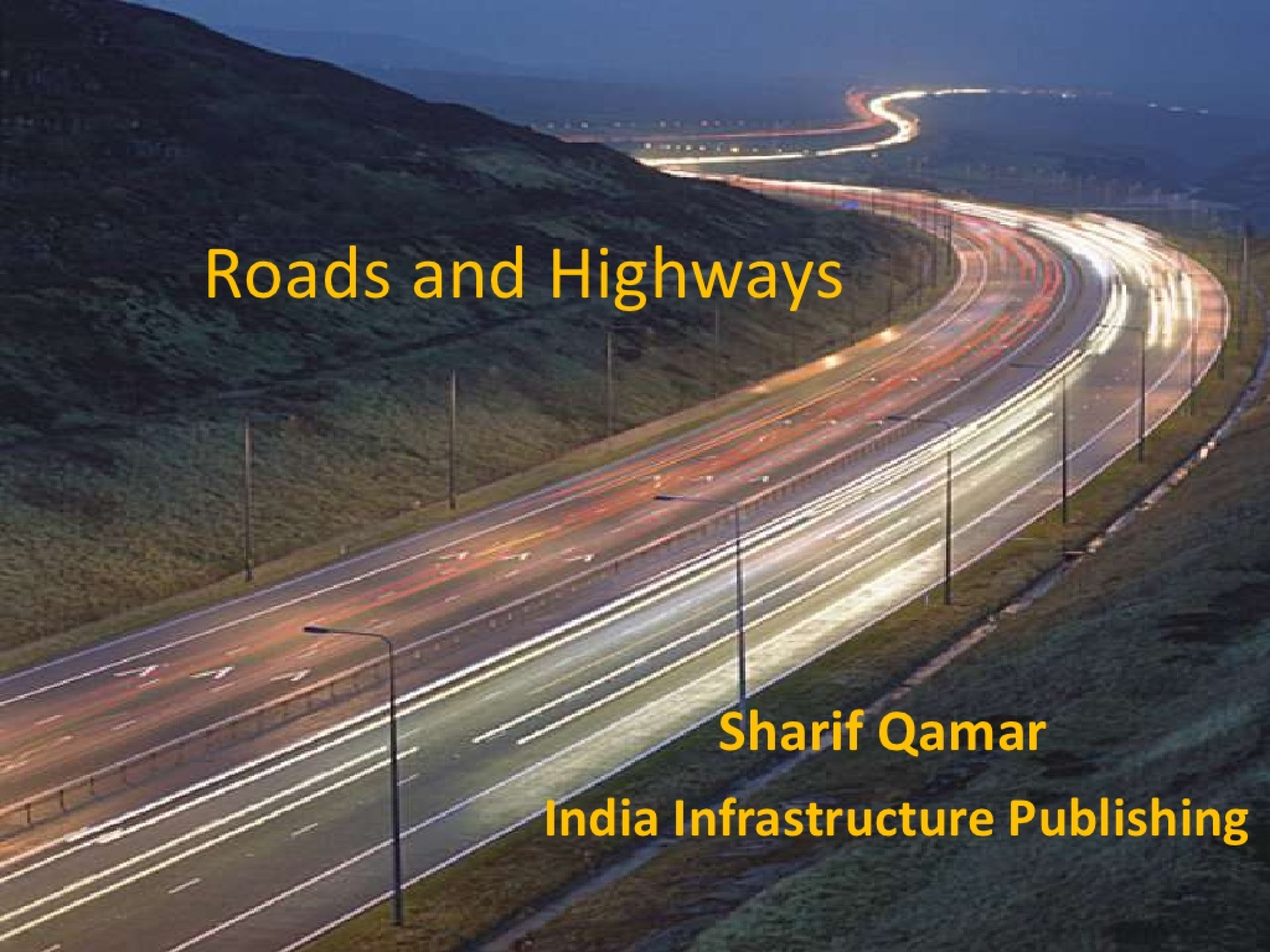

Roads and Highways
Sharif Qamar
India Infrastructure Publishing

Indian road sector – Importance

A good road connectivity ensures all round – social and economic development of any region. Road is build not only for two-wheelers or four-wheelers, but also for two-legged and four-legged..

Contributes about 5 % to the GDP,

Second largest investment envisaged, after Power sector

National highway traffic has grown between 7-10 % YoY

Passenger traffic projected to grow by 12-15 per cent till 2012

Number of vehicles increasing at 30 per cent p.a.

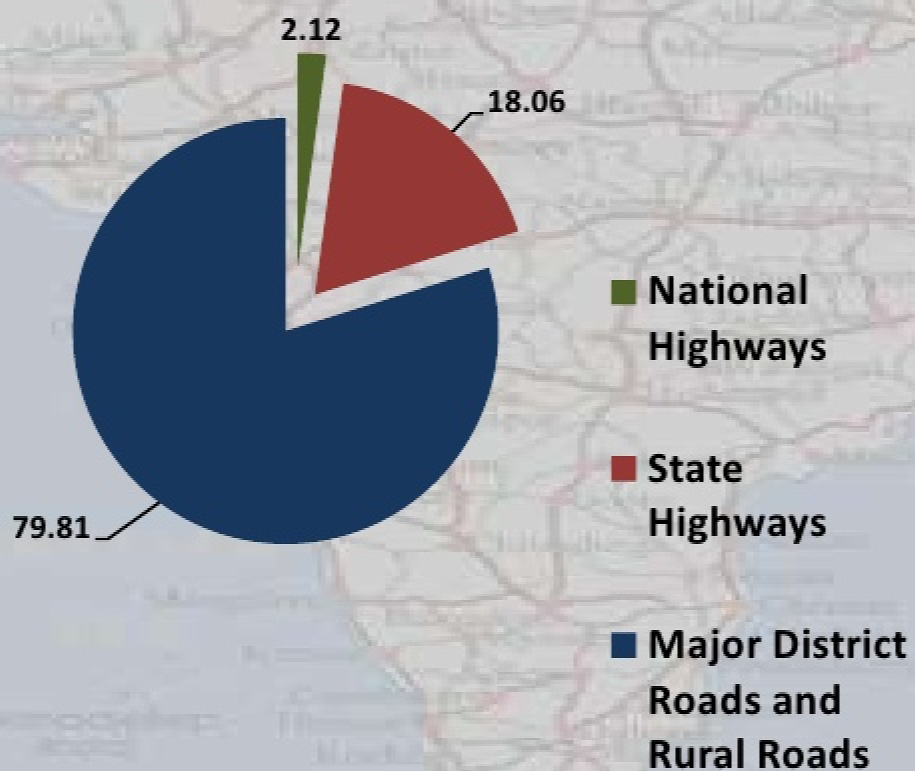
National highways carries 85 per cent passenger traffic and 65per cent freight traffic

Freight traffic to grow by 15-18 % till 2012

Indian road network – Size 1/2

- India’s road network - 3.3 million km - the second largest in the world
- Road density in terms of population - only 2.75 km per 1,000 people compared to the world average of 6.7
- Road density in terms of land - 770 km per 1,000 sq. km - short of the world average of 841

Indian road sector – Size 2/2



15 % road network carries 80 % traffic –

- **National highways, comprising about only 2 % of length, carries 40 % of the total traffic**
- **State roads, comprising 18 % of length, carries 40 % of the traffic**

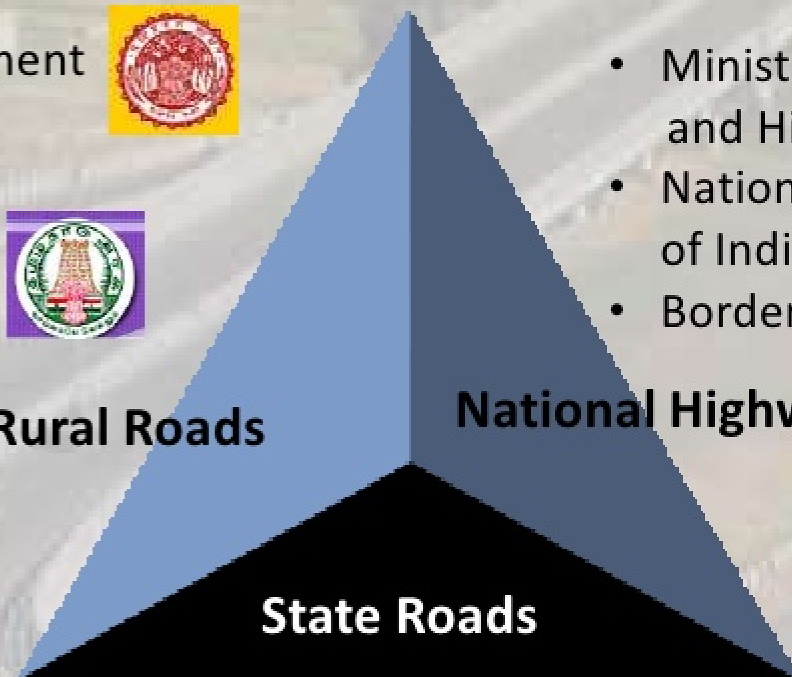
Width of National Highways(NHs) and State Roads (SRs)

- **14 % NHs and 1 % SRs are four-laned**
- **60 % NHs and 22 % SRs are double-laned**

Indian road sector – Agencies

- Ministry of Rural Development
- State Governments
- Rural Road Development Agencies
- Village Panchayats

- Ministry of Road Transport and Highways (MoRTH)
- National Highways Authority of India (NHAI)
- Border Roads Organisation



- State Governments
- Public Works Departments
- Road Development Corporations
- Infrastructure Development Boards

Indian road sector – Funding

- Road projects are funded through a variety of sources
  - Central and state government budgetary resources
  - Central Road Fund (CRF)
  - Market borrowings
  - Private investment
  - Assistance from multilateral agencies like the World Bank, the Asian Development Bank and the Japan Bank for International Cooperation

- In recent years, focus has shifted from traditional sources towards private investment

Indian road sector - Formats

- **BOT (toll)** - The private developer finances and undertakes the construction and maintenance of a highway and recovers its investment (plus a return) from toll revenues

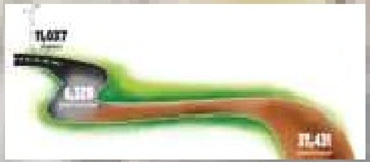
- **BOT (annuity)** – The developer finances and undertakes the construction and maintenance of the highway and recovers its investment from annual payments by the government/granting authority

- **EPC format** – Construction is contracted out to a third party for a one time payment. Ownership stays with the developer

Indian road sector – Policy reforms

Standard bidding documents

Approval of the new tolling policy



Policy changes

Formulation of a model concession agreement

Reform of the NHAI

Move towards privatisation through amendments in the acts

Indian road sector – Programmes

Central sector projects

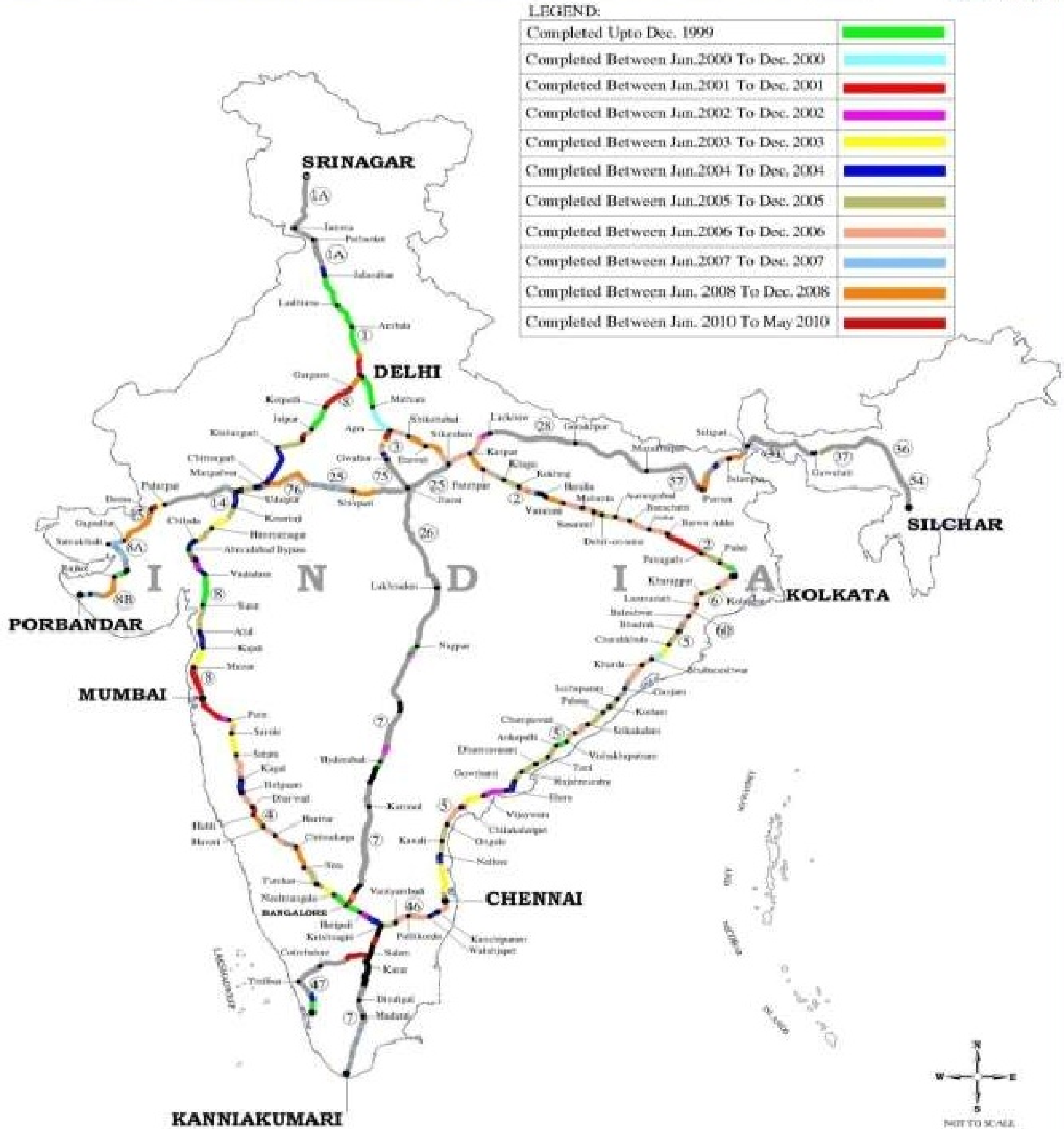
- National Highways Development Programme (NHDP)
- Pradhan Mantri Gram Sadak Yojana (PMGSY)
- Special Accelerated Road Development Programme for North-eastern Region (SARDP-NE)

State sector projects

- CRF projects
- State road sector projects – multi-lateral agency funded
- Public-private partnership (PPP) projects
- Other projects – NABARD-assisted projects, Hudco projects

NATIONAL HIGHWAYS DEVELOPMENT PROJECT

YEAR WISE COMPLETED PROJECT STATUS (FROM Dec. 1999 TO May 2010)



- **Biggest initiative** in the national highways sector
- Launched in **1999**
- Development of **50,000 km** of national highways under **7 phases**
- Envisages - **multi-lane connectivity** to the four metros and to the north-south and east-west corridors of the country; high-speed corridors ; two-lane roads, ring roads, bypasses, flyovers, etc
- Cost – **Rs 3,000 billion**

Indian road sector – PMGSY

- Biggest initiative for the rural roads sector
- Launched in December 2000
- Envisages to connect 170,000 habitations with 365,000 km
- Cost – Rs 1,320 billion

State road sector - Overview

- State highways and major district roads constitute the secondary system of road transportation in the country
- Presently characterized by inadequate width, and weak pavements and bridges
- Involvement of private sector in state road development is gradually increasing. About 137 projects worth Rs 648 billion have been completed or are under construction
- The total investment in state road during Tenth Plan was Rs 674.16 billion, while it is expected to cross Rs 1,418.55 billion during Eleventh Plan

State road sector - Comparison

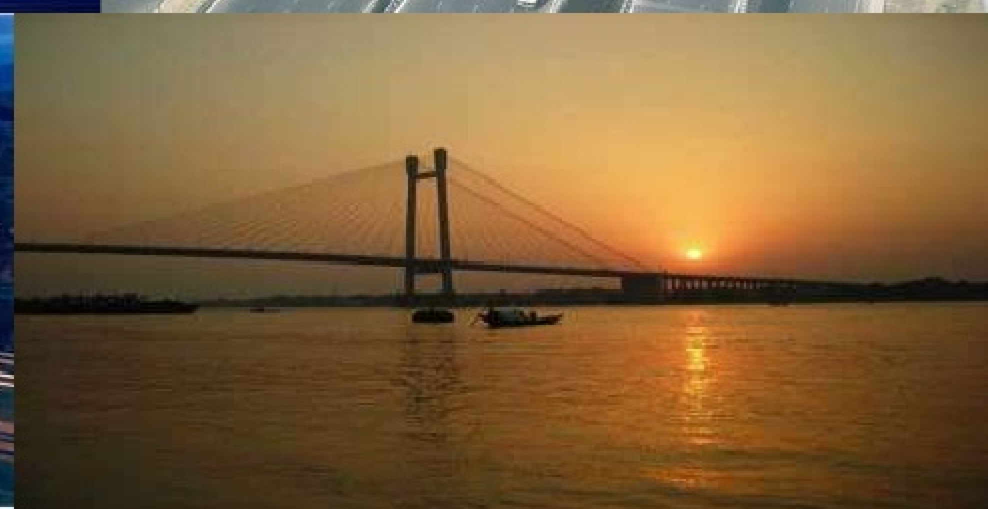
State	Road length (km)	Road density (area wise)	Road density (population wise)	MultilateralAid	Private Participation
Orissa	242,736	**1,558.93**	**6.61**	√	√
Maharashtra	233,664	753.75	2.42	√	√
Karnataka	209,868	**1,094.25**	**3.98**	√	√
Tamil Nadu	193,918	**1,491.68**	**3.12**	√	√
Rajasthan	185,043	544.24	3.28	-	√
Kerala	154,679	**3,980.11**	**4.86**	√	√
Uttar Pradesh	139,362	580.68	0.84	√	√
Gujarat	102,501	522.96	2.03	√	√
Bihar	81,645	867.05	0.99	√	Nil
Madhya Pradesh	73,312	237.91	1.21	√	√
Andhra Pradesh	68,511	247.55	0.9	√	√
Punjab	54,883	1,089.77	2.26	√	√
Chhattisgarh	36,066	266.78	1.73	√	√
Uttarakhand	28,298	528.28	3.34	√	Nil
Himachal Pradesh	27,260	489.64	4.49	√	Nil
Haryana	24,258	548.67	1.15	-	√

Source: IIR









Indian road sector – Players (1/2)

GMR Infrastructure

- Eight projects (6 completed, 2 under implementation)
- Major projects – Chennai outer ring road, Ambala-Chandigarh

Reliance Infrastructure

- 11 projects (2 completed, 9 under implementation)
- Major projects - Pune-Satara highway, Western Freeway project

Larsen and Toubro

- 28 projects (22 completed, 6 under implementation)
- Major projects - Panipat Elevated highway, Jaipur-Kishangarh highway, Vadodra-Bharuch stretch

Jaiprakash Associates

- Three projects under implementation
- Major projects – Yamuna expressway, Ganga Expressway

Indian road sector – Players (2/2)

IRB Infrastructure Developers

- 16 projects (10 completed, 6 under implementation)
- Major projects – Mumbai-Pune expressway section, Surat-Dahisar highway, Bharuch-Surat highway

Hindustan Construction Company

- 28 road projects (8 completed, 20 under implementation)
- Major projects – Badarpur elevated highway , Satara-Kolhapur, Bandra-Worli sea link

Nagarjuna Construction Company

- 39 projects (21 completed, 18 under implementation)
- Major projects – Radhanpur-Deesa highway, IT expressway in Bangalore

Other companies involved

Indian road sector – Tolling

Electronic Toll Collection

- MoRTH constituted a committee under Mr. Nandan Nilekani to suggest an uniform toll collection technology on national highways
- Radio-frequency Identification (RFID) technology for electronic toll collection
- Currently being used in USA, Mexico, Chile, Argentina and Dubai
- The system is cost effective – Rs 100 per tag and about Rs 0.2 million per tag reader

Indian road sector – Issues

- Stability in the policy decisions of the government is a major concern
- Funding requirement is a big issue
- Land acquisition continues to delay projects
- Capacity constraint – NHAI, private developers, etc.
- The sector does not have an independent regulator – often resulting in prolonged dispute settlements

Indian road sector – Future outlook

(1/2)

"The government plans to build 24,000 km road across the country by end of 2010-11. We close this year with 11,500 kms work in hand, we will award 12,000 kms."
- **Kamal Nath, Minister of Road Transport and Highways (July 2010)**

"We will award four expressway highway projects of a total length of 1,000 km under National Highways Development Project by the end of the current fiscal. A total of 34 projects were awarded in 2009-10 while 16 bids are under process and 31 are likely to be finalised soon." - **Brahm Dutt, Secretary, MoRTH (April 2010)**

"Indian roads still have a long way to go and the focus has to be not just on the total length but also the quality of roads." - **Vineet Agrawal, Transport Corporation of India Limited (April 2010)**

Indian road sector – Future outlook

(2/2)

Investment Estimates for 2007 -12

- National highways – Rs 2,500 billion
- State roads – Rs 1,000 billion

Funding Opportunities

- Equity market– Rs 360 billion
- Debt market – Rs 840 billion

Change in Market Structure

- New domestic companies are expected to foray into road development business
- International players are projected to enter into the Indian road sector
- Existing players are likely to churn out new strategies to maintain their stronghold

Tolling revenues expected to increase