

## INFRASTRUCTURE DEVELOPMENT IN INDIA WITH SPECIAL REFERENCE TO ROAD

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### INTRODUCTION

The term infrastructure refers to basic physical structures, such as roads, water supply, power generation, tele communications, etc. needed for the operation of an economy. It can also refer to the services and facilities necessary for an economy to function, Viewed functionally, infrastructure facilitates the production of goods and services, and also the distribution of finished products to markets, as well as provision of basic social services .

India's rise in recent years is a most prominent development in the world economy. India has reemerged as one of the fastest growing economics in the world. India's growth, particularly in manufacturing and services, has boosted the sentiments, both within country and abroad. With an upsurge in investment and robust macroeconomic fundamentals, the future outlook for India is distinctly upbeat. According to many commentators, India could unleash its full potentials, provided it improves the infrastructure facilities, which are at present not sufficient to meet the growing demand of the economy. Failing to improve the country's infrastructure will slow down India's growth process. Therefore, Indian government's first priority is rising to the challenge of maintaining and managing high growth through investment in infrastructure sector among others. The Provision of quality and efficient infrastructure services is essential to realize the full potential of the growth impulses surging through the economy. India while stepping up public investment in infrastructure has been actively engaged in involving private sector to meet the growing demand. The demand for infrastructure investment during the 11<sup>th</sup> Five year Plan (2007-2011) estimated to be us\$492.5 billion (planning commission, 2007-2011). To meet this growing demand, Government of India has planned to raise the investment in infrastructure from

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the present 4.7 percent of GDP to around 7.5 to 8 percent of GDP in the 11<sup>th</sup> Five Year Plan. In general, efforts towards infrastructure development are continued focus on the key areas of physical and social infrastructure.

## Infrastructure Development on Indian ROAD

The most distinct part of India's physical infrastructure development in recent years is the development of road network across the country; per sq. km. of surface area in India is now endowed with one km of roadways. India has one of the largest road networks in the world, aggregating to 3.34 million km. The country's road network consists of Expressways, National Highways, State Highways, Major District Roads, Other District Roads and Village Roads.

### Indian Road Network

Indian road network of 33 lakh km. is the second largest in the world consists of:

	(Length in Km)
Express way	200
National Highways	71,772
State Highways	131899
Major District Roads	67763
Rural and Other Roads	26,50,000
Total Length	33,00,000

-About 65% of freight and 80% passenger traffic is carried by the roads.

-National Highways constitute only about 1.7% of the road network but carry about 40% of total road traffic.

-Number of vehicles has been growing at average pace of 10.16% per annum over the last five years.

## Statewise distribution of National Highways

Sr. No.	Name of the State/U.T	Length (Kms)	Sr. No.	Name of the state/U.T	Length (kms)
1	Andhra Pradesh	4537	17	Maharashtra	4,257
2	Arunachala Pradesh	2,027	18	Manipur	1,317
3	Assam	2,940	19	Meghalaya	1,171
4	Bihar	4,106	20	Mizoram	1,027
5	Chandigarh	24	21	Nagaland	494
6	Chattisgarh	2,289	20	Orissa	3,704
7	Delhi	80	23	Pondicherry	53
8	Goa	269	24	Punjab	1557
9	Gujarat	4032	25	Rajasthan	7,130
10	Harayana	1633	26	Sikkim	149
11	Himachal Pradesh	1506	27	Tamil Nadu	4943
12	Jammu & Kashmir	1245	28	Tripura	400
13	Jharkhand	2170	29	UttraPradesh	7818
14	Karnataka	4396	30	Uttarakhand	2042
15	Kerala	1457	31	West Bengal	2681
16	Madhya Pradesh	5064	32	Andaman Nicobar	300
	Total				76818

(Ministry of Road Transport and highways GOI)

### India Nationalization of Highway numbers

On 28 April 2010, the Ministry of Road Transport and Highways officially notified the rationalized number system of the national highway network in the Gazette of the Government of India. 1) It is a systematic numbering scheme based on the orientation and the geographic location of the highway. This was adopted to ensure more flexibility and consistency in the

numbering of existing and new national highways. According to the system all north-south oriented highway will have even numbers increasing from the east to the west. Similarly all east-west oriented highways will be odd numbered increasing from the north to the south of the country."The Ministry has therefore requested to renumber the National Highway numbers in place of the existing number of National Highway for its proper location. Accordingly, a revised (Renumbered) map of National Highways in India is shown in this article. As per the new scheme, the single longest national highway will be NH44 which will run from Srinagar to Kanyakumari. The National Highways, the majority 2 lane (one in each direction), constitute a total of about 65,000 km (40,000 mi), out of which 5,840 km (3,630 mi) is to be converted into "Swarna Chatuspatha" or Golden Quadrilateral, a project commenced by the NDA Government led by Mr. Atal Bihari Vajpayee. (Source, The Hindu, Dt. June 7, 2008 :K.H. Muniappa, Union Minister of State for Surface Transport) of which 4,885 km (3,035 mi) are median-separated express highways. In some more developed areas it may broaden to 4 lanes. Closer to big cities, highways can even be of 8 lanes. Highways in India are around 2% of the total road network in India, but carries nearly 40% of the total road traffic. The National Highways (Amendment) Bill, 1995, provides for private investment in the building and maintenance of these arteries of India. The longest National highway is the NH7 from Varanasi to Kanyakumari passing through Uttar Pradesh, Jharkhand, Bihar, West Bengal covering a distance of 4,72KM(2,841mi), as of September 2011 as per National Highways Authority of India. The Shortest National Highway is the NH47 A (5.9 Nationalization of Highways Numbers

## Government Policy Initiative

### Policy Initiatives for Attracting Private Investment

- Government will carry out all encumbrances.
- NHAI/GOI to provide capital grant up to 40% relief for next 5 years, which may be availed of in 20 years.
- Concession period allowed up to 30 years
- Arbitration and Conciliation Act-1996 based on UNICITRAL Provisions.
- in BOT projects entrepreneur are allowed to collect and retain tolls
- Duty free import of specified modern high capacity equipment of highway construction.

Roads Offering “huge scope” for foreign investments the then finance minister Pranab Mukherjee said India needs about \$one trillion in next five years for infrastructure development half of which has come from the private sector addressing the gathering , India has made provisions for creating infrastructure debt fund to attract investment in this sector, . Therefore there is huge scope for investments in India” he said that Indias focus was on inclusive growth and therefore the development strategy was to achieve this “ we have empowered the people by driving them access to entitlement backed by legal enactment, he said various steps taken to achieve fiscal consolidation to adopt domestic demand driven strategy to minimize the impact of international crisis to ease extra commercial borrowings and in the field of direct and indirect taxes. He also assured the international community that India was confident of its economy reverting back to 8-10% growth per annum in the coming years because of its strong fundamentals “ For the current fiscal year, we have set our objective to focus on recovering our crisis growth momentum, create conditions for rapid revival high growth in private investment and address supply bottlenecks in agriculture, energy and transport sectors. The then finance minister said despite adverse international environment India managed to maintain GDP growth rate of about 7% in 2011-2012 I am confident that the strong fundamentals of our economy will help us return to sustained growth rate of 8 to 10% per annum in the coming years. India’s banking has remained robust and the regulatory environment and find new and renewable technologies to fuel our growth, Policy makers will need to remove barriers to trade and investment .

## Finance Mechanisms

NHAI proposes to finance its projects by a host of financing mechanisms. Some of them are as follows:

### Through budgetary allocations from the Government of India.

#### Cess

In a historic decision the government of india introduced a Cess on both petrol and Diesel. This amount at that time (at 1999prices) came to a total of approximately Rs.2000 crores per annum. Further, the parliament decreed that the fund so collected were to be put aside in a Central Road Fund (CRF) for exclusive utilization for the development of a modern road network. The

development work that it could be tapped to fund, the agencies to whom it was available were clearly defined as:

1. Construction and Maintenance of State Highways by state Governments.
2. Development of Rural Roads by State Governments
3. Construction of Rail over –bridge by Indian Railways
4. Constructions and Maintenance of National Highways by NHDP and Ministry of Road Transport and Highways

Today, the Cess contributes between Rs.5 to 6 thousands crores per annum towards NHDP. Loan Assistance from international funding agencies.

Loan assistance is available from multilateral development agencies like Asian Development Bank and World Bank or Other overseas lending agencies like Japanese Bank of International co-operation.

Market Borrowing.

NHAI Proposes to tap the market by securities cess receipts.

Private sector participation.

Major policy initiatives have been taken by the Government to attract foreign as well as domestic private investments. To promote involvement of the private sector in construction and maintenance of National Highways, Some projects are offered on Build Operate and Transfer(BOT)basis to private agencies. After the concession period, which can range upto 30 years this road is to be transferred back to NHAI by the Concessionaries.

NHAI funds are also leveraged by the setting up of Special Purpose Vehicles(SPVs). The SPVs will be borrowing funds and repaying these through toll revenues in the future. This model will also be tried in some other projects. Some more models may emerge in the near future for better leveraging of funds available with NHAI such as Annuity, which is a variant of BOT model.

The project is composed of the following phases:

- Phase I: The Golden Quadrilateral (GQ; 5,846 km) connecting the four major cities of Delhi, Mumbai, Chennai and Kolkata. This project connecting four metro cities, would be 5,846 km (3,633 mi). Total cost of the project is Rs.300 billion (US\$6.8 billion), funded largely by the government's special petroleum product tax revenues and government borrowing. In January 2012, India announced the four lane GQ highway network as complete.<sup>[1][2]</sup>

- Phase II: North-South and East-West corridors comprising national highways connecting four extreme points of the country. The North-South and East-West Corridor (NS-EW; 7,300 km) connecting Srinagar in the north to Kanyakumari in the south, including spur from Salem to Kanyakumari (Via Coimbatore and Kochi) and Silchar in the east to Porbandar in the west. Total length of the network is 7,300 km (4,500 mi). As of April 2012, 84.26% of the project had been completed and 15.7% of the project work is currently at progress.<sup>[3]</sup> It also includes Port connectivity and other projects — 1,157 km (719 mi). The final completion date to February 28, 2009 at a cost of Rs.350 billion (US\$8 billion), with funding similar to Phase I.
- Phase III: The government recently approved NHDP-III to upgrade 12,109 km (7,524 mi) of national highways on a Build, Operate and Transfer (BOT) basis, which takes into account high-density traffic, connectivity of state capitals via NHDP Phase I and II, and connectivity to centre of economic importance. contracts have been awarded for a 2,075 km (1,289 mi).
- Phase IV: The government is considering widening 20,000 km (12,000 mi) of highway that were not part of Phase I, II, or III. Phase IV will convert existing single lane highways into two lanes with paved shoulders. The plan will soon be presented to the government for approval.
- Phase V: As road traffic increases over time, a number of four lane highways will need to be upgraded/expanded to six lanes. The current plan calls for upgrade of about 5,000 km (3,100 mi) of four-lane roads, although the government has not yet identified the stretches.
- Phase VI: The government is working on constructing expressways that would connect major commercial and industrial townships. It has already identified 400 km (250 mi) of Vadodara (earlier Baroda)-Mumbai section that would connect to the existing Vadodara (earlier Baroda)- Ahmedabad section. The World Bank is studying this project. The project will be funded on BOT basis. The 334 km (208 mi) Expressway between Chennai—Bangalore and 277 km (172 mi) Expressway between Kolkata-Dhanbad has been identified and feasibility study and DPR contract has been awarded by NHAI.

- Phase VII: This phase calls for improvements to city road networks by adding ring roads to enable easier connectivity with national highways to important cities. In addition, improvements will be made to stretches of national highways that require additional flyovers and bypasses given population and housing growth along the highways and increasing traffic. The government has not yet identified a firm investment plan for this phase. The 19 km (12 mi) long Chennai port--Maduravoyal Elevated Expressway is being executed under this phase.

### **INDIA'S OVERLAND CONNECTIVITY WITH EAST ASIA: SOME CROSS-BORDER INFRASTRUCTURE INITIATIVES**

India attaches utmost importance towards development of connectivity with Southeast and East Asian countries. The importance of overland connectivity through cross-border transport corridors is not only for the trade, but it would also facilitate investments in infrastructure sector. It will also bring many rich rewards for bordering areas. Some of the recent initiatives linking India with ASEAN are as follows. 5.1. India – Myanmar-Thailand Trilateral Highway India – Myanmar – Thailand Trilateral Highway (IMTTH) from Moreh (in India) to Mae Sot (in Thailand) through Bagan (in Myanmar) links India with Southeast Asia. The IMTTH is divided into three phases; the first phase includes 78 km of new roads, upgradation of about 400 km of roads, construction of all-weather approach lanes, rehabilitation/ reconstruction of weak or distressed bridges and a detailed examination of a project on the Ayeyarwaddy river as well as a causeway. The entire project is being funded through government resources.

Source: Ministry of External Affairs, Govt. of India.

### **6. CONCLUDING REMARKS**

- Provision of quality and efficient infrastructure services is essential to realize the full potential of the emerging Indian economy. Indian government's first priority is therefore rising to the challenge of maintaining and managing high growth through investment in infrastructure sector, among others. To sustain expected growth, the Government of India has estimated that an investment of over US\$ 492.5 billion during the 11th Five Year Plan (2007-2012) was required. Therefore, there is substantial infrastructure needs in



infrastructure sector in India, which, in other words, also offers large investment opportunities. Public-Private-Partnership (PPP) is emerging as the preferred instrument, where the private sector gets its normal financial rates of return while the public sector partner provides concessional funding based on the long-term direct and indirect benefits to the economy. New instruments such as Viability Gap Funding (VGF) through a special purpose vehicle (SPV) set up recently by the Government of India to fund mega infrastructure projects may be relevant for other Asian countries as well. The cross-border infrastructure component is an important determinant of regional integration. If countries are not inter-linked each other through improved transportation network, regional integration process will not move ahead at a desired pace. In India, development of cross-border infrastructure, especially transportation linkages with neighbouring countries is underway and expected to contribute to the regional integration in Asia by reducing transportation costs and facilitating intra-regional trade and services. Nevertheless, there are many challenges. It is important for India to enhance its overland connectivity with Eassia in order to effectively facilitate the Asian regional integration. ["Rs. 3.2 trillion for infrastruture in 11th plan"](#) - India e-News article, dated 6 July 2006. Prime Minister Manomhan singh promised a big push to a infrastructure development and pledged a quick action in awarding airports, highway, port projects,as he sought boost investment and growth in turbulent times at a meeting with the ministers and top official from the coal, aviation, highways and shipping minister, he said infrastructure development is a key part of the strategy to revive the india growth story, which faced formidable challenges international situation and inflationary pressures. NHAJ Project Photographs

- National Highway Authority of India
- NH in Kerala
- Highway Photographs
- Map of NSEW progress, on the NHAJ website.

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