iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 6 **Issue:** X **Month of publication:** October 2018

DOI:

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 6 Issue X, Oct 2018- Available at www.ijraset.com

Indian Road Transport is Vital to the Economic Development and Social Integration of the Country

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Abstract: Roads are an integral part of the transport system. A country's road network should be efficient in order to maximize economic and social benefits. They play a significant role in achieving national development and contributing to the overall performance and social functioning of the community. It is acknowledged that roads enhance mobility, taking people out of isolation and therefore poverty. Roads play a very important role in the socio-economic development of the country but meanwhile this expansion also pose great challenges to the safety and security of the travelling public. The road transport industry is the backbone of strong economies and dynamic societies. It is therefore legitimate and indispensable to safeguard an industry that is vital to economic growth, social development, prosperity and, ultimately, peace and which plays a crucial role in everyone's life in industrialized and developing countries alike by meeting the demand for the sustainable mobility of both people and goods.

I. INTRODUCTION

The road transport industry is indeed instrumental in interconnecting all businesses to all major world markets, driving trade, creating employment, ensuring a better distribution of wealth and uniting mankind. It plays a crucial role in the daily economic and social life of industrialized and developing countries alike. For this reason, any penalty on road transport is an even greater penalty for the economy as a whole. An important part of the road transport industry's story is sustainable progress. Trucks, buses, coaches and taxis are safer, more efficient, cleaner and quieter today than ever before. They represent high technology at its best and are here to ensure an even better quality of life than we enjoy today. Transport investments within cities and across cities are essential for economic growth, job creation, and poverty reduction. Beyond simply facilitating cheaper and more efficient movements of goods, people, and ideas within cities, transport affects the distribution of economic activity across cities.

A. Road Transportation

With the economic development of infrastructure in India, the country has progressed at a rapid pace and today there is an availability of wide variety of modes of transport by land, water and air. But, overall Road Transport is the primary and preferred mode of transport for most of the population and India's Road Transport system is among the most heavily utilized system in the world. It plays a pivotal role in the economic development of a nation by increasing the productivity and competitiveness. Over the last ten years (2002-03 to 2011-12) Road Transport sector GDP grew at an annual average rate close to 10 per cent compared to an overall annual GDP growth of 6 per cent. Today Road Transport serving occupies an irresistible dominance within the transport sector with a share of 4.8 per cent in GDP compared to a too little 1.0 per cent share the road transport industry's story is sustainable progress. Trucks, buses, coaches and taxis are safer, more efficient, cleaner and quieter today than ever before. They represent high technology at its best and are here to ensure an even better quality of life than we enjoy today. Transport investments within cities and across cities are essential for economic growth, job creation, and poverty reduction.[2] Beyond simply facilitating cheaper and more efficient movements of goods, people, and ideas within cities, transport affects the distribution of economic activity across cities.

GDP in case of railways. Also annual average growth in freight transport at 6.5 per cent for road was much higher in comparison to railways which clocked a modest annual average increase of 3.6 per cent during the past reforms phase (1992-93 to 2011-12).

B. Functions of Transport

1) Transport contributes in growth of industries whose product requires quick marketing. Perishable articles like fish and green vegetables are carried to various consumers quickly even in distant markets through transport.

2) Transport helps in increase in the demand for goods. Through transport newer customers in newer places can be easily contacted and products can be introduced to them. Today markets have become national or international only because of transport. Introduction.

3) Transport creates place utility. Geographical and climatic factors force industries to be located in particular places far away from the markets and places where there may not be any demand for the products. Transport bridges the gap between production and consumption centers

4) Transport creates time utility. Of late transport has started creating the time utility also. It has been made possible by virtue of the improvements in the speed of transport. It helps the product to be distributed in the minimum possible time.

5) Transport helps in stabilization of price. Transport exerts considerable influence upon the stabilization of the prices of several commodities by moving commodities from surplus to deficit areas. This equalizes the supply and demand factor sand makes the price of commodities stable as well as equal.

6) Transport ensures even flow of commodities into the hands of the consumers throughout the period of consumption.

7) Transport enables the consumers to enjoy the benefits of goods not produced locally. This increases the standard of living, an essential factor for further development of marketing and economy.

8) Transport identifies competition, which in turn, reduces pries. Prices are also reduced because of the facilities offered by transport for large-scale production. Advantages of large-scale production is possible only due to transport.

9) Transport increases mobility of labor and capital. It makes people of one place migrate to other places in search of jobs. Even capital, machineries and equipments are imported from foreign countries through transport alone.

C. Importance of Roads

The importance of roads in connecting the vast rural areas of India to form the national market and economy cannot be overstated. Connectivity provided by roads is perhaps the single most important determinant of well being and the quality of life of people living in an urban area. The efficiency of the innumerable government programmes aimed at rural development, employment generation, and local industrialization is, to large extent, determined by the connectivity provided by roads. There is a considerable body of evidence that demonstrates the links between rural road investment, decline in poverty, and improvement in the quality of life. Road investment contributed directly to the growth of agricultural output, increased use of fertilizer and commercial bank expansion. Improvements in rural roads are positively correlated with decline in poverty. The potential value in improving of rural connectivity especially in the agricultural states is revealed by the large differences between mandi and farm gate prices.

Access to major roads provides relative advantages consequent upon which commercial users locate to enjoy the advantages. Modern businesses, industries, trades, agricultural and general activities depend on transport and transport infrastructure, with movement of goods and services from place to place becoming vital and inseparable aspects of global and urban economic survival. Developments of various transportation modes have become pivotal to physical and economic developments. As compared to the railways, the road transport system has definite advantages which can be summarized as follow:

1) Road transport is quicker, more convenient and more flexible. It is particularly good for short distance travel for movement of goods. Motor vehicles can easily collect passengers and goods from anywhere and take them to wherever they want to be dropped.

2) Door-to-door collection and delivery are possible in the case of road transport. But in the case of railways, the lines are fixed and the railways do not have the flexibility of the roadways. Passengers and goods will have to be taken to the railway stations.

3) Roads are a necessary complement to railways. India is a country of villages and it is only roads which can connect villages and railways can connect towns. The railway stations will have to be properly served by a network of feeder roads. Only through these roads the railways can receive their passengers and goods. If railways are essential for the movement of goods and people for long distances, road transport is essential for such movement for short distances. Roads and railways are, therefore, not competitive but complementary.

4) Road transport is of particular advantage to the farmers. Good roads help the farmers to move their products, particularly the perishable products; like vegetables, quickly to the mandis and towns. Only by developing the road system, the farmer can be assured of a steady market for his products. It is the road system which brings the villagers into contact with the towns and the new ideas and the new systems from the towns.

5) Roads are highly significant for the defense of the country. For the movement of troops, tanks, armored cars, and field guns etc. roads are essential. The great importance given to the construction of border roads to facilitate the movement of troops for the protection of the northern borders.
6) Roads play a very important role in the transportation of goods and passengers for short and medium distances.
7) It is comparatively easy and cheap to construct and maintain roads.
8) Road transport system establishes easy contact between farms, fields, factories and markets and provides door to door service.
9) Roads can negotiate high gradients and sharp turns which railways cannot do. As such, roads can be constructed in hilly areas also.
10) Roads act as great feeders to railways. Without good and sufficient roads, railways cannot collect sufficient produce to make their operation possible.
11) Road transport is more flexible than the railway transport. Buses and trucks may be stopped anywhere and at any time on the road for loading and unloading passengers and goods whereas trains stop only at particular stations.
12) Perishable commodities like vegetables, fruits and milk are transported more easily and quickly by roads than by railways.

Due to above-mentioned advantages, the road transport has become very popular and its share is constantly increasing.

D. Rural Roads

Rural roads provide basic inputs for all-round socio-economic development of the rural areas. The provision and construction of roads and road links brings multiple socio-economic benefits to the rural areas and results in forming Strong backbone for the agro-based economy. The importance of the rural roads has been emphasized in various plan documents. In the 7th Five Year Plan also it has been planned to provide all weather road connections to all the villages with a population of 1500 or above and 50 per cent of the villages having a population of between 1000-1500 persons. To accomplish this task construction of nearly 1.30 lakhs kilometres of road length with an estimated cost of Rs. 3100 crores (in order to provide all weather road connection to additional 25,000 villages under the above criteria) has been proposed during the plan period (1985- 1990).[5] Moreover the importance of providing rural roads can hardly be undermined in the context of our economic and social goals. The impact of providing rural roads accrues in various ways resulting in numerous economic and social benefits- quickly visible and quantifiable as well as indirect and non-quantifiable.

E. Importance of Rural Roads

Rural roads are part of total road network system and basically consist of various categories such as National Highways, State Highways, Major District Roads, Other District Roads and Village Roads. Rural roads include

Other District Roads and Village Roads as tertiary system for providing accessibility in rural areas. Rural roads, therefore, become links of a network, which facilitate the movements of persons and goods in an area. There are several other interconnecting routes also exists in rural areas. A road network, therefore, needs to be developed in such a way that the travel needs of the people in an area are met to the maximum extent in a collective way at the lowest cost of development. In rural areas major part of travel needs comprises of travel to market place, education and health centers.[6] Planning of road system should always focus on spatial aspect of planning and should be integrated with other non-spatial socio-economic activities. Roads have to be planned and programmed in such a way that all villages are connected in an optimal way to achieve efficient flow of traffic and accessibility. Development of roads is essential for bringing agricultural products to *mundies* for their marketing. Crores of rural people have to go to cities and *mundies* daily for seeking employment and purchasing essential commodities. Thus rural roads have special significance in Indian economy.

The total road network of an area needs proper integration with necessary interfacing befitting the functionality assigned to a type of road otherwise the continuity of transport flows may get affected. Currently lot of emphasis is given for the roads providing mobility through programmes like NHDP for selected national highways, some state road programme and rural access through PMGSY. However, the intermediate category of roads belongs to State Highways and Major District Roads are not receiving the emphasis they deserve. There should a balanced development approach for all type of road in order to achieve continuity in movement from rural habitations to market centers at local, regional and national level. The state agencies responsible for development of these roads should identify the gaps in the existing systems of roads and generally adopt the master plan, in order to achieve the integration. There is need for network structural analysis with assigned traffic flows for the development of regional level roads comprising of highways and rural roads.

Rural roads have been constructed under various rural road development programmes, which are mainly conceived for employment generation and poverty alleviation. In such programmes serious efforts were not made to build sustainable all-weather roads. Roads were never considered to be engineering structures and these not designed to the required specifications. The roads built under these programmes, without back-up system or facility to sustain them with engineering inputs for repair and maintenance, have disappeared in no time. Many of the technical aspects of road making i.e. adequate compaction of sub-grade, roadside drainage, required cross drainage etc. were seldom given due importance in rural road construction. In order to fulfil the objectives of PMGSY for provision of all-weather rural roads, the Indian Road Congress brought out the 'Rural Roads Manual'. The manual covers all aspects related to rural roads including planning and alignment; geometric design standards; climate and environment; road materials and pavement design; road drainage, culverts and small bridges on rural roads; construction specifications and quality control aspects; guidelines for using waste materials such as fly ash, etc., maintenance of rural roads and sources of finance for rural road development. Currently the manual is being followed for design of rural roads under PMGSY. To achieve more economy in designing the rural roads the Indian Roads congress is revising the manual based on the following criteria;[7]

1) Rural Roads are low volume facilities basically serving the access needs. The design speed and level of service expected are low. The design standards should be in harmony with such expectations.
2) Geometric standards, particularly gradients, are difficult to change later, and hence should be selected carefully with the future requirements in view.
3) The initial cost is an important consideration. Many roads particularly through routes will, in due course, carry fairly substantial traffic but it is preferable tooptimize costs by stage construction in tune with traffic growth.
4) A design period of 10 years is considered adequate, with rehabilitation being planned based on road condition.
5) Durable and permanent assets need to be aimed at through adequate provision for drainage and protection works.
6) The maintenance of assets must receive careful attention as a policy and should not be capitalized into richer than required standards at the design stage.

F. Impacts of Rural Roads

Impacts of rural roads are summarized as given below:[8]

1) *Improvement in Transportation Services:* which leads to improved access to market centers for the rural producers, better availability of form inputs at reduced prices;
2) *Diversification of Agricultural:* improved market access promotes shift in favour of cash crops and commercialization of agricultural activities.
3) *Diversification Of Livelihood Opportunities:* better connectivity enhances employment opportunities in the non-agricultural sectors.
4) *Improved Services:* improved road connectivity, inter-alia, enhances access to education, health and financial services.
5) *Increase in the outreach of the State:* Improved rural roads facilitate better availability of public services and functionaries in rural areas.

G. Efficient transport system for sustained economic development:

An efficient road 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 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 fifty 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.[9]

H. 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.

I. Development of 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 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.[10]

J. Induction of New Technology:

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 (EPC) 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, geosynthetics etc that would need to be encouraged depending upon the cost effectiveness. Indian infrastructure policy on roads permit duty free import of high capacity and modern road construction equipments, complete tax holiday for any 10 consecutive years out of 20 years. Longer concession periods of up to 30 years are permitted as per the roads policy of India. To attract private investment in the road sector, the Government has taken up the policy initiative of providing capital grant of 40 per cent of the project cost to enhance viability, Foreign direct investment up to 100 per cent, Easier external commercial borrowing norms, 100 per cent tax exemption in any consecutive 10 years out of 20 years. Build, Operate and Transfer (BOT) project entrepreneurs are also allowed to collect and retain the amounts from tolls on selected stretches.[11]

K. Investment Policy of Government of India

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 percent and foreign commercial borrowing to the extent of 30 per cent of the project cost has been permitted.[12] 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. Therefore, setting up of a joint venture or a 100 per cent foreign owned subsidiary qualifies as an investment.

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.

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.[13]

L. National Highway

The arterial roads of the country for inter-state and strategic defense movements. They traverse the length and width of the country connecting the National and State Capitals, major ports and rail junctions and link up with border roads and foreign highways. National highways in India are the primary long-distance roadways. Most are maintained by the Government of India, others are operated under a public-private partnership by the private sector.[14]

At present, out of 92,851 km of National Highways about 24 per cent length is of 4-lane and above standard, 52 per cent length is of 2-lane standard and 24 per cent length of single and intermediate standard. As on July, 2011, 28,740 km lengths of NHs were entrusted to NHAI, 38,629 km to State PWDs and 3,565 km to BRO. As more and more works are awarded under various phases of NHDP and subsequent phases of NHDP are taken up, additional length of NHs will be transferred from State PWDs to NHAI.

Table No. 3.01:
State wise distribution of National Highways

Sr. No.	Name of the State /Union Territory	Length (Kms)	Sr. No.	Name of the State /Union Territory	Length (Kms)
1)	Andhra Pradesh	7,068.15	18)	Maharashtra	6,335.44
2)	Arunachal Pradesh	1,780.05	19)	Manipur	1,488.74
3)	Assam	3,675.06	20)	Meghalaya	1,204.36
4)	Bihar	4,538.79	21)	Mizoram	1,181.00
5)	Chandigarh	15.28	22)	Nagaland	1,046.09

6)	Chhatisgarh	3,078.40	23)	Orissa	4,644.52
7)	Delhi	80.00	24)	Pondicherry	64.03
8)	Goa	262.00	25)	Punjab	2,136.15
9)	Gujarat	3,973.29	26)	Rajasthan	7,806.20
10)	Haryana	2,057.48	27)	Sikkim	309.00
11)	Himachal Pradesh	2,396.48	28)	Tamil Nadu	5,006.14
12)	Jammu & Kashmir	2,319.00	29)	Tripura	577.00
13)	Jharkhand	2,996.64	30)	Uttar Pradesh	7,863.00
14)	Karnataka	6,294.29	31)	Uttarakhand	2,364.92
15)	Kerala	1,811.52	32)	West Bengal	2,909.80
16)	Madhya Pradesh	5,184.57	33)	Andaman & Nicobar	330.70
17)	Dadra Nagar Haveli	31.00	34)	Daman & Diu	22.00
	T o t a l			92,851.07	

Source: http://www.nhai.org/govtpolicy.asp

Table No. 3.02:
List of State-wise National Highways in India

Sr No	Name Of State	NATIONAL HIGHWAY	Total Length (Km)
1	Andhra Pradesh	4, 5, 7, 9, 16, 18, 43, 63, 202, 205, 214, 214A, 219, 221 & 222	4472
2	Arunachal Pradesh	52, 52A & 153	392
3	Assam	31, 31B, 31C, 36, 37, 37A, 38, 39, 44, 51, 52, 52A, 52B, 53, 54, 61, 62, 151, 152, 153 & 154	2836
4	Bihar	2, 2C, 19, 28, 28A, 28B, 30, 30A, 31, 57, 57A, 77, 80, 81, 82, 83, 83, 84, 85, 98, 99, 101, 102, 103, 104, 105, 106, 107 & 110	3642
5	Chandigarh	21	24
6	Chhattisgarh	6, 12A, 16, 43, 78, 200, 202, 216, 217, 111, & 221	2184
7	Delhi	1, 2, 8, 10 & 24	72
8	Goa	4A, 17, 17A & 17B	269
9	Gujarat	NE-I, 6, 8, 8A, 8B, 8C, 8D, 8E, 14, 15, 59, 113 & 228	3245

		5, 5A, 6, 23, 42, 43, 60, 75,	
22	Odisha	200, 201, 203, 203A, 215, 217 & 2243704	3704
23	Puducherry	45A & 66	53
24	Punjab	1, 1A, 10, 15, 20, 21, 22, 64, 70, 71, 72 & 95	1557
25	Rajasthan	3, 8, 11, 11A, 11B, 12, 14, 15, 65, 71B, 76, 79, 79A, 89, 5585, 90, 113, 112, 114 & 116	53
26	Sikkim	31A	62
27	Tamilnadu	4, 5, 7, 7A, 45, 45A, 45B, 45C, 46, 47, 47B, 49, 66, 67, 68, 205, 207, 208, 209, 210, 219, 220, 226 & 227	4462
28	Tripura	44 & 44A 400	400
29	Uttaranchal	58, 72, 72A, 73, 74, 87, 94, 108, 109, 123, 119, 121, 87 Ext. & 125	1991
30	Uttar Pradesh	2, 2A, 3, 7, 11, 12A, 19, 24, 24A, 24B, 25, 25A, 26, 27, 28, 28B, 28C, 29, 56, 56A, 56B, 58, 72A, 73, 74, 75, 76, 86, 87, 91, 91A, 92, 93 ,96, 97 , 119 &	5874

Name of State	National Highway No.	Total Length (in km)
	NE-II	
	2, 2B, 6, 31, 31A, 31C, 32, 34,	
31 West Bengal	35, 41, 55, 60, 60A, 80, 81 & 117	2377
32 Andaman & Nicobar	223	300
	Total	66590
Source:	http://knowindia.gov.in	

Table no 3.03	Progress of National highways (2011)			
	Total Length (km)	Length Completed (km)	Length under Imp. (km)	To be awarded (km)
I - GQ,EW-NS corridors, Port connectivity & others	7,522	7442	80	
II - 4/6-laning North South- East West Corridor, Others	6,647	5302	901	444
Upgradation, 4/6-laning Phase III (phase III A + III B)	12,109	2555	6173	3390
IV - 2 - laning with paved shoulders	20,000	-	846	19154
V - 6-laning of GQ and High density corridor	6,500	653	1984	3863
VI - Expressways	1000	-	NIL	1000
VII - Ring Roads, Bypasses and flyovers and other structures	700 km of ring roads/ bypass + flyovers	-	41	659

Source: Report of the Working Group on Central Roads Sector (2011) - Government of India, Ministry of Road Transport & Highways - 12th Five Year Plan (2012-17)

M. State Highways

These are constructed and maintained by state governments and join the state capitals with district headquarters and other important towns. These roads are also connected to the national highways. The length of state roadways in India has more than doubled within a span of about three decades and has increased from 56,765 km in 1971 to 1, 37,950 km in 1999. These roads constitute 5.46 per cent of the total road length of India. Although construction and maintenance of state highways is the responsibility of the concerned state governments, yet with the revamping of the Central Road Fund (CRF) in 2000, the Centre provides about Rs. 1,000 crore for development of state roads. Further, to promote inter-state facilities and also to assist the State Governments in their economic development through construction of roads and bridges, Central Government provides 100 per cent grant for inter-state connectivity and 50 per cent grant for projects of economic importance from CRF. Loan assistance from external funding agency is also taken by some states. The distribution of State Highways is very uneven. Maharashtra (33,223 km) had the longest length of state highways in 1999. Next to Gujarat (19,796 km), Madhya Pradesh (11,789 km) Rajasthan (10,047 km), and Andhra Pradesh (8,763 km). Smaller states such as Goa and states like Mizoram, Sikkim, Nagaland, Tripura, etc. have less than five hundred km length of State Highways.

N. District Roadways

These roads join the district headquarters with the other places of the district. Development and maintenance of these roads fall within the purview of Zilla Parishads. There has been more than four and half times increase in the length of district roadways from 1, 73,723 km in 1951 to 8 01 ,655 km in 1999. These roads accounted for 31.74 per cent of the total road length of India. Formerly most of the district roads were un-surfaced and lacked bridges and culverts. But now the situation as changed and most of these roads are surfaced. Such a situation has improved connectivity and paves way for economic development. The study shows that Maharashtra with 1, 70,269 km district road length is at the top. Following Maharashtra are Uttar Pradesh (1,10,206 km), Madhya Pradesh including Chhattisgarh (85,792 km), Rajathan (62,357 km), Punjab (42,757 km), Karnataka (28,247 km), Assam (26,416 km), Himachal Pradesh (20,772 km), Haryana (19,651 km) and Kerala (18,504 km).

O. Village Roads

The village roads are mainly the responsibility of village panchayats and connect the villages with the neighboring towns and cities. These are generally dusty tracks and are usable only during the lair weather. They become muddy and unserviceable during the rainy season. Efforts have been made m the recent past to connect the villages with metalled roads. The length of these roads has increased by about 5 times from 2, 06,408 km in 1951 to 10, 28,410 km in 2001. These roads accounted for over 40 per cent of the total road length of the country. Still about 10 per cent of the villages having a population of 1,000 or more and 60 per cent of the villages with less than 1,000 people are not connected by all-weather roads. The network needs expansion and up-gradation of existing roads to all- weather roads. A new thrust was given to village roads when the Pradhan Mantri Gram Sadak Yojna (PMGSY) was launched. This is a 100% Centrally Sponsored Scheme to provide rural connectivity to unconnected habitants with a population of 500 persons or more (250 persons in case of hilly, desert and tribal areas) in rural areas by the end of the Tenth Plan period.

The scope o PMGSY has been expanded to include both construction of new links and up-gradation of existing through routes associated with such link routes to form one complete sub-network for providing connectivity between the village and the market. A survey undertaken to identify the core network as part of PMGSY showed that over 1.70 lakh unconnected habitations needed to be undertaken under this programme. This would require new construction of 3.68 lakh kilometres of rural roads at a total cost of Rs. 1, 33,000 crore.[16]

P. Road Networks and Development

An extensive and a good road network are needed to spur growth and development. Road transportation system move goods and people to facilitate production and trade. The elements of road transport are vital to the cost of trade, the global competitiveness of the country and its development prospects. Road transport has grown in importance with the mode accounting for an increasing share in the conveyance of passengers and goods in the overland traffic. The total length of classified road networks in India as at the end March 2012 is placed at 4.7 million km of which little 53.8 per cent are paved. A noteworthy aspect has been the step up in the expansion of National Highway network in recent years which has shown more than two fold jump from 33,650 kms in 1991 to

76,818 kms in 2012. India's road density averages about 1.42 km of road length per square km of land and is much higher compared to USA (0.67 km/sq.km) and China (0.40 km/sq.km). The need to promote road connectivity across the country and maintain road infrastructure poses an enormous challenge. It is noteworthy that growth in motor vehicle population during 2001 to 2011 of around 10 per cent has outstripped the modest growth in the roads network of 3.3 per cent.[17] This has resulted in the saturation of road capacities on many a stretches. Rehabilitation and construction of new roads are essential to provide sufficient, safe and efficient transportation for passenger and goods and are vital for making the economy competitive and for sustaining a high rate of growth. The road development in many ways exemplifies both the challenge and opportunity in infrastructure development.

Q. Demand for Road Transport

With a growing population in India, demand for road transport would increase further by 2020. While state highways are expected to link most districts in the country, all-weather rural roads are expected to provide access to the furthest outlying villages. Moreover, construction of the golden quadrilateral, Delhi-Mumbai-Chennai-Kolkata-Delhi, is expected to help link these metros and other northern, southern, western and eastern cities by 2020. A massive 10-year programme (2005-15) has been implemented by National Highway Development Project (NHDP) in a phased manner with an investment of Rs. 2356.90 including the completion of the works under NHDP Phase I and II, up gradation of 12,109 km of national highways on Build, Operate and Transfer (BOT) basis in Phase III, widening of 20,000 km of national highways to two lanes with paved shoulders in NHDP Phase-IV, six-laning of 6,500 km length of selected national highways in Phase V, development of 1,000 km of expressways under NHDP Phase-VI and construction of 700 km of ring roads in major towns and bypasses and construction of other standalone structures giving a boost to the development of roadways. This, along with Ministry of Road Transport and Highway's decision to accelerate implementation of National Highways to achieve a completion rate of 20 kms of highways/day will require substantial investment in road infrastructure. This translates to a 35,000 km at the rate of 7,000 km per year during 2009-14.[18] Further, a larger amount of population is expected to move toward own car travel. However, substantial investments for creation and/or improvement in mass /public transport systems could help reduce the use of vehicles on roads in major metro cities. Various infrastructure development projects in the transport sector will require increased amount of investments. While GoI will continue to be a major source of funds, private sector participation in development and operation of transport infrastructure is expected to increase substantially. GoI is already making efforts to attract private investment by offering projects on Build Operate and Transfer (BOT) basis. It has taken various policy initiatives that are likely to result in increased participation of private players in road construction projects. Moreover, internal generation of resources by transport services is likely to increase by 2020.

R. Bad Roads in India

India is said to be the fastest developing countries today. Although India is doing exceptionally well in fields like education, industrialization and fashion there are still certain areas where the country is lagging behind. India's road network is gigantic and said to be only after the United States of America. But one of the striking underlying facts is the condition of the roads. Since roads indirectly contribute to the economic growth of the country it is extremely essential that the roads are well laid out and strong. India is home to several bad roads be it the metropolitans, the cities or the villages. Bad road conditions are nothing new to India and the problem is being addressed since the last 30 years. Since India is a developing nation there is a constant demand for good quality infrastructure, transportation and services. But since India is a huge country with quite a sizable population this problem still has not been addressed in totality.

In order to improve the conditions of roads efforts began way back in the 1980s. It is during this time that roads were built to link major highways, to expand the width of existing roads and to construct important bridges. India has a total of about 2 million kilometers of roads out of which 960,000 kilometers are surfaced roads and about 1 million kilometers of roads in India are the poorly constructed ones. India is also home to Fifty-three National highways which carry about 40 percent of the total road traffic. Although the figures look pretty impressive but the underlying fact is that 25 percent of villages in India still having poor road links. The other problems faced by the Indian roads are; bad riding quality, poor geometrics, and insufficient pavement thickness. In India the responsibilities for road building and maintenance lies with the Central and state government. The administration of the national highway system is vested with the Ministry of State for Surface Transport in India and other state roads are preserved by the state public works departments. As far as the minor roads in the country are concerned they are up kept by the various districts, municipalities, and villages.[19]

S. Problems in Road Infrastructure Development in India:

1) *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.
2) *Shifting of Utilities:* Development of roads particularly 4- laning under NHDP sometimes requires 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
3) *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.
4) *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.

T. Problems and Prospects of Road Development in India

Road transportation in India faces a number of problems. Keeping in view the vastness of the dimensions of the country, her physiographic, her unlimited natural resources and the fast growing passenger and freight traffic, the inadequacy of the road network is quite glaring. India's road length of 75.01 km per 100 sq km of area is desperately low as compared to 294.6 km in Japan, 131.2 km in Austria, 451.8 km in Belgium, 147.2 km in France and 172.2 km in Switzerland Again India has low road length of 240.1 km per one lakh population as against 893.6 in Japan 497.2 in Malaysia 1277.7 in Saudi Arabia, 1392.4 in Austria, 1556 in Hungary, 1572.4 in Sweden, 2494.5 in the USA, 3184.9 m Canada, 4635.4 in Australia and 2705.7 in New Zealand. Lakhs of villages in remote areas are still awaiting a road to reach them.[20]

Another problem is that a little less than half of the roads (40%) are un-surfaced. They can be used only in fair weather and become muddy and unfit for transportation during the rainy season. Efforts need to be made to construct as many surfaced roads as is practically possible. The national highway network will have to be improved to meet the growing traffic of men and materials. A large section has insufficient road pavement thickness. Other deficiencies are inadequate capacity; poor riding quality, weak and distressed bridges/culverts, congested city sections too many railway level crossings, lack of wayside amenities and weak road safety measures.

About 20 per cent of national highways need widening from single to double lanes and 70 per cent of two lane roads have to be strengthened and selected corridors on national highways need conversion into expressways. This is clearly an enormous task and needs huge capital investment which is beyond the capacity in the public sector. Consequently, National Highway Act was amended in 1995 for encouraging private sector to participate in the construction, maintenance and operation of roads on Build, Operate and Transfer (BOT) basis.[21]

The future challenge in road sector revolves around building all-weather roads connecting each and every village to a State Highway or a National Highway. It is imperative to strengthen the road infrastructure for carrying rapidly increasing volumes of agricultural products to the consuming centers in the near future. Rural development is closely associated with road development. Another very important factor to be considered is the rapidly growing population of motor vehicles and increasing commerce. The number of registered vehicles increased from 306 thousand in 1950-51 to 58,863 thousand in 2001-02, thereby registering about 210 times increase in a span of half a century. However, carrying capacity of our roads has not been able to keep with the increase in vehicles. This has led to traffic jams, delays and environmental pollution. The most disturbing factor is that population of motor vehicles is likely to increase at an accelerated rate in the near future. As such there is an urgent need to take steps to increase the capacity of roads.

Thus, Road transport is vital to the economic development and social integration of the country. Road transport fulfils a major role in the Indian economy involving a wide range of industries and services from vehicle manufacturers and suppliers to infrastructure builders, services, energy providers, public authorities, insurance and many others. Road transport, together with the other modes of transport, provides indispensable mobility for all citizens and goods and contributes to the economic prosperity of a nation. It is a key factor to social, regional and economic cohesion, including the development of rural areas. However, the impact of road transport on the environment and health remains a major challenge in many aspects. 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. In addition to these factors, transit time, availability of capacity on alternative modes, quality and reliability of the service, associated costs like warehousing and demurrage etc. all influence the choice of the mode of transport. The alternative modes of transport viz. roadways, railways, waterways, airways, mass transit etc., each contribute to the transportation requirements of the economy. Transport sector accounts for a share of 6.4 per cent in India's Gross Domestic Product (GDP).

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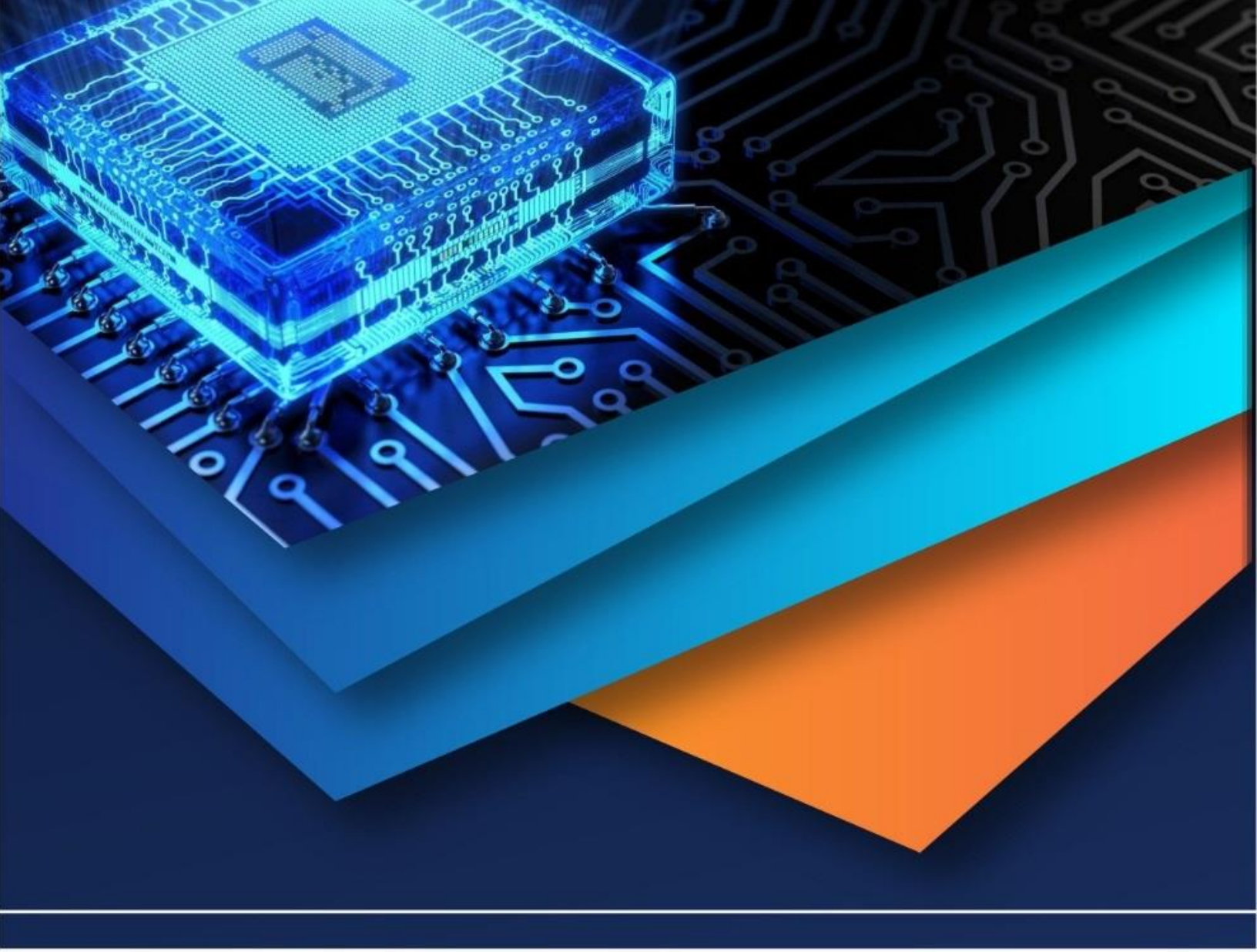

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