211
Cumulative expenditure (in Crores)	16,617	2,021	18,638

Source : NHAI

Table 9.14 : Capital expenditure in NHDP		
Year	Capital expenditure (Rs. crores)	Per cent 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)	12,322	NA
2005-06 (Projected	13,358	NA

Source: NHAI NA : Not available

2004. Maharashtra State Road Development Corporation (MSRDC) had been servicing the debt incurred for the Rs.1,630 crore expressway, while only earning toll of Rs.85 crore a year. MSRDC received 4 bids for the transfer of control of the Mumbai-Pune expressway. The bidding was aimed at handing over operations and maintenance for the expressway, and for the previous NH-4 highway, for a 15-year period. As an outcome of the auction, Ideal Road Builders (IRB) is to pay MSRDC Rs.918 crore as an upfront payment. IRB is required to complete the upgradation of NH-4 by March 2006, when the entire length of the highway is required to have four lanes.

9.62 In terms of policy issues, the major questions that need to be addressed in the roads sector are about a shift in focus from inaugurating roads to comprehensive 'corridor management', which can maximise the velocity and throughput of the highways. The economic return for the country from a given system of roads is controlled by (a) the effective sustained velocity obtained, and (b) the number of vehicles which are able to exploit the channel in this fashion. The impact of new roads upon India's GDP is obtained when high sustained velocities are obtained for a large number of vehicles.

9.63 This motivates a shift in focus from road construction to high sustained velocities. It brings up a new set of issues including: high efficiency in tolling, maintenance, continual performance analysis and incremental highway engineering work, enforcement against encroachment on shoulders or service roads, enforcement against illegal alterations, law and order, accidents, customer facilities on the road, etc. The goal must be to get up to *sustained* performance of 100 kmph, so that the drive from Mumbai to Delhi can be realistically achieved within 13 hours of continuous driving. This may require a fresh set of institutional innovations, and organisational structures, as compared with the existing efforts, which are focused on pre-inauguration activities.

Table 9.15 : Financial structure of NHAI

(Rs. in crores)

Year	Cash flow		Expenses	Bonds/ Loans	
	Fuel Cess	Tolls	Including Maintenance Highways	Issuance (Receipts) U/s 54 EC of Income tax Act, 1961	Service (Outgo) Repayment of Loan to GOI
1999-00	1,032.00	84.97	870.86	nil	nil
2000-01	1,800.00	133.82	1,404.34	656.62	nil
2001-02	2,100.00	192.20	4,189.16	804.44	nil
2002-03	2,000.00	252.00	6,785.03	5,592.94	4.50
2003-04	1,993.00	371.00	9,799.82	nil	115.60

Source : NHAI