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• **Introduction:**

Roadways in India have come a long way. Starting from the ‘pug dandies’ of earlier times to the present-day ‘Rajpath’ of Delhi, the country has crossed many spheres of road travel. The *thread that binds the nation together* is truly a deserving metaphor for a road network that is one of the largest in the world. It’s grand system of National highways, State highways and the roads that run endlessly within cities. India has its well-connected transport network since the time people started keeping records. The road network is assuming a pivotal role in the movement of ‘goods’ and ‘passengers’. There has been a substantial shift in the mode of transportation from Railways towards the road sector. While the Railways handle only 40 per cent of the freight and 20 per cent of the passengers load, 60 per cent of the goods and 80 per cent of passenger's movement takes place through roads.¹ It is anticipated that the function of the road network will further increase in the future.

Roadways in India are like the thread binding the topographical variations in India. The road network of India has proven its efficiency by providing its infrastructural contribution to the growth
of the Indian economy. India is a land of diversities and the Indian roads act as a national integration force providing the necessary adhesive for bringing the people from all corners together as easily as possible. The road transport system of India is one of the most widespread networks. It spans the entire nation in the form of small pagdandis, ring roads, flyovers, highways, expressways and freeways. The roadways travel has developed into an infrastructure strength that has given the Indian economy the necessary backbone support.

The road network in India especially in the more remote areas helps in the development of these regions by connecting them to nearby cities making the modern day facilities more accessible to them. Roadways of India has helped enhance the productivity of certain areas and contributed to the evolving of a more competitive infrastructure and economy on a world level. Road transport in India or roadways transport contributes to 60 per cent freight or cargo transport and 80 per cent passenger transport of India. These include roadways buses, roadways express services, transport both public and commercial systems and others. Special buses of Indian roadways equipped with automated speed enforcement systems are gaining popularity and also the attention of various state
governments owing to the rising cases of road accidents due to uncontrolled speeds of the roadways transport.

- **Roadways:**

  The classification of Indian roads can first considered in 1943 at the conference of the Provisional Chief Engineers held at Nagpur. The Roads are classified into following types:

  - **National Highways:** These roads are supposed to link the capital cities of different states, industrial centers; they should also lead to the borders of the country, connect the ports and roads of other countries situated on the border. The responsibility for their construction, extension and maintenance rests with the Central Government.

  - **State Highways:** These roads connect all the important centers of trade, industries and commerce within a State and also of those of other states or national highways. The responsibility for their construction and maintenance lies with the State Government.

  - **District Roads:** District roads connect important markets and centers of industries and they also lead to the railway
stations. They also join State or National Highways. Their maintenance is responsibility of the district boards.

- **Village Roads**: These roads provide communication in the countryside linking one village with the other or a group of villages. These are usually un-metalled or *kutch* roads. Their construction and maintenance is the responsibility of the villages concerned.

- **Border Roads**: The Border Roads Organization was created in 1960 to accelerate the economic development of the North and North Eastern border areas by making them accessible through the development of arterial roads.

- **Roads Network in India**:

  India has more than 3.3 million km of road network, making it one of the largest in the world of which rural roads - 2.65 million km (80%). In 1950 Average Distance - 10 km from a village. In 2000 Average Distance - 2 km from a village but, wide variation across states/districts. However, the quality of the roads is inappropriate and cannot meet the needs of efficient and fast moving transportation. The total road length in India has increased
significantly from 0.399 million kms as in 1951 to 3.38 million kms as in 2004. The surfaced road lengths have also increased from 0.157 million kms to around 1.604 million kms in the same period. Surface length constitutes 47.3 per cent of total road length in 2004. National Highways that are the prime arterial route span about 57,737 km throughout the country and cater to about 45 per cent of the total road transport demand.4 The entire network is classified into five distinct categories from the viewpoint of management and administration are:

- National Highways (NH)
- State Highways (SH)
- District Roads (DR)
- Village Roads (VR)
- Border Roads (BR)

Among the different categories of roads, National Highways constitute around 2 per cent, State Highways 4 per cent while 94 per cent of the entire network comprises DR, VR and BR. Out of these, PWD Roads are 21 per cent, Urban Roads 7 per cent and the rest of the road length in India is accounted for by the rural
roads. Development and maintenance of National Highways is under the purview of the Centre, all other categories of roads come under the purview of the respective States and UT. National Highways constitute only 2 per cent of the entire road network; they carry about 40 per cent of the freight and passengers. The National Highways cover near about every state of India. They are the vital lifelines of the economy making possible trade and commerce. The National Highways besides connecting the major cites of important towns and commercial hubs. There are 259 National Highways on the basis of their route numbers. However, the construction and up keeping of roads is one of the country's most continuous and expensive tasks. Driven by the ambition to connect the various regions of the country with high quality motor able roads, the Ministry of Surface Transport so far has laid down a stretch of 65,559 km of national highways in the country distributed over various states.

The National Highways have a length of 65,569 km and run across the length and breadth of India facilitating medium and long distance inter- city passenger & freight traffic. Though they comprise about 2 per cent of the road network, they carry about 40 per cent of the road based traffic. State Highways and Major District Roads
constitute the secondary system of road infrastructure of India. The State Highways provide linkages with the National Highways, district headquarters, important towns, tourist centers and minor ports and carry the traffic along major centers within the State. Their total length is about 137,711 km. Major District Roads run within the district, connecting areas of production with markets, rural areas to the district headquarters and to State/National Highways. By acting as the link between the rural and urban areas, the State Highways and Major District Roads contribute significantly to the development of the rural economy and industrial growth of India. It is assessed that the secondary system carries about 40 per cent of the total road traffic and comprises about 20 per cent of the total road length.

The scheme announced by the Government in 1995 was a much-needed step and recognized the importance of a proper road network. In it, Rs.200 crore was allocated as Commencement Capital to the National Highway Authority of India to enable it to construct subways, bridges etc. Roads are definitely a cost efficient and popular mode of transport. It stretches across the length and breadth of a country and can be used by different sections of society. It helps in the movement of men and material from one mode to another. It
forges national unity and is instrumental in the nation’s socio economic development. It acts as a support system to other means of transport like railways, shipping, airways etc. Hence a well developed roadway is vital for promoting commercial interest of the country.

- **Transport in India:**

Transport in the India is an important part of the nation’s economy. With a land area of 32, 87,240 km², and an estimated population of 1,028,737,436, transport in India is both a necessity as well as a convenience. Since the economic liberalization of the 1990s, development of infrastructure within the country has progressed at a rapid pace, and today there is a wide variety of modes of transport by land, water and air. However, the relatively low GDP of India has meant that access to these modes of transport has not been uniform. Only around 10 per cent of households own a motorcycle. Cars are owned by very few around 0.7 per cent of households owned one in 2007. Public transport still remains the primary mode of transport for most of the population, and India’s public transport systems are among the most heavily utilized in the world.
Despite improvements, several aspects of transport are still riddled with problems due to out-dated infrastructure and a burgeoning population, and demand for transport infrastructure and services have been rising by around 10 per cent a year. Taxes and bribes are common between state borders, and Transparency International estimates that truckers pay annually $5 billion in bribes. Although India has only 1 per cent of the world's vehicles, it accounts for 8 per cent of the world's vehicle fatalities. India's rail network is the longest and fourth most heavily used system in the world. India's growing international trade is putting strain on the ports in India. The country's over-burdened airports have just begun to get a makeover, with modernization work and greater investment in the aviation sector. In general, public transport suffers from outdated technology, incompetent management, corruption, over staffing, and low worker productivity.

- **Regulation of Roads in India**

Administration of roads is a concurrent subject, with the jurisdiction of the Central Government extending to national highways and the jurisdiction of the State Government taking care of
state highways, DRs, and village roads. At the Central government level, Ministry of Shipping, Road Transport and Highways (MoSRTH) and Ministry of Rural Development (MoRD) are the related ministries. The National Highways Authority of India (NHAI) and the National Rural Development Agency (NRRDA) fall under the purview of these two ministries respectively. Planning Commission is involved to the extent of including the proposals of the ministries in the five year plans of government. With an extensive road network of 3.3 million kilometers, India is the second largest in the world. Indian roads carry about 61 per cent of the freight and 85 per cent of the passenger traffic. All the highways and expressways together constitute about 66,000 kilometers (only 2% of all roads), whereas they carry 40 per cent of the road traffic. To further the existing infrastructure, Indian Government annually spends about Rs.18000 crores.

- **Government Initiative:**

For a country of India's size, an efficient road network is necessary both for national integration as well as for overall socio-economic development. The National Highways, with a total length of
65,569 km, serves as the arterial network across the country. The four-laning the 5,900 km long Golden Quadrilateral connecting Delhi, Mumbai, Chennai and Kolkata is on the verge of completion. The ongoing four-laning of the 7,300 km North-South East-West (NSEW) corridor is scheduled to be completed by December 2009. The Committee on Infrastructure adopted an Action Plan for development of the National Highways network. An ambitious National Highway Development Programme (NHDP), involving a total investment of Rs.2.2 crore up to 2012, has been established. The main elements of the programme are as follows:¹²

- 100 per cent FDI under the automatic route in all road development projects.

- 100 per cent income tax exemption for a period of 10 years.

- Cabinet Committee on Economic Affairs has agreed upon the National Highways Fee Rules, 2008 to establish uniformity in fee rate for public funded and private investments projects.

- An increment in the overseas borrowing amount of infrastructure sectors, to US$ 500 million from US$ 100 million.
• Offering cheaper loans for highway projects that will speed up the projects worth more than US$ 12. 70 billion under separate phases of the NHDP.

• The Ministry of Shipping and Road Transport is considering a ‘green corridor’ highway project solely for farmers with ‘no toll’ charges that would link rural roads with National Highways. This is likely to be developed along with the six-lane project under the NHDP.

• **Private Sector Participation in Road Development:**

  A report titled 'Opportunities in Infrastructure and Resources in India' reveals that investments of the order of US$ 500 billion are expected to take place in the coming years. This development would call for increased resource requirement, consumer responsiveness, and concern for managerial efficiency. The private sector will be largely involved both at construction contracts and BOT levels. Some major private participation in this initiative includes.

  • **Reliance Energy:** Three contracts to four-lane 400 kilometers of highway and four-laning of five national highway
projects in Tamil Nadu that covers 400 kilometers and at an estimated cost of more than US$ 762.42 million.

- **L&T inter-state Road Corridor Limited:** Four-laning of the 76 kilometers highway between Palanpur and Swaroopgunj on the East-West Corridor.

- **Jaiprakash Associates Ltd.:** Implementing the 165 kilometers long Taj Expressway project, this connects Greater Noida to Agra at a cost of US$ 554.93 million.

- **Lanco Infratech:** Four-laning of two highways in Karnataka at an estimated cost of US$ 247.41 million.

- **DS Construction:** Development of the Gwalior-Jhansi section on NH-75 that includes four-laning at a cost of US$ 159.9 million.

- **Maytas Infra Private Limited and Nagarjuna Construction Company Ltd (Joint Venture):** Four-lane the highway from Tindivanam and Pondicherry, at an estimated cost of US$ 70.09 million.
• **Era Constructions India Limited and Karam Chand Thapar & Bros Limited:** Construction of a section of the Delhi-Haryana Border to Rohtak and four-laning of Gwalior bypass at a cost of US$ 73.8 million.

• **Madhucon Projects:** Executing ongoing BOT projects with four toll-based road projects.

Since January 2006, the Public-Private Partnership (PPPAC) Appraisal Committee has granted approval to a total of 87 projects including 77 highway projects. The PPPAC approves the infrastructure projects worth US$ 5.98 billion on November 2008. This includes 21 highway projects to be taken up under NHDP.

• **International Participation:**

Many international players have joined the league in the growth and reform of the highway infrastructure in India. Indian road construction projects have become a lucrative and emerging investment opportunity for numerous international giants. The various international companies to join the league are Berhad (Malaysia), Deutsche Bank, Emirates Trading Agency (Dubai), the Isolux Corsan Group (Spain), Italthai (Thailand), Baelim (Korea),
Dyckerhoff (*Russia*), Widmann AG (*Germany*), IJM Corporation, SDN and Road Builders (Malaysia), Kajima and Taisei (*Japan*). These companies acquire equity stakes between 10 to 51 per cent in various highway projects floated by the National Highway Authority of India (NHAI) and other State Governments.

- **The Golden Quadrilateral:**

  Another ambitious plan on the anvil is the 5000 km Golden Quadrilateral project that aims to connect the four metros (*Delhi, Calcutta, Mumbai and Chennai*) via National Highways. 77 routes have been identified purpose, which will also connect major cities and ports. The existing National Highways are to be upgraded from 2-lanes to 4-lanes and even at certain places to 6-lanes, depending upon the density of the traffic. All this, however, requires a massive investment to the tune of Rs. 1.25 crores. The Government is in a position to pay Rs. 3,000 crores and the cess on petrol and diesel will be able to bring in Rs. 4,000 crores. To make this dream a reality, private companies will have to be brought in. These will then charge road tolls that are not feasible in the Indian context. The best remedy therefore is to increase the number of lanes of those roads that already exist, and go for a step by step procedure. For the moment
therefore, the only possible option before India is to four-lane the two-lane highways and construct bypasses.

**MapNo. 1.01 :The Golden Quadrilateral and NSEW project**

(Source: [www.roadmapsofindia.com](http://www.roadmapsofindia.com))
The list of National Highways in India gives a region wide listing of the Indian Highways, a class of roads maintained by the National Highways Authority of India. These are the main long-distance roadways in India and one of the highly used means of transport in India. They play a significant role in the Indian economy. The National Highways, the majority 2 lane, constitute a total of about 65,000 km, out of which 5,840 km is to be converted into Golden Quadrilateral, a prestigious project commenced by the Government of which 4,885 km 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. The National Highways (Amendment) Bill, 1995, provides for private investment in the building and maintenance of these arteries of India.¹⁴

- **Importance of Roads in Economy:**

  After Sixty years of Independence, India has made tremendous progress with respect to it transport system. The accelerated growth rate in the economy has helped the nation to bridge distance. The architect of the change is the development of thousands of km of world class roads, dedicated freight corridors and improvement in rural roads. Immediately after Independence India did not have the
luxury of well networked roadways. The British had left behind only 4 lakh km. of roads that linked major cities and the rural heartland. So the government then formulated a two pronged strategy-improve connectivity and provide infrastructure that stimulated economic growth. Unfortunately resources were meager and the government was finding it difficult to sustain progress. As a result the quality of roads was poor and would often deteriorate after the monsoons. The establishment of the National Highways Authority of India (NHAI) in 1988 dramatically changed the future of roadways in India. The NHAI brought about standardization in terms of quality and management became more efficient.\(^5\)

An efficient transport system is a pre-requisite for sustained economic development. It is not only the key infrastructural input for the growth process but also plays a significant role in promoting national integration, which is particularly important in a large country like India. The transport system also plays an important role of promoting the development of the backward regions and integrating them with the mainstream economy by opening them to trade and investment. In a liberalized set-up, an efficient transport
network becomes all the more important in order to increase productivity and enhancing the competitive efficiency of the economy in the world market. Of the various modes of transport that connect the cities and villages of the country, road transport constitutes the crucial link. Road infrastructure facilitates movement of ‘men’ and ‘material’, helps trade and commerce, links industry and agriculture to markets and opens up backward regions of India. In addition, the road system also provides last-mile connection for other modes of transport such as railways, airports, ports and inland waterway transport and complements the efforts of these modes in meeting the needs of transportation.

The road transport sector in India has expanded manifold in sixty years after independence, both in terms of spread and capacity. The growth in the importance of road transport within the transport sector is borne out by its growing share in GDP. The share of road transport in GDP is presently 3.69 per cent which accounts for a major share of all transport modes which contribute 5.5 per cent to GDP and handles more than 60 percent of the freight and more than 80 percent of the passenger traffic in India.¹⁶
Table No. 1.01:

Total Length of National Highways.

<table>
<thead>
<tr>
<th>Period</th>
<th>Total Length - National Highways* (km)</th>
<th>Widening to Two Lanes</th>
<th>Widening to Four Lanes</th>
<th>Strengthening of Pavement</th>
<th>Major Bridges</th>
</tr>
</thead>
<tbody>
<tr>
<td>1947-69</td>
<td>24,000</td>
<td>14,000 **</td>
<td>Nil</td>
<td>Nil</td>
<td>169</td>
</tr>
<tr>
<td>1969-90</td>
<td>33,612</td>
<td>16,000</td>
<td>267</td>
<td>9,000</td>
<td>302</td>
</tr>
<tr>
<td>1990-97</td>
<td>34,298</td>
<td>3,138</td>
<td>483</td>
<td>5371</td>
<td>51</td>
</tr>
<tr>
<td>1997-02</td>
<td>58,112</td>
<td>1,955</td>
<td>797</td>
<td>3511</td>
<td>91</td>
</tr>
<tr>
<td>2002-03</td>
<td>58,112</td>
<td>710</td>
<td>418</td>
<td>1109</td>
<td>14</td>
</tr>
<tr>
<td>2003-04</td>
<td>65,569</td>
<td>671</td>
<td>799</td>
<td>1489</td>
<td>17</td>
</tr>
<tr>
<td>2004-05</td>
<td>65,569</td>
<td>221</td>
<td>841</td>
<td>1087</td>
<td>1</td>
</tr>
</tbody>
</table>

(www.indiacore.col)

The road network though extensive remains inadequate in terms of spread, suffers from a number of deficiencies and is unable to handle high traffic density at many places and has poor riding
quality in some segments. The main reason for these shortcomings is the inadequacy of funds. Efforts are now underway to address these issues and improvement in the road network has been accorded a very high priority. This expansion of capacity will have to be accompanied by technological upgradation in many critical areas. The need for new technology acquires greater urgency because the sector had been suffering from slow technological development for a long time.17

- The Indian road network is seemingly very large. However, only 47 per cent of the roads are paved.
- The high density corridors of road linking metro cities and ports are crowded and are carrying traffic more than capacity.
- About 14,000 kms of National Highway require four laning, while 10,000 kms require widening from single lane to two-lane to facilitate normal flow of existing road traffic.
- The average productivity of a truck is 200 kms a day as against 350-400 kms that would be possible through reduction of congestion.
The demand for transport is affected by structural changes taking place in the economy. This growth in transport demand has to be met by expanding domestic supply as transport infrastructure is non-tradable. Investment in transport must reflect the need to make up for existing capacity shortages and also to allow for growth in demand.

The State Highways provide linkages with the National Highways, district headquarters, important towns, tourist centers and minor ports and carry the traffic along major centers within the State. Their total length is about 137,711 km. Major District Roads run within the district, connecting areas of production with markets, rural areas to the district headquarters and to State Highways/ National Highways. By acting as the link between the rural and urban areas, the State Highways and Major District Roads contribute significantly to the development of the rural economy and industrial growth of India. It is assessed that the secondary system carries about 40 per cent of the total road traffic and comprises about 20 per cent of the total road length. The last link in the chain is rural roads. The access to villages within a district or between different districts is provided by Other District Roads and Village Roads. These roads also meet the
social needs of the villagers and are also a means for transportation of agriculture produce from the villages to nearby markets. Rural connectivity is a key component of rural development and contributes significantly to generating higher agricultural incomes and productive employment opportunities besides promoting access to economic and social services. Studies show that rural roads have a significant impact on poverty reduction as well.

- **Infrastructure development:**

  After having neglected it since Independence, the government has at last woken up to the imperative need for improving infrastructure, such as power, transport, communication, etc. But there is no evidence of urgency in adopting liberal policies, which those would bring in the private sector to complement and supplement state effort. Discussions are centered around industry, ports, highways, etc. RT and rural infrastructure have not been given due importance. It may be recalled that the British put up 50,000 km of rail track, covering many towns, where there was no economic activity. The same concept should apply for RT. India should not wait for the demand to come first for justifying roads and road transport.
It ought to be the other way round. Providing roads and road transport would spur economic activity. Roads and transport will then become economically viable for investment and operation. Thus RT is important from the overall development point of view. Such a macro vision has not been planned so far.

**Table No. 1.02: Indian Road Networks:**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Types of Road</th>
<th>Length (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>National Highways</td>
<td>58,112</td>
</tr>
<tr>
<td>2</td>
<td>State Highways</td>
<td>1,37,119</td>
</tr>
<tr>
<td>3</td>
<td>Major District Roads</td>
<td>4,70,000</td>
</tr>
<tr>
<td>4</td>
<td>Rural Roads</td>
<td>26,50,000</td>
</tr>
</tbody>
</table>

(Source: ministry of shipping, road transport & highways Government of India)

India faces the enormous task of providing all-weather road access to all of its nearly 6 lakh villages. The Central Road Research Institute (CRRI) has been engaged in research work on a variety of aspects, some of which are discrete items.\(^{18}\) Reported in this study are findings in regard to the study of the socio-economic impact of road development in rural regions, network planning, pavement
design, and efforts to evolve intermediate technologies. The study of socio-economic aspects indicates that some parameters are more directly affected by road development, such as literacy, proportion of non-agricultural workers, unit agricultural yield, and unit fertilizer consumption. Other socioeconomic parameters on which road development has a more indirect effect are facilities for health, education, banking, and postal services.

- **Plan Initiative in Road Development:**

  In the *eight plans* the government gave the sector lots of incentives like customs free import of capital goods and freebies like tax holidays. The government came up with a proposal for an ambitious project called ‘Golden Quadrilateral’ to connect the country through two different corridors the North-South and East-West corridor extending to a length of 25,000 km. It was funded by the World Bank and Asian Development Bank. The government came with a special cess on petrol and diesel to finance the project.\(^{19}\) The landscape for roadways changed dramatically after this.

  The *Ninth Plan* envisaged a comprehensive package to address various transport sector issues. It emphasized the need for improving
the capacity and quality of the transportation system through technological up-gradation. It also laid stress on improvement of the self-financing capacity of this sector and on the need for ensuring an improved transport system to provide speedy, efficient, safe and economical carriage of goods and people. The Planning Commission has felt that achievement of objectives and targets for road sector have been encouraging during the plan period.

The *Tenth Plan* Document reiterates the need for expeditious development of the Primary system (National Highways and Expressways), Secondary system (State Highways and Major District Roads) and Rural Roads. The expeditious completion of the Golden Quadrilateral as also the North-South and East-West corridors is therefore essential. The encouragement of private sector participation in the Highway Sector, levy of tolls on NH network, Phased removal of deficiencies in the existing NH network, provision of wayside amenities along highways, popularization of use of containers and multi-axle vehicles in the carriage of goods for reducing transportation cost and road safety are some of the other major thrust areas. With the year 2004 being declared as the year of Road Safety, there is a concomitant requirement to tackle road safety related issues
on priority. The details of targets and achievements during the Ninth and the Tenth Five Year Plan are:

**Table No. 1.03:**

**Target and Achievements in Ninth and Tenth Plan.**

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Widening to 2- Lanes (km)</td>
<td>Targets</td>
<td>1791</td>
<td>829</td>
<td>701</td>
<td>832</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Achievements</td>
<td>1955</td>
<td>710</td>
<td>671</td>
<td>221*</td>
</tr>
<tr>
<td>2</td>
<td>Widening to 4- Lanes (km)</td>
<td>Targets</td>
<td>944</td>
<td>582</td>
<td>2245</td>
<td>2945</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Achievements</td>
<td>797</td>
<td>418</td>
<td>799</td>
<td>841*</td>
</tr>
<tr>
<td>3</td>
<td>Strengthening Weak 2 Lanes (km)</td>
<td>Targets</td>
<td>3042</td>
<td>1260</td>
<td>3016</td>
<td>3535</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Achievements</td>
<td>3511</td>
<td>1109</td>
<td>1489</td>
<td>1087*</td>
</tr>
<tr>
<td>4</td>
<td>By- Passes (Nos.)</td>
<td>Targets</td>
<td>59</td>
<td>21</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Achievements</td>
<td>30</td>
<td>12</td>
<td>6</td>
<td>3*</td>
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<tr>
<td></td>
<td>Construction of Bridges/ROBs/RUBs including rehabilitation of Bridges (Nos.)</td>
<td>Targets</td>
<td></td>
<td></td>
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<td>---</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Achievements</td>
<td>442</td>
<td>143</td>
<td>123</td>
<td>30*</td>
<td></td>
</tr>
</tbody>
</table>

(Source: http://www.indiacore.col)

The outlay for Central Sector roads for the Tenth Plan is Rs 59,490 crore. This includes Rs 34,790 crore of budgetary support and Rs. 24,700 crore of internal and extra budgetary resources. For the 11th Five Year Plan, the target for village roads is 2,30,447 km, says the action plan, expected to be unveiled soon by Rural Development Minister. India currently has a road network of 3,16,452 km. The ministry's action plan also aims to enlarge the scope of the National Rural Employment Guarantee Scheme that promises 100 days of employment to one member of each household. The idea is to make it an overall driver of the rural economy. The aim is to consolidate in existing flagship programmes - like those for employment, education, health and infrastructure.
• **Budgetary Support for Road Development:**

Transport planning has to give priority to creating a policy framework, which ensures an adequate flow of resources to this sector. Within the budgetary constraints, transport infrastructure development needs to be treated as a high priority area for continued resource allocation. Despite these efforts, the total resource requirement greatly exceeds the capacity of the budget to meet the cost of maintenance and expansion. Broad estimates of investment requirement till the year 2010 indicate that it will be necessary to increase annual investment levels to three to four times the present level in real terms. The financing of investment on this scale is a massive task. Increasing participation of the private sector would also be necessary to augment the resource base and increase competitive efficiency. In order to augment availability of resources for the sector, the budgetary resources could be used to leverage private investment. Internal generation of resources through rational pricing and user charges is, therefore, essential for the successful development of transport infrastructure.
• **Maintenance of Road:**

The existing road network is showing signs of serious distress because of neglect of maintenance, which is highly un-economic from the national point of view. Out of the total length of 65,569 km of NHs, about 25,000 km is under severe strain due to high volume of traffic. One of the main factors responsible for this is the upgradation of large segments of State Highways to National Highways during the Ninth Plan. Total estimated cost of removing deficiencies on National Highways is about Rs 1,65,000 crore. The present allocation for maintenance of National Highways is only 40 per cent of the requirements based on the norms for maintenance. The situation in respect of State roads is still worse. Due to resource constraints private sector also needs to be involved in maintenance of National Highways.

• **Environment & Road Infrastructure:**

In the Road Transport Sector, energy planning has a special significance, because transport is the second largest consumer of energy. The growth of transport not only leads to pressure on limited availability of non-renewable energy but also gives rise to broader
environmental issues. As the demand for transport services rises, it leads to increased use of scarce land and contributes to the atmospheric pollution in a big way. Sound pollution, road congestion, etc. are other environmental hazards due to transport. It is, therefore, necessary that environmental concerns should be built into road infrastructure project planning right from the beginning at the stage of site selection, alignment finalization, etc. The Government of India is alive to these concerns and has mandated that all road infrastructure projects require environmental clearance before they are taken up.

- **Development of Economically Backward Areas:**

  The need for adequate and efficient transport system for promoting economic development is well known. While considering the creation of new transport facility in economically backward regions however, it must be borne in mind that transport is only one of the essential elements for development of the region and it is not necessary that highly capital-intensive transport projects will by themselves bring about economic development. There has also been persistent demand for subsidizing transport operations in backward
and remote areas on the plea that the traffic and the low level of income would not generate the kind of demand which could bear the cost of providing transport services. While the responsibility of ensuring efficient operation of transport services in these regions is that of the State, it does not necessarily mean that the state should be direct provider of these services. Whether it relates to providing transport services in the backward area or in isolated and hilly region, the State could involve private operators and award routes on the basis of least subsidy, so that benefits are targeted and costs become apparent.

- **Employment Generation Through Road Development:**

  Road construction activity is inherently employment generating. State Governments may explore the possibility of forming Cooperative Societies of un-employed youths (skilled/ unskilled), who could be given some basic training and thereafter the Societies could take up assignments for maintenance, tree plantation, protection of assets activities through competitive bidding process. Maharashtra States are reported to have such Societies. The only solution to remove poverty is to create employment, which can be increased
through roads and road transport. Unfortunately, the government has not approached the problem from this point of view. In the above concept, RTS should become an integral part of regional planning, which would connect towns, large villages with a population of 5,000 and all the surrounding villages with a population ranging from 500 to 5,000. RTS should be considered as the nerve system for such connectivity. Such regional planning ought to have been the main focus of development planning. But the government undertook this work with official machinery, which is bureaucratic and non-professional. Most districts get about Rs 60 crores per year for spending in 300 development schemes. But RTS has not been given priority under these schemes.

- **New Technology in Road Development:**

  There is an urgent need for the introduction of the new technology in the designs, engineering and construction methods as also carrying out surveys through remote sensing techniques particularly in the up-gradation of the roads which are covered by the HDC. Use of machines to improve both the quality and speed of construction needs to be pursued more vigorously. The possibility of
creating equipment leasing companies need to be encouraged. The
concept of awarding road projects with huge costs as turnkey
Engineering Procurement Construction contracts helps to reduce
construction time and improves quality. These steps would help in
reducing the abnormally high time taken for construction of roads by
at least 50 per cent. Several new materials of road construction are
also emerging such as polymer modified bitumen, geo-synthetics etc.
that would need to be encouraged depending upon the cost
effectiveness.

- **Problems in Road Infrastructure Development:**

  *Land Acquisition:* Speedy land acquisition is crucial for timely
  completion of road projects. This is more important for
  implementation of major projects of NHDP which have a time bound
  programme for completion. In Maharashtra it took a long time for
  acquiring the land. The delays are mainly due to pre-occupation of
  competent authority appointed by State Governments with other
  works, frequent transfers of competent authorities and opposition
  from the land users.
Shifting of Utilities: Development of roads particularly 4-laning under NHDP sometimes require shifting of utilities like electric lines, telephone lines and water pipes etc. Despite the entire allocation cost being met by NHAI and advance payments being made, there have been instances of inordinate delays.

Cutting of Trees: Improvement of NHs, particularly widening sometimes require cutting of trees in many reaches. Despite the payment of prescribed compensation for plantation of trees, approval for tree cutting has taken a lot of time in some States. Sometimes additional conditions are put which are difficult to implement.

Law and Order: There have been problem of law and order in some States which has affected the progress of NHDP. The problem of insurgency in some of the States of the North-East Region is also acute, which has adversely affected work on roads. There have also been instances of assault on field level officers. State Government and local administration need to take effective steps to curb such incidents and create an atmosphere of security.

Private Sector Participation & Toll Roads: Investment in creation of transport infrastructure has largely been made by the
State in India. In assessing the role of the private sector, a distinction has to be made between infrastructure and services. The basic road infrastructure, with a few exceptions is under the purview of the public sector. To bridge the resource gap and to instill competitive efficiency, efforts are being made to associate the private sector with road projects. However, the initial response has not been very encouraging and more innovative methods are needed to ensure greater participation of the private sector. Levy of User Fees on roads is another alternative for generating additional resources for their upgrading. The major attraction of toll financing is speedier construction of roads which may otherwise be delayed due to budgetary constraints. Further, being implemented on pay- as- you- use principle, they are usually constructed and operated on commercial principles implying efficiency in execution and better level of service to users.

The concept of direct tolling, viewed mainly as a user charge has already been successfully implemented mainly on bridges and bypass roads and on four lane National Highways. The developer assumes the majority of the risk associated with design, construction, maintenance, operation and financing of the road. To encourage
private sector participation, the Govt. has introduced annuity approach in which a fixed annual payment is made to the entrepreneur. Due to limitation of the budgetary resources, the role and participation of private sector are to be encouraged by and large for the development of National Highways.

- **Motor Vehicle Population:**

  There has been a staggering 100 fold increase in the population of motorized vehicles; however, the expansion in the road network has not been commensurate with this increase. While the motor vehicle population has grown from 0.3 million in 1951 to over 30 million in 2004, the road network has expanded from 0.4 million km to 3.32 million km, only 8 fold increase in terms of length during the same period. However, upgrading of roads by way of widening of carriage- ways, improved surface quality, strengthening/reconstruction of old/ weak bridges and culverts, etc. has been carried out.
Table No. 1.04:

Number of Goods and Passenger Vehicle in India.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Goods Vehicle (in thousands)</th>
<th>Number of Passenger Buses (in thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950-1951</td>
<td>82</td>
<td>34</td>
</tr>
<tr>
<td>1997-1998</td>
<td>2536</td>
<td>538</td>
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<td>540</td>
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<td>3045</td>
<td>669</td>
</tr>
<tr>
<td>2002-2003</td>
<td>3485</td>
<td>728</td>
</tr>
</tbody>
</table>

(Source: [http://www.indiacore.co](http://www.indiacore.co))

- Road Safety:

Safety on roads has become a major area of concern. The number of persons killed in road accidents has increased from 60,113 in the year 1992 to 84,674 in the year 2002. The sheer magnitude and severity of road accidents require immediate attention. The number
of persons killed per ten thousand vehicles is 14.39 in India, compared to 17.10 in China and between 1.0 to 2.50 in many high income countries. Similarly, the fatality per 10,000 persons in India in the year 2002 was 0.82 as against 0.83 in China, 1.48 in USA. Planning Commission had assessed the social cost of road accidents in India in the year 1999-2000 at Rs 55,000 crores, which constituted about 3 per cent of the Gross Domestic Product of India for the year. In so far as road accidents are concerned, there is a need to prepare a realistic National Road Safety Policy providing for concerted action by all concerned to bring down the number of accidents and fatalities. The existing road safety policy prepared in the year 1992 needs to be updated in the light of changing road and road transport scenario. Road traffic injury prevention needs to be incorporated into broad range of activities such as, development and management of road infrastructure, provision of safety in vehicles, law and personnel, mobility planning, provision of health and hospital services, urban and environmental planning etc.
• **Environment and Road Transport:**

For improvement in ambient air quality, there are three aspects namely fuel specifications, engine technology and better maintenance & fitment of in-use motor vehicles. The share of transport sector in emissions of Nitrogen Oxide, Sulphur Dioxide, Suspended Particulate Matter and Carbon Monoxide has been a matter of concern. There is serious respiratory health problems associated with air pollution. While quality of fuel and engine technology are interlinked, the emissions from on-road vehicles can be tackled in a stand alone mode. As regards the fitness of on-road vehicles, whereas same is done annually in respect of transport vehicles, however, for non-transport vehicles, this is done only after the first 15 years. There is a need for further tightening of test procedures in this regard and gradually bringing the non-transport vehicles also under the ambit of fitness regime. The norms for new vehicles are being constantly upgraded and Bharat Stage II norms which are equivalent to Euro- II norms have already been extended to all mega cities in India and these were come into force over the rest of India from April 1, 2005.
• **Investment Policy:**

The Government of India has laid great emphasis on the development of adequate road network in India. A vision of expressways connecting far corners of India has been projected. There is a need to up-grade the road system in India by widening and strengthening the existing highways, reconstruction and widening of bridges and provisions of user friendly improvements. It is obvious that this vital infrastructure requirement would have to be developed with the private sector's participation. Here is an overview of the government's investment policy towards roadways. The government has announced a series of far-reaching measures to promote investment in roads. These measures include industry status to road sector, exemption from import duty on identified high quality construction plant and equipment, duty free import of bitumen permitted under OGL, automatic approval for foreign equity up to 74 per cent and foreign commercial borrowing to the extent of 30 per cent of the project cost has been permitted. There is no restriction on the maximum equity holding by a foreign company in a joint venture to be set up in India. The pre-qualification criteria, however, requires experience of the joint venture partners in similar projects. India has
finalized Investment Promotion and Protection Agreements with over 30 countries.\textsuperscript{20} Therefore, setting up of a joint venture or a 100 per cent foreign owned subsidiary qualifies as an investment.

There is an exemption for infrastructure funds from income tax on the incomes from Income Tax dividend, interest on long term capital gains of such funds or companies from investments in the form of shares or long term finance in any enterprises setup to develop, maintain and operate an infrastructure facility. Subscription to equity shares or debentures issued by a public company formed and registered in India and the issue is wholly and exclusively for the purpose of developing, maintaining and operating an infrastructure facility, will be eligible for deductions under Section 88 of the income Tax Act, 1961, which permits deduction equal to 20 per cent of the amount subscribed, from the amount of tax payable by the subscriber.

- **The Action Plan for Road Development:**

India's villages will get some 46,000 km of roads at a cost of Rs.15,000 crore in the fiscal 2009-10 even as the rural job guarantee scheme will be recast to drive the overall economy rather than just assure 100 days of employment, says a new policy document of the
government. For the 11th Five Year Plan (2007-12), the target for village roads is 2,30,447 km, says the action plan. India currently has a road network of 3,316,452 km.\textsuperscript{21} The action plan also aims to enlarge the scope of the National Rural Employment Guarantee Scheme that promises 100 days of employment to one member of each household. The idea is to make it an overall driver of the rural economy. The aim is to consolidate our existing flagship programmes - like those for employment, education, health and infrastructure.

Earlier, most projects engaged workers for things that did not help create permanent assets. They were involved in sundry works like road repairs, building temporary check dams and digging pits. Now the scope of work will be expanded. Focus will be on expanding social and economic infrastructure rather than mere employment for unskilled manual workers. Adequate funding would also be provided as the government’s focus on rural development has already seen the allocation for the ministry during the current five-year plan stepped up by a whopping 116 percent. The action plan says the works allotted under the job guarantee programme is limited to unskilled manual work and draws from the need for reform. Accordingly, the action
plan envisages convergence of other rural development programmes undertaken by other ministries like those for water resources, forests and environment and agriculture ministries. An equal emphasis has also been laid on ensuring that the programmes are free from corruption and implemented properly.\textsuperscript{22}

- **Rural Development:**

Improving quality of rural life is also an important dimension of rural development. In this dimension, activities may include construction of rural durable assets and infrastructure like roads, bridges, power supply, educational facility, improving health and sanitation, adoption of Information Communication Technology in rural areas, new product development for rural market vez.\textsuperscript{23} Fast moving consumer goods durable agricultural goods and services like insurance, durable agricultural goods and services like insurance, banking, telephone etc. Rural development implies both the economic betterment of people as well as greater social transformation. In order to provide the rural people with better prospects for economic development, increased participation of people in the rural development programmes, decentralization of
planning, better enforcement of land reforms and greater access to credit are envisaged. Initially, main thrust for development was laid on agriculture industry, communication, education, health and allied sectors but later on it was realized that accelerated development can be provided only if governmental efforts are adequately supplemented by direct and indirect involvement of people at the grass root level. Accordingly, on 31st March 1952, an organization known as Community Projects Administration was set up under the Planning Commission to administer the programmes relating to community development. The community development programme inaugurated on October 2, 1952, was an important landmark in the history of the rural development. This programme underwent many changes and was handled by different Ministries.

In order to ensure that the fruits of economic reform are shared by all sections of societies five elements of social and economic infrastructure, critical to the quality of life in rural areas, were identified. These are health education drinking water, housing and roads. To impart greater momentum to the efforts in these sectors the Government had launched the Pradhan Mantri Gramdoya Yojana (PMGY) and the ministry of rural development was entrusted with
the responsibility of implementing drinking water, housing and rural roads component of PMGSY

During the Ninth Plan period, several anti-poverty Programmes have been restructured to enhance the efficiency of the Programmes for providing increased benefits to the rural poor. Self Employment Programmes have been revamped by merging the Integrated Rural Development Programme (IRDP), the Development of Women and Children in Rural Areas (DWCRA), the Supply of Improved Tool-Kits to Rural Artisans (SITRA), the Training of Rural Youth for Self Employment (TRYSEM), the Ganga Kalyan Yojana (GKY) and the Million Wells Scheme (MWS) into a holistic self-employment scheme called Swarnjayanti Gram Swarozgar Yojana (SGSY).

Keeping in view the needs and aspirations of the local people, Panchayati Raj Institutions have been involved in the programme implementation and these institutions constitute the core of decentralized development of planning and its implementations. The Ministry is also vigorously pursuing with the State Governments for expeditious devolution of requisite administrative and financial powers to PRI’s as envisaged under 73rd amendment act of the

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Constitution of India. On 25th December 2002, under Drinking Water Sector, a new initiative ‘Swajal Dhara’ empowering the Panchayats to formulate, implement, operate and maintain Drinking Water Projects has been launched. In order to further involve PRIs in the development process, a new initiative ‘Hariyali’ has been launched by Hon’ble Prime Minister on 27th January, 2003. Hariyali has been launched to strengthen and involve Panchayati Raj Institutions in the implementation of Watershed Development Programmes namely IWDP, DPAP and DDP.24

The empowerment of rural women is crucial for the development of rural India. Bringing women into the mainstream of development is a major concern for the Government of India. Therefore, the programmes for poverty alleviation have a women’s component to ensure flow of adequate funds to this section. The Constitutional (73rd) Amendment, Act 1992 provides for reservation of selective posts for women.25 The Constitution has placed enormous responsibility on the Panchayats to formulate and execute various programmes of economic development and social justice, and a number of Centrally Sponsored Schemes are being implemented through Panchayats. Thus, women Members and Chairpersons of
Panchayats, who are basically new entrants in Panchayats, have to acquire the required skill and be given appropriate orientation to assume their rightful roles as leaders and decision makers. To impart training for elected representatives of PRIs is primarily the responsibility of the State Governments/Union Territory Administrations. Ministry of Rural Development also extends some financial assistance to the States with a view to improve the quality of training programmes and to catalyze capacity building initiatives for the PRI elected members and functionaries. It is well known that development is dependent on appropriate and adequate infrastructure, such as power, transport, communication, water and irrigation. Also, essential services, such as educational institutions, health care facilities, rural banks and co-operatives, markets, development boards, etc. are essential for balanced development. Rural development did not make much progress due to lack of such inputs.

- **Rural Infrastructure:**

   Infrastructure refers to the basic structures and facilities necessary for a country or an organization to function efficiently,
buildings, transport, water and energy resources, and administrative system. Development of infrastructure is essential for the development of a country or a region. It is quite impossible for a country or a region to develop the economy without developing infrastructure. Development of infrastructure is essential for rapid development of all the sectors of an economy. The significance of infrastructure in the development of a country is similar to the significance of backbone in human body. Rural infrastructure comprises rural roads, rural housing and rural electrification. Rural road connectivity is an extremely important aspect of rural development. A centrally sponsored scheme has been launched called the Pradhan Mantri Gram Sadak Yojana (PMGSY) which seeks to provide connectivity to all unconnected habitations in rural areas with a population of more than 500 persons through good all-weather roads by the end of the Tenth Plan period. According to the 1991 Census around 3.1 million households are without shelter and another 10.31 million households reside in un-serviceable kutchta houses. Considering the magnitude of the problem, a National Housing Habitat Policy was announced in 1998 which aims at providing ‘Housing for all’ and facilitates construction of 20lakh
additional housing units (13lakh in rural areas and 7lakh in urban areas) annually with an emphasis on extending benefits to the poor and deprived. Government is committed to the goal of ensuring shelter for all by the end of Tenth Plan period. For achieving these objectives a comprehensive action plan for rural housing has been prepared.

- **Ministry of Rural Development:**

  In October 1974, the Department of Rural Development came into existence as a part of Ministry of Food and Agriculture. On 18th August 1979, the Department of Rural Development was elevated to the status of a new Ministry of Rural Reconstruction. That Ministry was renamed as Ministry of Rural Development on 23rd January 1982. In January 1985, the Ministry of Rural Development was again converted into a Department under the Ministry of Agriculture and Rural Development which was later rechristened as Ministry of Agriculture in September 1985. On July 5, 1991 the Department was upgraded as Ministry of Rural Development. Another Department viz. Department of Wasteland Development was created under this Ministry on 2nd July 1992. In March 1995, the
Ministry was renamed as the Ministry of Rural Areas and Employment with three departments namely Department of Rural Employment and Poverty Alleviation, Rural Development and Wasteland Development.

Again, in 1999 Ministry of Rural Areas and Employment was renamed as Ministry of Rural Development. This Ministry has been acting as a catalyst effecting the change in rural areas through the implementation of wide spectrum of programmes which are aimed at poverty alleviation, employment generation, infrastructure development and social security. Over the years, with the experience gained, in the implementation of the programmes and in response to the felt needs of the poor, several programmes have been modified and new programmes have been introduced. This Ministry’s main objective is to alleviate rural poverty and ensure improved quality of life for the rural population especially those below the poverty line. These objectives are achieved through formulation, development and implementation of programmes relating to various spheres of rural life and activities, from income generation to environmental replenishment.
The importance of rural transport to economic and social development is obvious. Three fourths of India’s population of 960 million, i.e. 720 million, lives in six lakh villages, which vary in population between 800 and 5000. Though migration to towns is reducing the percentage of rural population, in absolute numbers the rural population is increasing. For instance, during the decade 1981–91, rural population has increased by 100 million. Bulk of the 300 million people below the poverty line and the 30 million handicapped are in rural areas. 50 per cent of the rural population is illiterate. At least 50 per cent does not have access to clean drinking water, schools and primary health care facilities. Adequate rural road transport will improve these conditions. Such a dismal state of affairs continues even after massive governmental investment for rural development, poverty alleviation and employment generation. Only 15 per cent of Rs 20,000 crores of annual subsidies and grants, under various schemes, has reached the beneficiaries. Increasing allocation for rural development in successive Five Year Plans has not improved the situation. Only an efficient Rural Transport (RT) system can allow people to take advantage of massive investment envisaged for rural development.
• Rural transport (RT) – Low priority:

If a proper RT system had been provided, it would have functioned as a catalyst, facilitator and efficient instrument for accelerating rural development and bringing about social equity. But RT is now far behind requirements, and therefore, is unable to play this vital role. According to the National Transport Policy Committee (NTPC), Fair Weather Roads (FWR) connected only 55 per cent of villages. In order to cover all the villages by All Weather Roads (AWR), investment required may be of the order of Rs 30,000 crores, which is beyond the scope of the existing priorities of the government for investment. Transport itself has been given very low priority by the government; and RT stills less. AWRs will bring in connectivity and mobility. India’s large area size and population, the scattered nature and small size of village settlements, poverty and illiteracy of rural people and low level of commercial activity do not provide sufficient incentive and economic justification for large investments in RT.
• **Rural Transport System And Planning:**

RT is concerned with transporting goods and people within the village, between villages and urban areas, linking village roads with district roads, state highways and national highways. Rural Transport System (RTS) consists of roads and vehicles of various types and capacities, ownership and investment patterns, maintenance of roads and vehicles, taxation and government regulations, etc. The efficiency of RTS will depend upon the perspectives and priorities given by the government. RTS has to be integrated into regional planning and state plans. Policies regarding state vs. private in laying roads and operation of vehicles have to be changed in order to make progress. The government has slowly, but very reluctantly, opened up road building for private participation, based on the concept of build, operate and transfer. But the progress is very slow. If the responsibility of laying the national and state highways as well as their maintenance is given to the private sector, government can divert available funds for district and village roads, in which the private sector may not be interested, as it would not be profitable for them. Also, it is not easy for the private sector to earn revenue through tolls in such roads.
- **Animal-drawn carts:**

  Though it would be desirable to connect all villages by AWRs, yet, under the present conditions, where 50 per cent of villages are not connected by motor roads, use of bullock carts is inevitable for many years. Out of 15 million carts, 12 million are estimated to be in rural areas, which may be transporting about six billion tonne km of freight per year. Bullock Carts uses in Maharashtra. Camel carts operate in Rajasthan and Gujarat in both urban and rural sectors. In Haryana, Punjab and Western UP, buffaloes also are used for carting. Bullocks are becoming costly. Therefore, use of buffaloes and donkeys should be encouraged. Donkeys work as pack animals in Gujarat, Rajasthan and parts of Tamil Nadu. There is good scope for increasing the population of donkeys through a massive breeding programme and introducing donkey carts. At present, there is no organized effort for breeding work animals. The number of carts has remained almost the same during the last two decades, estimated to be about 15 million in the whole country. In the early forties, a British engineer estimated that road damage then due to the iron rim fitted to wooden wheels was as much as Rs 50 crores per year. In current terms, the damage may be 300 to 500 crores of rupees per year. But
even such heavy social cost has not prompted the government to popularize improved designs of carts with pneumatic tyred wheels, which do not damage roads.

- **Importance of Road in Overall Nation’s Development:**

  Road transport and road transportation is essential ingredient for rapid growth of an economy and a vital input to economic development, trade and social integration, which rely on the conveyance of both people and goods. Reduction in transport costs promote specialization, extend markets and thereby enable exploitation of the economies of scale. Global competition has made the existence of efficient transport and logistic systems in delivery chain an absolute imperative. Easy accessibility, flexibility of operations, door-to-door service and reliability have earned road transport an increasingly higher share of both passenger and freight traffic vis-à-vis other transport modes. Road transport has emerged as the dominant segment in India’s transportation sector with a share of 4.5 per cent in India’s GDP in recent years.\(^{28}\)

  The road infrastructure industry has become grossly inadequate and is increasingly unable to meet emerging requirements on Indian
industry and people. This is mainly due to the inadequacies of the road network in terms of mileage as well as quality, which if expanded and upgraded could go a long way in promoting efficiency of vehicles’ operations. Part of the problem also lies in the inability of service organizations, especially in the public sector driven mechanism, to deliver services efficiently. With the industry having suffered from very little technological and managerial improvements in the design and construction of roads, there is urgent need to effect these changes immediately.

The road infrastructure network contributes and complements significantly to economic activity through its backward and forward linkages with other sectors of the economy. It creates employment for semi-skilled labour, besides cement, steel, construction equipment, tar and many other related products. Even after the road network is completed its maintenance requires output of many industries. Many research studies provide evidence of beneficial impact of infrastructure development on economic growth and income distribution. Just like most of the infrastructure sector industries in India, road infrastructure is also grossly underprovided for. Whereas the vehicles on the roads have increased at the rate of 10.9 percent
per annum since 1950 the road length in terms of National Highways has increased by only 2.2 percent per annum. Though from 1991-2004 the National Highways have grown at more than twice this rate of 5.3 per cent per annum. But since then the growth has slowed down to 4.5 per cent per annum. The overall road length has grown at even slower rate of 3.7 percent from 1951 to 2004 for which the data is available.²⁹

The quality of roads is also not up to the required level besides the road discipline and enforcement of traffic rules has made India lead in terms of road accidents and road causalities in the world. The poor quality of roads is one of the most important causes of high level of wear and tear of the vehicles in India. Over the last few years there has been many initiatives but most of them have been half hearted which have helped very little in improving the supply bottlenecks in the road sector. A lot needs to be done to expand the national highway network as also in terms of quality to carry higher level of traffic. In simple words due to the lack of infrastructure the economy especially the industrial sector is growing at much slower pace in India. Also opportunities to invest correspondingly are also fewer.
The market integration impact of the roads network is not as strong as it should be and could be.

Last 10 years have seen unprecedented growth in the Indian economy and many experts have pointed out that if there is adequate infrastructure in place then the growth of 10 percent is not very difficult for a country. The mostly 4 lane national highways programme did well when it was initiated in 1998. Contracts were awarded which led to some 6,000kms being completed by the end of 2005, mostly on the Golden Quadrilateral that links India’s four biggest cities. There were of course massive delays in certain sectors because of slow land acquisition, corruption, bureaucratic lethargy, and extortion by Naxalite. There has been regular interference in the detailed functioning of the National Highways Authority of India (NHAI), whose financially-sensitive responsibilities include drawing up initial lists of tenderers, and issuing partial and final completion certificates, as well as placing contracts.

During 1998-2004 success had been due to heavy government funding. This was needed to get the construction programme moving quickly on highways that would not yield profits, as well as on those
that could be operated as private sector toll roads. The Planning Commission, however, did not like this approach and switched the emphasis to private sector financing, stopping primary government funding and allowing only built-operate-and transfer (BOT) contracts. That virtually halted new contracts from the end of 2005.

A Government Committee on Infrastructure was formed, serviced by the Planning Commission for enforcing the BOT system has increased bureaucratic wrangling, and the committee took about two years to agree on a new model concession agreement (MCA) and prepare associated forms of contract and procedural documents. In economic policy context, the Planning Commission had argued to take highway construction out of the government’s inclusive approach to economic growth, where money is spent on uneconomic but socially desirable projects, and had put it into the exclusive growth area where the private sector is expected to invest and reap profits.

It is important to note that emerging bottlenecks are in form of the road quality as well as quantity. As this sector, just like most of the other infrastructure sector, is increasingly moving away from being a pure ‘public good’ to ‘congestible public good’ and in many
places has become like any ‘private good’. In addition there are strong economies of scale attached to it which gives monopoly advantage to the operators of these roads. As of now most of these have been in Government hand and therefore they are offered at zero prices. This leads to excessive demand for these as is to be expected considering there is no direct user charge for these. It makes it very difficult to maintain these roads later. However, people pay indirectly in terms of their time, fuel cost, and damage to their vehicles due to these poor roads. As the roads are priced at zero prices so effectively there is no responsibility on any institution/person at least directly. According to a study by World Bank (1989) it costs almost 50 percent more to people/goods to travel on these roads in terms of these other costs of congestion, fuel cost, accidents and vehicle wear and tear.\textsuperscript{30} The SPV based models to provide for the road infrastructure and also let government and private run companies to come to manage these projects to ensure cost efficiency. There is evidence from the history of railway construction in India which suggest that for rapid growth we need to involve reputed players in the market. If these issues are resolved in an imaginative and radical manner then there is no reason
that for Indian growth story to not to become part of most successful examples of development in the world.

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