

INDIA TRANSPORTATION INFRASTRUCTURE BLUEPRINT

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Some Quotes from People Interviewed

- *“Poor transport infrastructure has resulted in artificial increases in costs making Indian exports uncompetitive and stifling domestic demand growth.”*
- *“With 30% population residing in cities and over 60% of GDP being accounted for from urban centres, urban transportation needs immediate attention.”*
- *“After the Road sector, development in the Port sector is a silent revolution, which will deliver immense benefits.”*
- *“Government policies are not keeping pace with changing requirements and global trends....”*
- *“Five year and ten year plans are in the right direction but implementation is a key issue. There is an urgent need to build institutional capacity to expedite implementation....”*
- *“We need to play football, i.e. the government is mainly referee (and planner), the private sector and the users are the players....”*
- *“Transport infrastructure, e.g. roads, is never for free. We need to see the real costs (even in the case of budget finance) and promote value for money solutions using private sector efficiencies (for investing and managing projects) with sufficient mid- and long-term view.”*
- *“Funding is not an issue provided appropriate structuring is done using a sound legal basis.”*

India Transportation Infrastructure Blueprint

1. India's race against time in transportation infrastructure

Effective physical infrastructure is critical to ensuring that India's accelerating economic progress does not stall. Ports and international air links are critical to providing access to international markets. Road, rail and urban systems are critical to ensuring balanced development across the country. Well-planned urban transit systems are essential if India's growing megacities are to function economically and socially. Effective international and domestic air links are critical to sustaining and spreading India's growing tourism and service industries.

To be competitive internationally, this growth in capacity must be achieved while increasing service levels and decreasing costs. Internationally, prices of transport services have fallen due to increased productivity, increased competition between suppliers and pressure from users who face growing global competition in their own markets.

The liberalization of the Indian economy has brought home the realization that India needs a more efficient transport system if India is to be globally competitive.

India's transport network is extensive, but its overall performance – especially surface transport – is poor. Economic losses from congestion and poor roads are estimated to be as high as 200-300 billion rupees (US\$ 4.3-6.5 billion) a year¹. Within India, infrastructure capacity constraints are widely claimed to be the main reason for the poor services. But the problem is more complicated. A number of operational weaknesses not only reduce service quality, but also exacerbate capacity shortages – especially in operations dominated by the public sector with little competition.

In many cases, the infrastructure is left over from the time of the Raj. Although the initial numbers seem impressive, the infrastructure is too old or too small to be internationally competitive. For example, the geographic coverage of India's road network, at 0.66 km of roads per square km of land area, is almost identical to the level of the United States (0.65), and much higher than that of China (0.16), Mexico (0.16) and Brazil (0.20). However, China's road network consists of over 15,000 km of four- or six-lane access-controlled expressways linking the major cities, all built during the last ten years, whereas in India only 3,000 km of national highways are four-lane².

In every transportation sector, China's modern infrastructure now surpasses India by a significant and accelerating margin – giving China an important competitive advantage over India in the global market. For example, cargo transit time to the US from China is 2-3 weeks as compared to 8-12 weeks from India³ (see Annexe 1.1.1 and 1.1.2 for more comparisons).

Transportation infrastructure in India is improving. The question is whether the infrastructure is improving quickly enough, given India's accelerating requirements to move people and services, and given ongoing improvements in other countries.

¹ Rakesh Mohan Committee, India Infrastructure Report, 1996.

² World Bank, India's Transport Sector: The Challenges Ahead, 2002.

³ World Development Indicators.

Infrastructure improvement is in a race against time in India, and India's accelerated economic growth is at stake.

2. India's accelerating need to move people and goods efficiently

During the last 10 years, India's economy has grown by 6-7% a year and its total transport demand has grown by about 8-9% a year. However, the growth rate varies by sub-sector and sub-market: road, air and ocean transport have grown rapidly, while rail transport has grown more slowly (Annexe 1.1.3).

Demand growth for transportation services appears to be accelerating. In India the demand elasticity of transport services over the economic growth ranges from 1.2 to 1.4⁴. In other words, if the Indian economy is to continue to grow at 6-7% in the next five years, the demand for transport will grow at 8-9%. To reach 8% for a sustained period of time, transportation capacity must increase by 10-12% per year.

The following long-term trends are evident:

1. Road transport is expected to increase its modal share – due to the development of the Golden Quadrilateral and the increasing demand for door-to-door service.
2. The decline in market share of railways is going to continue until the railways implement reforms and become more commercially oriented. Ideally, railways should play a critical role, especially in the movement of container traffic.
3. Growth in demand for high-quality services is expected to be higher than overall demand because of the high income-elasticity of demand for quality service – leading to the development of aviation and better surface transport services.
4. Growth in exports will increase demand for international air and ocean transport, as well as for multimodal transport. Increased international investment and accelerated deployment of back office services will significantly increase demand for high quality, high frequency international and domestic air services.
5. Rapid urbanization and increased use of personal transportation will lead to increasing pressure on already congested cities, thereby creating a need for modern and affordable urban transport solutions. Without major changes there is a real danger of urban gridlock, with major implications for the economic competitiveness and “liveability” of India's major cities.

3. Supply is not increasing as quickly as demand

Despite improvements in some areas – such as roads in the Golden Quadrilateral – supply has not kept pace with the accelerating demand.

Transportation supply is the result of two key factors:

1. The efficient and timely creation of new transportation assets (e.g., a 4-lane highway, a new port terminal, a metro system).
2. The efficient operation of existing assets to maximize effective capacity and minimize the cost of operation.

⁴ ADB Country Strategy Programme 2003-2006.

In India, supply has not kept pace with demand. This is due to five major problems which affect every transportation sector, although some more than others:

1. A lack of agreement on transportation's primary role as supporting sustained economic growth. Indeed, transportation services in India today are often seen in one of two ways: as primarily a social rather than an economic or commercial service leading to pricing and service orientation distortions (such as with railroads); or as a luxury which can be handsomely taxed for government revenue purposes (such as airlines).
2. Unclear and fragmented responsibilities for setting policy, managing critical transportation infrastructure, running operations and overseeing results. For example, in Urban Transport, many agencies have a role but none assumes overall responsibility leading to poor policy and unclear accountability.
3. Chronic under investment in high-quality transportation infrastructure. Public investments in transport have declined or stagnated relative to the total plan expenditure but for the 9th and 10th plans where the trend has been reversed (see Annexe1.1.4), and the input from private sector continues to be very limited.
4. Weak management of assets and sub-optimal allocation of scarce resources. There is inadequate data collection and analysis for decision-making; poor decision-making due to inadequate training and overstaffing; an excessive focus on new investment at the expense of existing asset maintenance; and a lack of competition in procurement.
5. A lack of effective oversight systems to allow transport users and their representatives to make transport agencies account for their performance – beyond mere compliance with budgets and regulations.

4. The human and economic costs of Transportation Infrastructure shortfalls are enormous

The deficiencies of the transport sector lead to various adverse impacts on the Indian economy and society at large:

1. Wastage of time and money in moving people and goods efficiently.
2. High opportunity costs of public resources used in an inefficient manner. The cost of patching up or subsidizing existing operations means that less funds are available to improve services.
3. Poor safety outcomes in certain sectors causing loss of human life and economic losses.
4. Adverse environmental impact (e.g., due to idling vehicles).
5. Negative social impact as poor transportation increases costs to consumers, limits workers' ability to travel to jobs and limits the economic growth that is essential to poverty reduction.

5. Reforms are showing great potential but are being inconsistently applied

During the last decade the pace of reform in different sub-sectors of transportation infrastructure has varied. On one end, significant reforms have happened and are currently taking place in the Roads and Ports infrastructure, while on the other a status quo situation prevails in the Railways sector. On Urban Transport a beginning has been made with the 74th amendment to the constitution and a draft National Urban Transport

Policy. Attempts to quantify the intensity of reforms during the last decade indicate that roads and ports are most advanced.

Sector Policy	Roads	Railways	Ports	Urban Transport	Aviation
Private sector	5	1	4	3	3
FDI	5	1	5	4	3
Independent Regulation	3	1	4	2	1
Legal reforms	5	1	3	3	2
Higher budgetary allocation	5	2	5	3	2
Liberal equipment imports	5	2	5	4	5
Public Private Sector partnerships	5	2	4	3	1
Total	33	10	30	22	17

Note: 5 denotes positive developments while 1 denotes insignificant action.

There are some encouraging recent examples of policy innovations:

- **Highways:** Launch of the National Highway Development Project (NHDP) and creation of NHAI, CRF and RDCs to address implementation and financing issues. This will lead to the construction of the single-lane National Highway equivalent of 6,072 km/year during 1999-2007 compared to 669 kms/year till the 8th plan⁵ (see Appendix 1.1.5 for a case study of the impressive National Highway reforms).
- **Railways:** Some rationalization of tariff structures and reduction of cross-subsidy to passenger fares. Creation of Container Corporation of India (CONCOR) for multimodalism. Launch of the Golden Quadrilateral project to decongest the high-density corridors. Imposition of safety surcharge for asset renewal.
- **Ports:** Phased corporatization of major ports and opening up to private sector and FDI with fiscal incentives. Attempt to separate regulation by creating Tariff Authority for Major Ports (TAMP). Development of minor ports. Recent announcement to launch a “Golden Sea Chain” project will bring focus and accelerate reforms.
- **Urban Transport:** Fiscal and administrative decentralization to local bodies and states through constitutional amendment. Implementation of capital-intensive metro projects in Delhi through SPV kind of structure. Pollution control through application of better technology and environment friendly fuels in public transport systems.
- **Aviation:** Introduction of some competition on the domestic front by allowing private sector airlines leading to increases in capacity and significant quality improvements. Putting Airport privatization on track through constitutional amendment. The recent decision to allow competition on international routes is a positive sign and, if fully implemented, should provide travellers with significantly expanded service options.

⁵ National Highway Authority of India (NHAI) estimates.

The experts interviewed were satisfied with the government's performance on the roads and ports sector but were concerned at the difficult situation in railways and expressed an urgent need for pressing forward on the urban transport infrastructure.

On the social and poverty alleviation front, experts believe that while roads will address part of the problem, the situation will continue to aggravate unless a concrete plan is drawn and implemented on the Urban Transportation and Railways side.

6. Vision for the future: 150% to 200% growth in transportation capacity over ten years by acting today on a few key elements for success

Worldwide transport growth has been consistently higher than the economic growth. India has set itself an ambitious growth target of 8% in GDP over the 10th plan period. This will require growth in transportation system capacity in the order of 10-12% per year: that is an increase of 150-200% in the next ten years. Because much of the infrastructure projects have long gestation periods of 5-10 years, policy and investment decisions taken now will determine the limits to India's growth a decade from now.

Over a ten-year horizon, India should have two goals to reach global standards in transportation infrastructure:

- Capacity enhancement and more competitive operations from existing infrastructure through policy and operational improvements.
- Investments in the creation of better and more modern infrastructure.

India's own experience and international best practices point to a few critical elements for success:

- Clear public policy responsibility – one government body with authority to act in a comprehensive fashion (e.g., one highway policy authority; one municipal transportation design authority).
- Building institutional capacity (human resources and equipment) in Indian government agencies to develop, implement and oversee world-class transportation infrastructure policies, to handle new technology and to react to emerging issues (environment, etc.).
- A clear policy roadmap coupled with resolution of outstanding legal and regulatory constraints to improve access to private finance.
- Splitting of policy, implementation and enterprise management. Increased competition – in creation of infrastructure (such as bidding to build a road) and in provision of services (such as in having competing airlines on international routes).
- Unbundling of transportation systems to allow maximum competition where appropriate (e.g., in the rail system, spinning off of canteens and other support services, separate out car-building, consider competing train operations, maintain one provider/maintainer of track).
- Overcoming social concerns of restructuring by building a social safety net to protect the retrenched labour.
- Making social policy elements distinct and market oriented (e.g., bidding system to provide essential air services to category III routes at minimum cost). Not using as a cash cow (e.g., aviation) or embedding social programmes (e.g., subsidization of passenger rail travel, airline category III route service requirements).

- Self-financing as much as possible. User-pay (e.g., tolls) or linked revenue (e.g., gas tax used to pay for roads or public transit) are often best. Capture a share of associated value creation (e.g., the increase of property values around a new airport) to help cover costs. While subsidies may be required on certain projects (e.g., urban mass transit) – the support should be carefully calibrated against international benchmarks.
- Transparency to ensure that the right investments are made, with lowest cost, and most efficient operations. Badly structured infrastructure projects can be a plight on a country's international reputation and cause major bottlenecks to growth. They are time consuming to restart and very expensive to undo. It is very tempting for major infrastructure projects to fall prey to parochial interests – rent seeking bureaucrats, local bias, political factors and regional favouritism. A well-structured delineation of responsibilities and transparent processes will help mitigate this danger.

7. There are concrete opportunities for improvement in each transportation sector

- **Roads:** Continue with recent developments – extend to major state highways and rural roads. Price and manage traffic carefully to avoid congestion. Put in place incentives to limit road-destroying traffic. Ensure an appropriate engineering technology for feeder roads.
- **Rail:** Stop making freight pay for passenger traffic. Use policy changes (e.g., reduce number of stops with slow trains – hub and spoke with buses), operational improvements, and signalling investments to increase effective capacity of existing lines. Unbundle operations: strip-out non-core businesses; provide choice and competition where appropriate in core businesses. Accelerate development of state-of-the-art multimodal container services (working closely with ports and trucking lines). Provide sufficient public and private sector funding for new infrastructure.
- **Ports:** Maintain the momentum. Avoid unnecessary duplication and make clear-headed assessments of how best to use port facilities in the surrounding region. Determine when best to compete, when best to leverage other countries' facilities (e.g., Colombo's deep-water port). Ensure privatization is made less painful through a negotiated settlement between the government and labour unions. De-bottleneck the custom procedures to reduce holding time and documentation.
- **Urban Centres:** Get act together quickly – shift transport responsibility to state and local governments and facilitate the process of building financial and institutional capacity. For each major city, develop a comprehensive transportation plan integrated with land use plan. Move forward with well-structured, international bids. Take steps to improve traffic management and discourage use of personal transport.
- **Aviation:** Allow full competition on all routes (recently proposed). Eliminate the fuel tax – a most regressive tax whose burden becomes larger as fuel costs increase (and airlines' ability to pay diminishes). As an interim step – cap tax revenue and determine a better way of obtaining (e.g., a per passenger levy). Rationalize airport charges. Over time, eliminate category III restrictions and

provide essential air services subsidies where required (with costs shared by national/state/local authorities). In the interim, allow airlines to transfer their category III obligations to a competitor or to a third party operator – who could use a standard, appropriate fleet and be paid by the majors to meet their category III requirements. Improve quality of and access to airports – privatize or municipalize. Develop a robust traffic management system that addresses relevant technical issues and meets strategic objectives through rigorous systems engineering and large-scale integration efforts such that rising air traffic demand is supported in a safe, secure and efficient manner. Get government out of the business of controlling maintenance shops and hanger facilities.

8. If key players show the required vision and courage, there will be multi-billion dollar investment opportunities and a chance for Indian businesses to become world-class builders and managers of transportation infrastructure

The Indian transport infrastructure is going to see lot of action in the next ten years. The timing is right for India to expedite its transport reform for the following reasons:

1. The initial reform momentum has already been built up.
2. There is a growing consensus in India that transport should be managed as an economic sector.
3. There are many successful models of transport reform around the world.

A massive requirement for national and international capital will create opportunities for financial institutions, foreign investors and infrastructure players and stimulate various industries: cement, steel, equipment, consultancy, engineering, etc. The quantum of investments expected in the next ten years is⁶:

- Roads: US\$ 40 billion
- Ports: US\$ 20 billion
- Railways: US\$ 15 billion
- Urban transport: US\$ 5 billion
- Aviation: US\$ 7 billion

While these potential opportunities do exist, there are many implications for all the stakeholders including the government to make them happen:

Government: Given the resistance to reform, this is one of the most critical areas for action. The government needs to come out with clear and consistent policy guidelines to ensure courageous, long-term and well-coordinated decisions. To accelerate development, the government needs to strike a balance between the need for immediate action and the need for public and private sector learning and capacity building. The government needs to pay specific attention to contract management and regulation to create a level playing field with appropriate levels of risk sharing.

Multilateral Agencies: Institutions like the WB and ADB have a key role to play. They must encourage the development of new revenue streams such as direct user charges. Further, their support must be focused on strengthening institutions and promoting a

⁶ Urban Infrastructure and Aviation figures are Bombardier estimates while other figures are from Ministry of Commerce GOI.

clear distribution of roles between public and private sector, rather than just providing pure budget finance for projects.

Industry: Industry will need to lobby to ensure that the momentum gained is not lost and the government creates an environment conducive to implement global best practices after adaptation to Indian conditions. For example, Indian companies should go beyond pure construction jobs and take on broader concession jobs. Industry should promote international partnerships so that the Indian companies can leverage international experience and foreign companies can leverage the local knowledge of Indian companies.

Lastly, India provides a unique opportunity because of its huge size and population: successfully implementing transportation infrastructure reforms could create a whole new category of world-class Indian businesses. The appropriate investments in R&D, specialized equipment, key skills and human resources needed to meet India's own needs will allow many Indian companies to reach world-class levels of critical mass and competence in transportation infrastructure. Industry can then leverage these world-class, low-cost solutions into other world markets. For example:

- Today, Indian airlines have difficulty getting access to hangers for maintenance. As a result, private operators have to do some maintenance abroad. Airline maintenance and overhaul should be an area where India could develop a major international business, leveraging its low labour costs and world-class engineering to service aircraft for other countries as well as its own.
- Railcar building is now in the hands of a state monopoly with old designs, little or no internal competition and no exports. A privatized and competitive railcar-manufacturing sector should provide better cost and quality to India's railways as well as being able to export its products into world markets.
- There are many highly skilled transportation-related service businesses – architecture, civil engineering and information systems – where India could develop world-class skills with world beating costs.

Indian companies could develop a real competitive advantage for major markets in Asia-Pacific, Africa and Latin America with similar transportation infrastructure requirements.

In conclusion, dealing with India's transportation infrastructure will not only provide India's existing companies with the efficient transportation it needs to take on the world, it could create a whole new set of world-class Indian players in the transportation sector.

Annexe 1.1

Annexe 1.1.1

Comparison of Indian and Chinese Transport Infrastructure

Basic Statistics		India	As of	China	As of
Railways	Total route km	63,140	2001-02	71,800	2002
Highways	Total million km	3.31		1.4	1999
	Paved million km	1.5		0.27	1999
	Unpaved million km	1.8		1.12	1999
	> 4-lane Expressways km	3000		16,000	1999
Waterways	Total km	14,500		110,000	1999
Ports and harbours					
Marine trade	No of ships (> 1000 GRT)	319	2002	1764	2002
	Total GRT (million)	6.3	2002	16.9	2002
Ships by Type	Bulk carrier	0		2	
	Bulk	115		328	
	Cargo	80		822	
	Chemical Tanker	16		25	
	Combination bulk	1		10	
	Combination ore/oil	3		1	
	Container	13		134	
	Liquefied Gas	9		26	
	Petroleum Tanker	74		263	
	Specialized Tanker	1		3	
	Multifunctional large load	0		6	
	Refrigerated Cargo	0		26	
	Roll on/Roll off	0		23	
	Vehicle carrier	0		1	
	Passenger/Cargo	5		45	
	Passenger	0		7	
	Short-sea passenger	2		42	
	Total	319	2002	1764	2002
Airports	Total	120	2002	143	2002
Runways	Total	335	2001	489	2001
	Paved runways	232		324	
	Unpaved runways	102		165	
Aircraft	Total Commercial	140	2002	620	2002
	Mainline air-planes	125		559	
	Regional Air-planes	15		61	

Source: Bombardier research

Annexe 1.1.2

Estimates and Projections of Freight and Passenger Traffic vs GDP in India

Freight Traffic				
Year	GDP (1980-1 prices)(Rs bn)	CAGR % growth	Traffic btkm	CAGR % growth
1984-85	1324		343	
1991-92	1855	4.9%	524	6.2%
1998-99	2817	6.1%	869	7.5%
2005-06		6%	1442	7.5%
Passenger Traffic				
Year	GDP (1980-1 prices) (Rs bn)	CAGR % growth	Traffic bpkm	CAGR % growth
1984-85	1324		966	
1991-92	1855	4.9%	1477	6.3%
1998-99	2817	6.1%	2450	7.5%
2005-06		6%	4065	7.5%

Transport Effort: Comparison with China

	India		China	
	btkm/bpkm	% share	btkm/bpkm	% share
Freight				
Road	449	52%	527	14%
Rail	284	33%	1310	34%
Air	0.1	0%	3	0%
Coastal and Inland waterways	66	8%	1924	50%
Pipeline	70	8%	58	2%
Total	869	100.0%	3821	100%
Passenger				
Road	2034	83.0%	554	55.3%
Rail	404	16.5%	355	35.4%
Air	11	0.4%	77	7.7%
Coastal and Inland waterways	1	0.0%	16	1.6%
Total	2450	100.0%	1002	100.0%

Source - Integrated Transport G. Raghuram, World Bank (1995) and Chinese Railways (1997)

Note: Indian rail and air data is based on CMIE, Indian Infrastructure, Dec. 1999. The road figures are based on the assumption that IR's share is 40% in freight and 20% in passenger of the total.

Annexe 1.1.3

GDP by Transport Sub sector (at 1980-81 prices) (Rs Billion)

	1980-81	1990-91	1996-97	Annual Growth Rate %	
				1980-81 to 1990-91	1990-91 to 1996-97
Rs crores					
GDP at Factor cost	1224.3	2122.5	2968.5	5.7%	5.7%
Railways	11.2	16.8	19.6	4.1%	2.7%
Roads	24.5	60.0	81.2	9.3%	5.2%
Water	8.2	10.9	15.6	2.8%	6.2%
Air	2.6	3.9	5.0	4.2%	4.5%
Service incidental to transport	2.5	6.2	8.4	9.4%	5.2%
Percentage					
GDP at Factor cost	100.0%	100.0%	100.0%		
Railways	0.9%	0.8%	0.7%		
Roads	2.0%	2.8%	2.7%		
Water	0.7%	0.5%	0.5%		
Air	0.2%	0.2%	0.2%		
Service incidental to transport	0.2%	0.3%	0.3%		
Total	4.0%	4.6%	4.4%		

Source: GOI, National Accounts Statistics 1998

Freight and Passenger Traffic Growth by Mode

	1991-92	1998-99	Growth Rate
Freight			
Rail (btkm)	257	284	1.4%
Road (btkm)	267	449	7.7%
Goods vehicles excluding 3-wheelers ('000)*	1,356	2,260	8.9%
International air cargo (btkm)**	0.1	0.2	8.3%
Domestic air cargo (btkm)**	0.1	0.1	7.7%
Major port cargo tonnage (million)	152	252	7.5%
Minor port cargo tonnage (million)	13	36	15.7%
Passenger			
Rail (bpkm)	315	404	3.6%
Road (bpkm)	1,162	2,046	8.4%
Passenger vehicles excl. 2- and 3-wheelers ('000)*	3,285	5,150	7.8%

2-wheelers ('000)*	14,200	25,693	10.4%
International air passengers (million)**	821	1,265	11.4%
Domestic air passenger-km (million)**	793	1,070	7.8%

(*) Data for year 1997;and (**) data for year 1997-98

Source: WB report

Annexe 1.1.4

Expenditure on Transport Sub-sectors under Plan periods (Rs billion)

Sub-sector	1st Plan 1951-56	2nd Plan 1956-61	3rd Plan 1961-66	4th Plan 1969-74	5th Plan 1974-79	6th Plan 1980-85	7th Plan 1985-90	8th Plan 1992-97	9th Plan 1997-02
Railways	2.2	7.2	13.3	9.3	20.6	65.9	165.5	323.0	454.1
Roads	1.5	2.4	4.4	8.6	17.0	38.9	63.4	161.0	386.5
Road transport	0.0	0.0	0.9	4.6	12.0	19.9	21.5	35.4	73.8
Ports	0.3	0.3	0.9	2.5	4.9	7.3	15.1	23.0	99.4
Shipping	0.2	0.5	1.4	4.5	7.6	8.3	7.2	30.3	63.1
IWT	0.0	0.0	0.1	0.3	0.7	2.3	1.9	1.5	5.3
Civil Aviation	0.2	0.5	0.5	1.8	2.9	9.6	19.5	72.5	113.7
Total Transport sector	4.3	11.0	19.8	25.2	55.4	139.6	294.8	649.4	1202.5
Total Plan (All sectors)	19.6	46.7	85.8	157.8	394.3	1092.9	2187.3	5332.5	8592.0

Sector-wise Expenditure as % of Transport Sector total under Plan periods

Sub-sector	1st Plan 1951-56	2nd Plan 1956-61	3rd Plan 1961-66	4th Plan 1969-74	5th Plan 1974-79	6th Plan 1980-85	7th Plan 1985-90	8th Plan 1992-97	9th Plan 1997-02
Railways	50.0	65.7	66.9	37.0	37.2	47.2	56.1	49.7	37.8
Roads	33.9	22.0	22.2	34.2	30.7	27.8	21.5	24.8	32.1
Road transport	0.0	0.0	4.6	18.3	21.6	14.3	7.3	5.4	6.1
Ports	6.5	3.0	4.7	9.9	8.8	5.2	5.1	3.5	8.3
Shipping	4.4	4.8	7.1	17.8	13.6	5.9	2.4	4.7	5.2
IWT	0.0	0.0	0.6	1.3	1.3	1.6	0.6	0.2	0.4
Civil Aviation	5.3	4.5	2.5	7.0	5.3	6.9	6.6	11.2	9.5
Transport sector as % of Total Plan	22.1	23.5	23.1	16.0	14.1	12.8	13.5	12.2	14.0

Source: Indian Planning Experience: A Statistical Profile

Annexe 1.1.5 Transportation Infrastructure Reform Case Study: The National Highway Authority of India

One of the most significant developments in the last few years has been the establishment of the National Highway Authority of India (NHAI) as a semi-autonomous agency with a firm legal basis and the launch of the National Highway Development Programme (NHDP). NHAI has set new standards with a lean and diversely trained workforce and infusion of technology. NHAI is involved only in planning and procuring road construction. Once the overall plan is agreed upon no further approvals from the government are required. To bring in customer orientation, a Road Users' Advisory Committee represented by road users, business, states and the construction industry has been constituted.

At the state level also some positive changes have happened:

- Divesting rural roads to local governments or dedicated central agencies.
- Separating roads from buildings and/or irrigation functions.
- Divesting government construction plant and equipment.
- Creating Road Development Corporations (RDCs) as implementing agencies.

For rural roads the Prime Minister has announced a national programme called Pradhan Mantri Gram Sadak Yojna – PMGSY (Prime Minister's Rural Road Programme) aiming at all-weather road access to all villages with a population of over 1,000 people by 2003 and above 500 by 2007.

To address the financing issues, an important development has been the implementation of a **Central Road Fund** (CRF) with an annual income of about Rs 56-60 billion through a one-rupee tax on both petrol and diesel. Presently, fuel tax allocation is along the following lines: NHDP – Rs 20 billion, rural roads – Rs 25 billion, state roads – Rs 10 billion and rail over bridges and safety – Rs 3 billion⁷. Though CRF generates funds from extra road user payments through an explicit tariff, there are some problem areas – (i) it is not separated from the general tax revenues; (ii) it is presently purely an accounting mechanism, thereby not imposing financial discipline. There is some experimentation going on with state level road funds on similar lines as the CRF.

Further, both central and state governments are making significant efforts to mobilize funds through multilateral agencies like WB, ADB, etc, the issue of government backed bonds and increasing allocation by treating roads as a priority sector. The government has also initiated several measures and introduced innovative models to increase private sector finance through BOT and O&M concessions. Finally to get the biggest bang for the buck, expenditure is increasingly focused on the core network – the Golden Quadrilateral being a good illustration.

To address the pricing and revenue issues, the GOI is now taking steps towards rational and transparent road pricing using the “user pays” principle through direct tolling, which will not only impose discipline on both users and suppliers but also separate revenues from general taxes. However, widespread direct toll collection opportunities are still limited in India in the near term because of the high social costs involved.

⁷ NHAI and Ministry of Road Transport and Highways.

Measures to encourage private sector participation in Road projects

- GOI to carry out all preparatory work including land acquisition and utility removal.
- ROW (right-of-way) to be made available free of all encumbrances.
- Capital grants up to 40% of project cost to enhance viability on a case-to-case basis.
- 100% tax exemption for five years and 30% relief during any 10-year period.
- Concession period allowed up to 30 years.
- FDI up to 100% equity for construction of roads and bridges.
- Associated housing and real estate development entitled for same tax benefits.
- NHAI permitted to participate in equity in BOT projects up to 30%.
- Introducing new methods of payment such as annuities and shadow tolls that reduce the commercial risk to concessionaires in comparison to directly tolled BOTs.

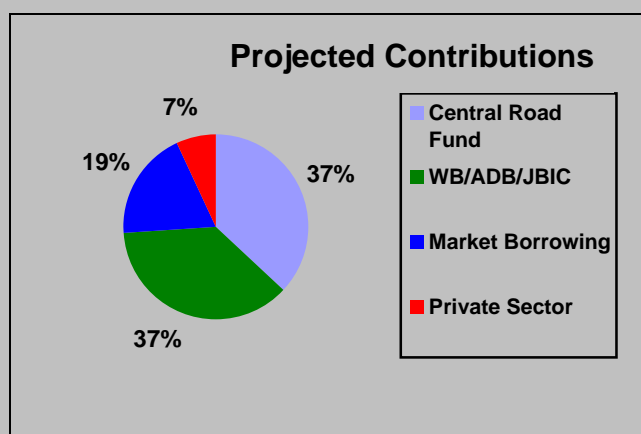
NHDP in Top Gear⁸

In October 1998, Prime Minister Atal Behari Vajpayee unveiled his vision of transforming Indian highways into modern superhighways through the National Highway Development Project (NHDP) comprising the Golden Quadrilateral (GQ) and the North-South and East-West (NSEW) corridors at a substantial investment of Rs 540 Billion.

NHDP broadly has 3 components...

Golden Quadrilateral (Phase 1) Mumbai – New Delhi – Kolkata-Chennai	5,846 km
East-West, North-South Corridors	7,300 km
Connectivity of Ports to these Highways	400 km
Total	13,546 km

The National Highway Authority of India (NHAI) was mandated to implement the project. Other than the Government of India, the World Bank, ADB and the Japanese Bank for International Cooperation have been brought on board to fund the project. The projected contributions from each source are given in the pie chart below.



NHAI has been successful in mobilizing investments for the GQ phase 1 of the project and it is expected that the majority of the project will be completed by the end of 2004 with the remaining few projects getting over by 2005. For the NSEW corridor, 630 km of the project have been four-lane while around 500 km are under implementation. Contracts for the rest would be awarded during 2003 and 2004.

⁸ Indian Infrastructure, January 2003.