Chapter - 2

Road Transport and Development
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ROAD TRANSPORT AND DEVELOPMENT

An attempt is being made in this chapter towards the discussion on the general role of Road Transport, an overview of Road Transport and Development, Road Transport in India and in Karnataka. The chapter being descriptive in nature covers all the major developments pertaining to the Road Transportation in general.

2.1. Transportation

Effective Transportation is indispensable to the economic progress. Extraction, manufacturing, merchandising and banking are also necessary, but business, like other depends upon transportation.

The indispensability of transportation is attested by the economic history of the United States. According to one economist, “Historians have generally failed to appreciate the importance of this factor in American Development”. According to Macaulry, “With the exception of the alphabet and the printing press, those invention which abridge distance have done most for civilization”\(^1\).

In spite of the development of variety of modes of public transport, the dependence of the commuting public on the road based system continues

everywhere to be considerable. "The inherent Flexibility in bus operation enables it to reach the remotest areas and bus services can be to meet practically every type of requirement".  

The role of Transportation in economics can be described by explaining its relation to the consumption, production, exchange and distribution of wealth. Production allows the creation of utility and Transportation through providing ‘Place Utility’ is a part theory. Merely, to grow, mine or manufacture of an article is generally not enough to complete its usefulness; it must be transported. Since Transportation is a part of production, an increase in its efficiency bogusly helps to lower the cost of production of goods and thus reduce prices. Firstly Transportation widens the market for perishable as distinguished from durable products. Secondly, it reduces the average volume of goods in transit and markets possible smaller inventories, thereby raising the rate of turnover of capital invested in stokes, savings space and lessening rehandling. Thirdly, it shortens the time from the beginning of production of final sale, enabling the producer to gauge his market for accurately, reduces risk, and saves interest. As regards passengers higher speed enhances freedom of movement and relieves the discomfort of long journeys. In so far as travel is for commercial purposes the rapid transit of passenger’s aids management. It also trends to equalise the supply of labor in different location.

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2 Sharma Santosh. 1976. Productivity in Road Transport. Association of State Road Transport Undertakings Publications, New Delhi
4 Truman C. Bigham and Mervill.
Through the "annihilation of distance", improved transportation has for reaching results. It increases wealth. It transforms the organization of industry. It creates large cities. It raises the standard of living and promotes culture. It unites humanity politically and aids national defense.

2.1.1. Meaning of Transport

The word transport has been derived from the Latin word Transportare. Tran means across or the other side and portare means to carry. The Chambers dictionary defines transport as-to carry, convey and transportation as carriage from one place to another. The obvious definition of transportation is the movement of goods or people over space but conventionally the short trip inside the household or office or warehouse of factory as part of transport are not because they are part of the industrial process. Only movements out side the home or factory are normally reckoned to require the services of the transport sector.

2.1.2. Classification

Transport can be classified from two angles.

1. According to the tracks or vehicles used.

2. According to the energy used in moving the vehicles.

According to the tracks or vehicles used, transport can be divided into (a) Land transport-Road transport and Rail transport, (b) Water transport, (c) Air transport.
According to the energy used in moving the vehicles, transport can be used classified into four categories:

(a) Human Energy
(b) Animal Energy
(c) Mechanical Energy
(d) Air Energy

Along with the advancement of civilization, the importance of mechanical energy has increased in transport. Modern age is that of machines. In some areas owing to geographical factors the human energy in transport is still used.5

2.1.3. Transport and Economics

In a 1999 report, the Standing Advisory Committee on Trunk Road Assessment (SACTRA) elaborates the effects of transport improvements on the economy. Transport improvements were defined as “any intervention” which reduces transport costs or improves the quality of transport services and it will not construct the new links. The issue was divided into three parts: (a) if there is a positive effect of transport improvements on economic activity; (b) if there exists a “decoupling” of growth in traffic volumes from growth in the economy; and (c) if the economic impacts are captured in cost benefit analysis. The mechanisms by which transport improvements could, in theory, influence economic activity

include the reorganization of production, distribution and land use; enlargement of
the labor catchments area; increases in the output due to lower costs; stimulation
of the inward investment; unlocking inaccessible sites for development ;. and
triggering of self-reinforcing growth. All these mechanisms seem to be monopoly
granted from the Government, and no obligation to provide access at all points in
the system (Biehl, 1991) relevant in the case of the Oresund bridge.

One of the main conclusions was that the outcome of a transport
improvement was dependent on whether the price of the service is higher or lower
than the marginal social cost (including marginal cost of taxes, subsidies and
uncharged external costs, and assuming that all costs are expressible in monetary
terms, i.e. also environmental impacts, time delays, accident costs, etc.). If the
local prices are high due to monopoly power, then a transport improvement
opening up the area to external competition could lead to additional benefits to the
overall economy. On the other hand, if transport prices are too low due to
uncharged external costs (congestion or environmental effects) then a transport
improvement (according to the definition above, facilitating transport) would lead
to additional overall costs. It is however evident that some of these mechanisms
will not lead to a uniform effect over the whole study area. The SACTRA report
also states that some benefits (e.g., increased employment, in the example with the
local monopoly above) might accrue to areas outside the “target area” (e.g., the
distant competitors). In our case, the situation of connecting Malmo with
Copenhagen—two large regional centers, up till now self-sustaining—will affect
both centers radically when the business activities reorganize, specialize and rationalize. At the same time, we should not forget the relationship of the so-called hinterlands (Eastern Scania and the area outside the Large Copenhagen area) to the new “twin city”. In order to capture the overall effect of the Oresund bridge investment, we need to closely examine also the effects of the new competition from Copenhagen on Eastern Scania (and from Malmo on the areas outside Copenhagen).

2.2. Road Transport

Road means any prepared route on land destined for the movement of goods and persons.⁶

Road Transport includes transport by human energy or porters, by pack animals like mules, donkeys, horses, bullocks, camels or elephants, by country carts, as well as by the modern system of automobile trucks and lorries, motor buses and coaches.⁷ Although the term Road Transport, in its traditional sense, may include all primitive forms, it is used nowadays in a more respective sense to refer generally, to the motor transportation. Thus Road transportation can be defined as any form of transport which is being carried on by wheeled vehicles operated by power, animals, human beings or machines on any road whether metalled or unmetalled to transport men and materials from one location to another.

Road transport plays a pivotal role in bringing about greater mobility both within and between the rural and urban areas. In India, as in many other parts of the world, investment in road transport is treated as a part of the public provision of services with a clear objective to meet the social obligations at an affordable, safe and reliable service to the people. In order to achieve these objectives, the Road Transport Act 1950 was promulgated by the Central Government and many State Governments in turn used this Act to create State Road Transport Undertakings (SRTUs). Currently there are 67 public sector including SRTUs that own about 120,000 buses, with an Equity Capital of Rs.800 millions. These undertakings operate 1200 million passenger kilometers daily carrying 245 million passengers daily. They provide direct employment 0.73 million people. The SRTUs in the country are set up under four patterns / categories.

1. Departmental undertakings, directly under the State Governments

2. Municipal undertakings, owned and controlled by the municipal corporations

3. Companies formed under the Companies Act of 1956

4. Road Transport Corporations, formed under the RTC Act 1950.

While the objectives set out for Public undertakings are laudable and the organizations began in the right direction, the support needed from the Central and State Governments to sustain their efforts, suffered a set back during second half of Seventies. Currently, a stage has reached when these public undertakings are
forced to meet a number of social obligations without any budgetary support from Governments. As a result most of these undertakings report huge financial losses.

**Road and other Means of Transport**

Roads are fundamental means of transport. They are supplementary and Complementary to the railways, inland waterways, and airways or shipping. The other means of transport do not provide complete service and depend on roads (transport) for collecting and distributing their traffic. The existence of all other forms of transport depends upon the existence of the approach roads. The Road Transport is also competitive and hence puts a check on the undesirable increase in the rates and fares of other means of transport.

**2.2.1. Characteristics of Road Transport**

**Flexibility**

Road Transport offers flexible service, free from fixed schedules and any number of vehicles can be passed into service quickly to meet the sudden demand or can be withdrawn if demand shrinks.

**Quick and Assured Deliveries**

Road Transport offers Quick and assured deliveries. Time is of great value for a wide range of commodities, including both perishables and high-valued goods. Road Transport by its quick delivery reduces the need for larger inventories and locking up of working capital at a great cost.
Small Investment

Road Transport requires less investment as compared to other means of transport. In the case of other modes of transport, the initial investment will be huge which is not possible for the developing economy to bear at an initial stage. Further, vehicles are very cheap under road transport and operating and maintenance costs are comparatively very low.

Simpler Packaging

A Personal touch is generally present in Road Transport. The customer is given individual care in various matters, including care of goods, settlement of claims for damages or loss, is prevalent.

Employment Potential

Road Transport has a high employment potential. This is an important factor in a country with large human resources needing adequate gainful employment, which at least meets their ends with minimum skills.

Road Transport generates greater employment opportunities. Table 2.1 shows the employment potential per lakh of rupees invested.

<table>
<thead>
<tr>
<th>Mode of Transport</th>
<th>Employment per lakh of Rupees invested</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct</td>
</tr>
<tr>
<td>Road Transport</td>
<td>7.75</td>
</tr>
<tr>
<td>Railways</td>
<td>3.64</td>
</tr>
<tr>
<td>Air Transport</td>
<td>0.72</td>
</tr>
</tbody>
</table>

Source: State Transport Undertakings in India. Central Institute of Road transport, Pune 2005.
It is seen from the table that the direct employment in Road Transport is around ten times greater than the direct employment in Air transport and about two times greater than the direct employment in the Railways.

**Connectivity to Hilly Terrain**

Road Transport alone can provide physical connectivity to the hilly terrains.

**Personalised Travel**

Travel by private car or motorized two-wheeler, or even cycle, satisfies personal pleasures. Such travel provides freedom from scheduled journey and provides easy travel mode in developed countries.

**Strategic Importance**

The defense of the country is more dependent on Road Transport for the movement of all the arms, ammunition and personnel to the extreme place where they are needed, thereby, assuring the maintenance of the national interest.

**Natural Calamities**

In the case of natural calamities, Road transport is of greater importance in providing relief. Famine or flood, it is the Road Transport, which provides hope for the needy during natural calamities.
Environmental impact

All road improvements should be sustainable. Consequently, short-run gains from road infrastructure should not obscure the wider or long-run damage that may be associated with it. The aim is to limit and if possible reduce damage at local, regional and global levels, taking account of all the relevant environmental policies such as those on climate change, local air quality and biodiversity. It is also important to acknowledge the positive environmental benefits that the trunk road system can bring.

Bypasses have their positive and negative sides. They can take noisy, polluting traffic out of towns and villages allowing the implementation of traffic safety regulations and other measures to improve the urban environment. They can also reduce the accidents. On the other hand, bypasses intrudes on the countryside. Road improvements have mixed effect on the emissions. By easing congestion they could help in reducing emission of some pollutants, but they increase emission of others.

Environmental impacts arising from road development projects can be categorized into direct, indirect, and cumulative impacts. These categories can be further broken down, according to their nature into positive or negative impacts, random or predictable impacts, local or widespread impacts, temporary or permanent impacts, and short-or long-term impacts. Direct impacts are caused by
the road itself—that is, by road building processes like land consumption, removal of vegetation, and severance of farmland. An example of this is removing gravel material from a borrow pit for use in surfacing a road. In this case, the land area where the pit is located is affected directly by activities associated with the road project. Direct impacts are generally easier to inventory, assess and control than indirect ones, since the cause–effect relationship is usually obvious. Indirect impacts (also known as secondary, tertiary, or chain impacts) are usually closely linked to the project and may have more profound consequences on the environment than the direct impacts. Indirect impacts are more difficult to measure, but can ultimately be more important. Over the time they can affect larger geographical areas of the environment than anticipated. Examples include degradation of surface water quality by erosion of land cleared for a new road, urban growth near a new road, and increased deforestation of an area stemming from easier (more profitable) transportation of logs to market or the influx of settlers. In areas where wild game is plentiful, such as Africa, new roads often lead to rapid depletion of animals due to poaching.

Environmental impacts should be considered as they pertain not only to road rights-of-way (RROW) but also to the sites associated with the road project, which include deposit and borrow sites, materials treatment areas, quarries, access roads, and facilities provided for the project workers. These ‘OFF-RROW’ areas are often where indirect impacts appear. Environmental impact assessment
practitioners predict and evaluate the significance of the possible indirect effects by taking a holistic approach to impact assessment. It is especially important that any synergetic relationships between impacts be closely examined, since indirect effects frequently lead to synergetic ones.

It is with indirect impacts that linkages between the natural and social environment are most pronounced. For example, the appropriation of land for a road may displace farmers or interfere with their cropping patterns forcing them to use a different water supply. This change could result in the depletion of a groundwater aquifer, intensification of new land clearing, erosion, and contamination of water with fertilizers and pesticides carried in runoff.

2.2.2. Significance of Road Transport

Road Transport constitutes one of the most impartment activities of man in every stage of advanced civilization. It is an important constituent of the infrastructure for economic growth. It plays a significant role in satisfying the needs of society. In the absence of Road Transport, people cannot get the different varieties of food produced in different climates and soil in the world.

The modern civilization is an off-spring of modern Road Transport. It is a mirror which reflects the progress of a Nation, and a link between industry, trade and agriculture. The Modern civilization, which rests upon the large-scale factory production, specialization and division of labour, international exchange of goods
and service and in which the life is fully inter-dependent, stand of single stone of Road Transport.\textsuperscript{8} In the absence of Road Transport, the factories would close down due to non-availability of raw materials drawn from different places, organized markets would collapse due to non-availability of goods supplied from distant mills and fields, the whole system of commerce would fall, international exchange would cease and it would crash our entire system of modern living.

**Economic Significance of Road Transport**

Transportation plays a crucial role in shaping the destiny of a nation. “In fact the whole structure of industry and commerce resets upon the well-laid foundation of Transport” we can see its importance in different branches of economics.

**Road Transport and Production**

Road Transport has considerably facilitated production and particularly large-scale production which is impossible without it. Large-scale production by its nature requires huge quantity of raw materials, large number of workers, huge capital investment, wider markets etc. If finished goods are not immediately distributed, it would require great storing capacity, apart from causing huge working capital to be blocked. This would mean higher cost of storing and financing. This problem of producer can only be solved through cheap and

\textsuperscript{8} Saxena, K.K. Indian Railways-Problems and Prospects. p.2.
efficient Road Transport service which also immensely helps in improving the quality of production and reducing the cost of production. It also improves the industrial productivity.

**Road Transport and Distribution**

Road Transport influences the pattern and reward of distribution of the factors of production, i.e., land, labour, capital, organization and enterprise. Road Transport links increase the rental values of land by assuring future hopes and aspirations of the people of that area for development.

**Road Transport and Agriculture**

Road Transport is an ideal rural transport. No other means of transport can provide so extensive a network of communication as the road to provide transport does in the rural areas. The success of agriculture largely depends upon the sufficiency and condition of the roads. "If it is true that the strength of an army lies in its truer that the strength of our agriculture lies our road." Thus our roads directly and indirectly influence agriculture.

The role of transport in the sphere of agriculture cannot be over-emphasised. It increases the production and productivity of agriculture by providing facilities for improved seeds, manure, fertilizers, marketing, storing, financing, machines, tools, and technical advice.

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9 Ramachandram, V.V. 1956. Road Transport in India. The Orient Publishing Co., Madras, p.3.
A good road network makes it possible to adopt Modern techniques and equipment in the field of agriculture. The use of tractors, modern fertilizers, and improved seeds can transform the nature of agriculture. Agricultural operations in big farms can take place on commercial basis if there is an improved road facility network.

A good road network provides indirect advantages to agriculture and to the rural inhabitants. It breaks the isolation of villages; promotes dairy farming, bee-keeping, poultry-farming and various village and agricultural industries. The villagers thus, get better gainful employment and local raw materials are more profitably utilized. The good road also lessens the strain on the health and fatigue of draught animals and increases their efficiency and speed. It is also an instrument for better cleanliness, sanitation, education, social awakening and cultural development in the countryside.

**Road Transport and Industry**

Industry and Road Transport development go hand in hand. They are the cause and effect of development for each other. Industrial Revolution brought about fundamental transportation provided the pace to Industrialization.

The Road Transport facility plays a dominant role in the location of a factory. The factory that ignores this aspect at the time of its establishment is bound to meet its doom at any early date. Road Transport plays equally an important role in regional development and decentralization of the economic activities and no area can be industrialized without it.
The concentration of economic activities in a few industrial centers is the result of the absence of good Road Transport facilities in other parts of the country. Through proper and balanced development of the system in backward areas, new industries could be developed and old ones shifted to those areas and thus decentralization might take place. Lastly Road Transportation greatly influences the cost structure of a product. The frequent purchases, the capacity of keeping the small inventories, the small load movement store collection and shop delivery of small scale industries all go in favour of Road Transport

Road Transport and Employment

Good Road increases the employment opportunity, particularly in the countryside. First, road construction itself employs various workers, especially in times of depression or prevailing large unemployment in the country. Secondly by promoting new industry, rural handicrafts and agriculture and the local materials are utilized.

Other Economic Advantage

The other important advantages of Road Transport are, a good system of Road Transport increases the mobility of labour and capital. It helps in providing banking, insurance and postal services in an area. It helps in protection of the famine-stricken areas and people. Good road system reduces the operating expenses and depreciation of the road vehicle. Public roads provide facilities for
spreading electric and telephone wires and water pipe-lines. The commercial houses and private persons can own Road Transport means, which increases a good network of transport in hilly areas and forest and thus increases welfare in such areas as well as the place utility of various commodities, which can be brought to plains and sold at fair prices.

**Political Significance**

Road Transport has great Political significance. The various impotent angles have been analyzed under the following heads.

**National Utility**

The Road Transport by its very nature is a unifying factor—both in a national and an international sense. “One reason why Road Transportation strengthens national unity is that it promotes homogeneity among people. Another reason is that it creates a need for political unity, by making the different parts of the country economically interdependent.”

**National Defence**

The second political importance of Road Transport is that its strengthens National defense. The ancient kings and rulers constructed good roads for waging wars and expanding their kingdoms. Constriction of roads on Indians boundaries

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after the attacks of China and Pakistan shows how roads are significant in
defending the country. Military and imperialistic considerations were, doubtless,
upper most in the construction of Roman roads. Road Transport in particular
helped a great deal in supplying materials and transporting troops from one place
to another. The importance of road is greatly realized in the hilly areas where no
other means of transport can help the nation's defenders. Moreover, tanks are good
means for fighting. The motor vehicles are more mobile and vulnerable than other
types of transportation.

Internal Law and Order

Road Transport immensely helps in maintaining internal Law, Order,
Administration and Justice. Internal security against anti-social elements,
sabotage, arson, and violent activities can never be assured in a country without
efficient and prompt service of transport and communication. The timely police
and military aid, service of fire-bridge etc, all require good Road Transport system
in a country.

Social significance

Roads determine social progress. They provide maximum social advantage.
They are the basic necessities of the societies. Since the hoary days of history,
their importance can hardly be exaggerated. Society cannot survive without roads.
Promotes Education and Culture

Road Transport enables students to go to nearby cities to attend schools, colleges, universities and helps in distributing books, magazines, newspapers over a wider area, helps in spreading Education. Likewise, culture, fashion, traditions, fine arts go from one place to another in a country through the medium of road which are the best means for the masses.

Raises Standard of Living

By linking the rural areas with the urban areas and by making it possible to visit cities frequently by consuming commodities and services of different kinds, the roads raise the standard of living, especially of the village people. They also help in having social health and sanitation.

Dispersal of Population

The concentration of population in urban areas and outflow of people from rural areas have created many socio-economic problems. The city life attracts people because it has got modern facilities of living and employment opportunities, but it also enhances and creates problems of housing, slums, unemployment, scarcity of food materials etc.

One of the other hand, the vacuum of Educated and intelligent persons, and labour force in the countryside kills all the opportunities for development and utilization of local resources. Agriculture does get due attention. Rural families lead life without the male member of the family.
The well developed network can link the rural areas with urban areas so as to enable the village people to reside in the countryside and work in cities and frequently visit towns to enjoy modern facilities by developing such facilities in their villages. This would help in both ways. The cities will have less connection of population and hence less problems of socio-economic nature, and the villages will have better opportunities of development, agriculture and village industry will develop, leading to the prosperity of the country in general. As already indicated the Road Transport is an ideal form of rural transport and it helps in decentralizing the population.

Other social advantages

Road Transport promotes the habit of tourism. They also helps in eradicating the conservatism of the people by broadening their outlook. The significance of Road Transport lies in its basic social necessity.

2.2.3. Limitation of Road Transport

The major drawbacks of Road Transport are as follows:

Limited carrying capacity

Almost all the Road Transport vehicles suffer from limited capacity. The carrying capacity of human porters and animals is very limited. While the animals carts, motor busses, and trucks can have additional capacity, when compared to a ship or a train, it is very limited.
Low Speed

The speed of human porters and animal carts is very slow. Even the speed of mechanized vehicles as compared to railways and airways is slow. Over long distance, speed factor becomes very important.

Less Punctual

The road vehicles are less punctual and hence are less reliable and dependable. First, as each road vehicle is independent and does not cause delay to other vehicles, secondly, traffic congestion on the roads causes delay and slowing down of speed. Thirdly, the one-way bridge, railway crossings, speed limits in crowded areas or at bridges etc., also cause delay. On the other hand, railways can maintain punctuality ratio due to greater attention on line clearance because, blockade of line means total blockade of the railway traffic. The journeys are not independent in railway, as all the trains have to pass through only one railway line. Moreover, they have better traffic control.

Higher Frequency of Accidents

The road accidents are not as serious as those of railway or ship, yet they are very frequent. Their frequency is very high because of certain reasons. First, the roads and common public properties are used at all times by pedestrians, animals and various types of carts and mechanized vehicles. The chances of collusion are definitely greater when compared to railways where the rail route is
free for trains alone. Secondly, the traffic control does not exist at all on certain roads, are even if it does, it is not very strict. Thirdly, the lack of road sense, negligence of the public while moving on crossing the roads, ignorance of road rules, negligence of road traffic rules by the drivers are also responsible for higher frequency of road accidents.

Moreover, on account of the diversity of interest between the road haulers and Transport Authorities, the latter often ignore proper maintenance, lighting arrangements, road signals, etc. with the result the accidents are generally caused during nights and rainy season. Besides, other causes like mechanical defect in vehicles, over-speed, wrong and careless overtaking, lack of training are responsible for higher frequency of accidents.

**Lack of Organization**

Road Transport is not organized and coordinated properly. The varied character of road vehicles does not permit a unified and strong organization. However, truck owners and rickshaw owners, have formed some associations but they are not very effective so as to command strict control over road vehicles.

Despites these limitation and drawback Road Transport has an ever growing sphere. It has its own sphere wherein it suits most and provides most economical and convenient service. The flexibility in freedom of movement, frequently and readiness of service on demand small investment, door-to-door
service, and its suitability in certain regions and in certain circumstances has made it so inevitable that one cannot think of life without a system of Road Transport.

With the improvement in mechanized vehicles and road engineering, the scope of Road Transport will go on increasing.

2.3. Road Transportation in India

The origin of road and road transport in India is lost in antiquity. It was only after the First World War that the mechanized road transport started assuming importance in the country's economy. Since then it has made rapid strides both in terms of road kilometreage and the number of vehicles plying on the roads.

2.3.1. Road Transport in India

India's Transport system is both a major component of the national economy and an important factor in shaping the lifestyle, promoting community development and facilitating industrial location patterns. Failure to provide the necessary transport infrastructure in a region which is planning for growth will create bottlenecks and may eventually retard growth. Among the different modes of transport, certainly, it is the Road Transport which is crucial.

2.3.2. Road Transport in India before Independence

The road routes are developed by the Aryan Kings (3000-1000 B.C), the Buddhist Kings (sixth- fourth century B.C) and the Mauryas (fourth-second
century B.C) used by the people of India till the fifteenth century, Sher Shah, the Afghan king, showed active interest in the construction and maintenance of the road system in the middle of the sixteenth century for the defense, consolidation and better administration of his new kingdom in India.

The importance of roads for promoting trade, agriculture, facilitating pilgrimage, use in the war-time activities and the like was understood by the rulers throughout the country. The Gupta Kings were popular for their overseas trade. In the later years, until sixteenth century, the rulers were preoccupied with internal wars and stabilizing the Government and hence did not pay much attention towards the transport system. Mohammad Bin Tughlaq, Akbar, Aurangzeb, Sher-Shah-Suri are the rulers worth mentioning for their role in the development of Road Transport in India.

Only the excellent transport facilities of the British made them the conquerors and rulers of India. By using their best water transport facilities, East India Company did trade with Indian rulers to start along with Dutch and Portuguese. They slowly established colonies in the country and then advanced modes of transport helped them win over the territories one by one. Only British rulers did no real attempt to improve the economy of the country. Only in the twentieth century, because of the world wars, the demand for transport emerged instantly leading to several quick improvements towards the progress in transport was made.
Surfaced road and mechanized Road Transport are comparatively of recent origin in India. The first motor vehicle came to India only in 1898, in order to control and regulate the movement of vehicles to safeguard the lives of pedestrians and to identify the ownership. The first enactment dealing with operational control of motor vehicles was made in 1914 in India.

The Indian Motor Vehicles Act 1914, could not copy with the situation on account of the tremendous increase in the operation of vehicles in the early 1920's as a result of the increased sale of surplus military vehicles soon after the First World War. The government, therefore, enacted a new legislation called the Motor Vehicle Act 1939. The main object of the Act was to ensure the growth of the Road transport on the basis of co-operation within the industry on the one hand and with the railways on the other. Subsequently a Tripartite scheme was introduced to solve the complex problem among the transportation by organizing Joint Stock Companies in the states. But this measure failed.

2.3.3. Allocation for Transport in Five Year Plans

India has witnessed a gradual and phenomenal increase in transportation network during the planning period. This laudable achievement is due to the considerable amount allocation to this sector in all the plans. Indian planners gave high priority to the development of transport. In their opinion an efficient and well developed system of transport and communication is to the success of a planned
economic development which lays stress on rapid industrialization. Accordingly, the allocation on the transport sector was quite high during the first three plans viz., between 25 and 28 percent on the outlay.

The allocations in the next successive plans on the transport sector declined gradually. In the Fourth, Fifth, and Sixth plan, the budgetary resources allocated were 20 percent, 18 percent and 16 per cent respectively. The Eighth plan allocation was only 13 per cent of the total outlay, but the lower allocation after third plan does not mean that transport sector had been fully developed but it is due to resource crunch. In the Ninth plan and in the Tenth plan the allocation for transport was 15.2 per cent and 14.8 per cent respectively.  

2.3.3. Road Transport since Independence

After Independence, there has been a great development in Roads and Road Transport. The length of the roads increased from 4 lakhs of kms. In 1951 to 32.1 lakh kms and in 2005, the rate of growth was 5.4 per cent per year. In terms of road length of paved roads India’s position is second in the world.  

India is a country of six lakh villages. The majority of the population in India lives in rural areas. The 1943, Nagpur plan has classified Indian roads into four groups. They are:

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National Highways

National highways connect the national capital New Delhi with state capitals, and important cities. The construction, repairs and administration of these roads are the responsibility of the Central Government. In 2005, the total length of National Highways is 65,569 kms numbering more than 63 National Highways.

State Highways

State highways connect important cities, district center and National highways. The construction repairs and administration of these roads is the responsibility of the state government. Till March 2005, the total length of the State Highways covered was 1,44,899 kms.

District Roads

District Roads connect taluk centers, important place, state highway and National highway. The construction, repairs and administration of these roads is left to the local bodies. At present the total length of district roads is 4,87,763 kms.

Village Roads

Village roads connect taluk centers with different villages, they are mainly kutchta roads. As on March 2005, the total length of village roads is 32,10,000 kms.
2.4. Development of Road Transport in India

Road transport is now undertaken by State Governments. Since independence, most state governments have Nationalized the bus transport system either completely or partially. Taking all the states together, Nationalized bus services now account to about 40 per cent. There are currently 60 State Road Transport Undertakings (SRTUs) with a total fleet of over 1,00,000 buses with a total investment of over Rs. 5,000 crores and a direct employment of over 1.5 million people and they carry 45 million passengers every day. The state governments are constantly attempting to Nationalize more and more road routes. The important arguments given in favour of Nationalization of bus transport are as follows:

- Road transport is a public utility service and as such should be in the hands of the State.
- Road transport brings in large revenue for the state, which can be used for economic development.
- Nationalization of road transport helps to bring co-ordination between roads and railways transport.
- It also eliminates competition between bus transport companies.
- It brings advantages of large-scale operation.
- Facilities that are not available to small bus companies are available to the large Government Road Transport Corporations.
- The state road undertaking can provide better facilities to the passengers and good working conditions to the employees.
- Utility based additional services.

2.4.1. History of Motor Vehicle Legislation in India

The present Act came into existence on 1st July 1989. Prior to this, Motor Vehicle Act 1939 was in force from 1st June 1935 till 30th June 1989. The respective State governments had framed Rules to implement the Act. The history of the legislations in India dates back to the early 20th century, when the motor vehicles had just started trickling on the India soil. The respective Provinces had their own motor vehicle laws.

a) The Bengal Act 1903
b) The Bombay Act 1904
c) The Burma Act 1906
d) The Madras Act 1907
e) The Punjab Act 1907 and
f) The United Province Act 1911.

The first law to regulate the motor vehicles throughout India came into existence on 1st Feb 1915. It remained in force till 30th May 1939. It regulated the registration of Motor vehicles and licenses for the drivers of motor vehicles.
The Motor Vehicles Act 1939 was in enforcement from 1st June 1939 till 30th June 1988. The Act of 1939 was a statute to regulate the road transport and ensure to healthy competitions between railways and the roadways. The wheels of modern economy had just started spinning then. The Act was then further amended to suit the needs of Independent India.

The present Motor Vehicles Act 1988 was brought to force in the country on 1st July 1989. There was a need for the new act to regulate the road transport in India with the changing scenario in the Automobile and Transport industry. The objectives of the Act state that ‘Need was felt to take into account the changes in road transport technology, pattern of passenger and freight movement development of the road network in the country and the improvement in the techniques in motor vehicles management’.

The Act had incorporated suggestions and recommendations made by several committees and groups of Stake holders.

The Motor Vehicle Act 1988 has been amended in 1994, 2000, and 2001, to keep it updated with changing needs. The Act is likely to be amended again, as the Motor Vehicle Act Amendment Bill 2007 has been presented in the Parliament. The Joint Parliamentary Committee was to submit its report in the last week Winter Session of the Parliament, this year (2007).

Although the Motor Vehicle Acts were in force in India from time to time there is always some ambiguity/missing links and the gap between the law makers and the law enforcers.
2.5. Road Transport under Plan Period

The systematic development of Road Transport in India began in 1929 with the constitution of Jayakar Committee by the British Government. This committee had realized the important role of the central Government in the development of roads. It also discussed in detail the development plans for roads.

Nagpur Plan

In 1943 the chief engineers of all states met in Nagpur and prepared a 10-year development plan for Road Transport, this is popularly known as Nagpur Plan. This plan was divided roads into National Highways, State Highways, District Highways, and Village Roads. This plan aimed at increasing the Surfaced Roads from 88,000 kms to 1,23,000 kms and Un-Surfaced Roads from 1,32,000 kms to 2,08,000 kms. Nagpur plan was renewed in 1948.

Bombay Plan (1961-81)

The chief engineers of the Central and State Government who were looking after the administration of roads and bridges met in Bombay in 1957 and prepared a 20-year road development plan (1961-81). The Bombay plan aimed at increasing the length of roads from 6.69 lakh kms in 1961 to 10.51 lakh kms by 1981.
### Table – 2.2

Road Transport under Five Year Plans

<table>
<thead>
<tr>
<th>Plans</th>
<th>Investment (Crores)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>(01)</td>
<td>(02)</td>
<td>(03)</td>
</tr>
<tr>
<td>I Plan (1951-56)</td>
<td>147</td>
<td>33.80</td>
</tr>
<tr>
<td>II Plan (1956-61)</td>
<td>242</td>
<td>22.00</td>
</tr>
<tr>
<td>III Plan (1961-66)</td>
<td>467</td>
<td>23.54</td>
</tr>
<tr>
<td>IV Plan (1969-74)</td>
<td>990</td>
<td>37.45</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>VI Plan (1980-85)</td>
<td>5082</td>
<td>35.94</td>
</tr>
<tr>
<td>VII Plan (1985-90)</td>
<td>8486</td>
<td>38.68</td>
</tr>
<tr>
<td>VIII plan (1992-97)</td>
<td>17060</td>
<td>39.00</td>
</tr>
<tr>
<td>IX Plan (1997-2002)</td>
<td>164345</td>
<td>40.56</td>
</tr>
<tr>
<td>X Plan (2002-07)</td>
<td>225977</td>
<td>43.40</td>
</tr>
</tbody>
</table>

### Table 2.3
Number of Busses Owned by the Public and Private Sectors in India: 1996-2006

<table>
<thead>
<tr>
<th>Plans</th>
<th>Public Sector</th>
<th>Private Sector</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(01)</td>
<td>(02)</td>
<td>(03)</td>
<td>(04)</td>
</tr>
<tr>
<td>1996</td>
<td>111.1</td>
<td>333.7</td>
<td>449.8</td>
</tr>
<tr>
<td>1997</td>
<td>111.0</td>
<td>377.10</td>
<td>488.10</td>
</tr>
<tr>
<td>1998</td>
<td>113.8</td>
<td>424.2</td>
<td>538.0*</td>
</tr>
<tr>
<td>1999</td>
<td>116.0</td>
<td>424.0</td>
<td>540.0*</td>
</tr>
<tr>
<td>2000</td>
<td>118.0</td>
<td>444.3</td>
<td>562.3*</td>
</tr>
<tr>
<td>2001</td>
<td>115.0</td>
<td>518.9</td>
<td>633.9*</td>
</tr>
<tr>
<td>2002</td>
<td>114.7</td>
<td>520.3</td>
<td>635.0*</td>
</tr>
<tr>
<td>2003</td>
<td>115.2</td>
<td>611.9</td>
<td>727.1*</td>
</tr>
<tr>
<td>2004</td>
<td>117.6</td>
<td>736.8</td>
<td>854.4*</td>
</tr>
<tr>
<td>2005</td>
<td>120.5</td>
<td>856.4</td>
<td>976.9*</td>
</tr>
<tr>
<td>2006</td>
<td>126.9</td>
<td>972.3</td>
<td>1099.2*</td>
</tr>
</tbody>
</table>

**Note:** *Includes Omni-busses*

Public Sector busses are owned and operated by STUs which are on road in use. The busses of private sector are derived from total number of buses net of those in public sector.

**Source:** Road Transport year Book 2006-07, Transport Research Wing, Ministry of Shipping, Road Transport and Highways, Government of India, New Delhi.

It is evident from the data presented in the Table 2.3, that the number of buses owned by the private sector was only 33, 37,000 in 1996 which has shown jump in 2006 it triggered-off to as high as 97,32,000 in number. Similarly, the buses owned by the Public Sector was just 11, 11,000 in 1996 and increased to
Chapter 2: Road Transport and Development

1,26,9000 in 2006. The slow growth in the number of public sector owned buses may be attributed to the impact of the policy of privatization followed in India in recent years. Thus, the analysis carried out above gives an overview of the development of transport sector in general, in India since independence.

2.6. Road Development Policy of Government

Pursuing the policy of private sector participation, the ministry of surface Transport has awarded 20 projects at an estimated cost of over Rs. 1000 crore. Several State Governments have also taken steps to associate private sector in the development of roads. To encourage private sector participation, a model concession agreement for major projects costing more than Rs. 100 crore has been finalized to be undertaken under Build Operate Transfer (BOT) scheme.

Highways Development Policy

National Highways that are the prime arterial route span about 65,569 km throughout the country and cater to about 40 per cent of the total Road Transport demand. The National Highways Authority of India (NHAI) was constituted and made operational in February 1995. This authority was entrusted with the task of implementing the National Highways Development Project (NHDP) comprising 4 to 6 laning of 14, 279 km of National Highways at an cost of Rs. 65,000 crore (2004 prices) on 31st January 2005 about 5,418 kilometer of NHDP was completed.
The Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched in December 2000 to provide connectivity all weather roads in 1000 habitations in plane areas and 500 habitations in hilly regions. The Central Road Fund Ordinance (CRFO) 2000 was promulgated on 1st November, 2000 to give statutory effect to the creation of Central Road Fund. A cess of Re. 1 per liter on petrol, high speed diesel and oil is levied to mobilize resources to this fund. Under NHDP phase III, it is proposed to take up rehabilitation and upgradation of about 10,000 kms of existing National Highways to four lane dual carriage ways under a BOOT (Build, Own, Operator and Transfer) basis. The important aspect of Road Transport under five year plan is that in many states several segments of Road Transport were Nationalized. National permit plan was implemented for the inter-state transport of goods and passengers. At present in India Road Transport covers 87 per cent of passenger transport and 65 per cent of goods transport.

2.7. Problems of Road Transport

Compared to the vast geographical area and population, the extent of Road Transport is inadequate. The permit system, Motor Vehicles Act, and unlimited check posts centers have all restricted the development of Road Transport, it is also facing the burden of tax. Inflation in the price of fuel, spare parts etc., has also restricted the development of Road Transport. Many transport companies are running under losses. Rural Roads are not suitable for transport throughout the year. Moreover village roads are in a very bad shape. Road Transport is the prime
mode of transport in cities, whereas in rural areas many villages are yet to have road links. The administration of roads is not satisfactory and financial problems have kept roads in a bad condition.

Table 2.4

<table>
<thead>
<tr>
<th>Year</th>
<th>Share in percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fright Transport</td>
</tr>
<tr>
<td>1950-51</td>
<td>13.8</td>
</tr>
<tr>
<td>1960-61</td>
<td>16.2</td>
</tr>
<tr>
<td>1970-71</td>
<td>30.1</td>
</tr>
<tr>
<td>1980-81</td>
<td>38.1</td>
</tr>
<tr>
<td>1990-91</td>
<td>38.1</td>
</tr>
<tr>
<td>2000-01</td>
<td>61.6</td>
</tr>
<tr>
<td>2001-02</td>
<td>60.5</td>
</tr>
<tr>
<td>2002-03</td>
<td>60.5</td>
</tr>
<tr>
<td>2003-04</td>
<td>61.1</td>
</tr>
<tr>
<td>2004-05</td>
<td>62.5*</td>
</tr>
<tr>
<td>2005-06</td>
<td>63.3*</td>
</tr>
<tr>
<td>Percentage</td>
<td>366.75</td>
</tr>
</tbody>
</table>

* Road Transport year book 2004-05, 2005-06. Transport Research Wing, Ministry of Shipping, Road Transport and Highways, Government of India, New Delhi, p. 6

Data presented in Table 2.3 reveal that the Road transport Sector in passenger carriage has been all time high. The data also prove that the Road Transport Sector has been, equally, on the forefront with respect to the freight carriage, across the country where its share was high as 63.3 per cent during 2005-06.
2.8. Road Accident Scenario in India

Accidents and the fatalities on road are the result of the inter-play of a number of factors. Road users in India are heterogeneous in nature, ranging from pedestrians, animal-driven carts, bicycles, rickshaws, handcarts and tractor trolleys, to various categories of two / three wheelers, motor cars, buses, trucks, and multi-axle commercial vehicles etc. The absolute number of vehicles has increased from 3.06 lakhs in 1951 to 72 million in 2006. In 2003, cars numbered 8.6 million (12.9%), buses 0.73 million (1.1%), trucks 3.5 million (5.2%), and motorcycles 47.5 million (70.9%). The vehicle population has been steadily increasing with the pace picking up significantly since the Eighties. However, the increased vehicle population in the face of the limited road space used by a large variety of motorized and non-motorized traffic has increased the need and urgency for a well thought-out policy on the road safety management. In this regard, the Government of India has been keen to issue needed policy directions and has already accorded a high priority to the same, although more than eighty thousand people are killed and around four lakhs injured in about four lakhs reported road accidents in the country.

---

Table 2.5
Road Accidents in India

<table>
<thead>
<tr>
<th>Year</th>
<th>No of Vehicles (1000)</th>
<th>Accident</th>
<th>Fatalities</th>
<th>Accident Per 1000</th>
<th>Fatalities Per 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>44875</td>
<td>386456</td>
<td>81966</td>
<td>86.12</td>
<td>18.27</td>
</tr>
<tr>
<td>2000</td>
<td>48857</td>
<td>391449</td>
<td>78911</td>
<td>80.12</td>
<td>16.15</td>
</tr>
<tr>
<td>2001</td>
<td>54991</td>
<td>405637</td>
<td>80888</td>
<td>73.76</td>
<td>14.70</td>
</tr>
<tr>
<td>2002</td>
<td>58924</td>
<td>407497</td>
<td>84674</td>
<td>69.23</td>
<td>14.39</td>
</tr>
<tr>
<td>2003</td>
<td>67033 (p)</td>
<td>406726</td>
<td>85998</td>
<td>60.68</td>
<td>12.83</td>
</tr>
</tbody>
</table>

(p) Provisional

Table 2.6
The extend of Road Accident death of the five years 1999 to 2003

<table>
<thead>
<tr>
<th>Year</th>
<th>All Roads</th>
<th>National Highway</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accident</td>
<td>No of person killed</td>
</tr>
<tr>
<td>1999</td>
<td>386456</td>
<td>81966</td>
</tr>
<tr>
<td>2000</td>
<td>391449</td>
<td>78911</td>
</tr>
<tr>
<td>2001</td>
<td>405637</td>
<td>80888</td>
</tr>
<tr>
<td>2002</td>
<td>407497</td>
<td>84674</td>
</tr>
<tr>
<td>2003</td>
<td>406726</td>
<td>85998</td>
</tr>
</tbody>
</table>

(p) Provisional
In spite of the fact that the overall road condition in country is now much better, the study shows that the increase in the traffic has been disproportionate to the basic infrastructure of surface transportation and such situation is causing greater risk and creating traffic hazards on the road. India is facing a serious road accident problem. India has one percent of the world's vehicles but it accounts for six percent of the world's accidents. The statistics of road deaths in India when compared to developed countries reveal that, India is at least six times worse than the worst of European countries. The annual rate of mortality in India due to road traffic accidents is a phenomenal 8%. According to some estimates, India accounts for 10% of the global road carnage. It is estimated that there is an accident every 90 seconds in India and every 7 minutes one person dies. National Highways that constitute 2% of the total road length and carry more than 40% of passenger traffic and 85% of goods traffic have registered more accidents, accounting for 20%, as compared to other roads. The road accidents in India and persons killed since 1970 reveals constant rise. However, the number of accidents always exceeds the number of persons killed about 89,000 persons were killed and 1295,000 injured in road accidents in India in 2006. In India two wheelers and trucks contribute to the majority of accidents.

The data on accidents and fatalities in road accidents across major metros the data reveals that Kolkata, Delhi, Chennai and Mumbai accounted for more than 50 % of total road accidents and about 40% in total number of persons killed
in during 2002, 2003 and 2004. However, the share of these four metros in total accidents has declined from 62% in 2001 to 53% in 2004. Similarly, the share of these four metros in total number of persons killed in road accidents has also fallen from 51% in 2001 to 40% in 2004. It is noteworthy that Delhi accounted for more than 1/5th of total number of persons killed in metros. However, its share has fallen from 26.6% in 2001 to 22.1% in 2004.

2.9. Road Transport in Karnataka

Road transport is the dominant transport mode in the State of Karnataka. The total length of the road network in the State is about 134,000 kms, of which about 42,000 kms are under the responsibility of the Karnataka Public Works Department (PWD). About 66% of the total network is surface treated. Zilla Panchayat, Irrigation and Forest Departments manage the rest of the total network. Some additional 9,000 kms of urban roads are managed by Municipal Governments.

Though the state is well connected with the internal transport system of the country, it appears that transport system in Karnataka is not satisfactory. Out of different modes of transport that are available in the country, some are plying a very limited role in the state due to their inherent nature. They include air and water transport. Consequently, the railway and road transport have a constructive and a responsible role in passenger transportation.
2.10. Historical Profile of the KSRTC

The larger state of Mysore was formed on November 1, 1956, as per the provision of the states Reorganisation Act, by combining with the former Mysore state (District of Bangalore, Chikkamagalur, Chitradurga, Hasan, Kolar, Mandya, Mysore, Shimoga, and Tumkur), the Kannada speaking areas of former states of Hyderabad (Hyderabad- Karnataka, i.e., Districts of Bidar, Gulbarga, and Raichur), Bombay (Bombay- Karnataka, i.e., Districts of Belgaum except Chandgad Taluk, Bijapur, Dharwad, and North Kanara), Madras (Madras-Karnataka, i.e., Districts of Bellary, Kollegal, Taluk in Coibattur District and South Kenara, District excluding Kasargod Taluk) and the whole of the state of Coorg. On the basis of the provision of the Mysore state (Alteration of Name) Act, 1973, the new nomenclature ‘Karnataka’ replaced what was then known as Mysore on November 1, 1973, (RE 14).

The road sector suffers from a number of problems which includes:

- Insufficient investment in the primary network given the rapidly growing demand for road transport
- Inadequate and sub optimal allocation of resources for road maintenance
- Limited private sector participation in development of the sector
- Institutional constraints of the key road agency, the Public Works Department (PWD) and
• PWD’s lack of customer focus as well as absence of road user and broader citizen involvement in sector management.

The road network is one of the most valuable assets in the state of Karnataka, facilitating the movement of many thousands of tonnes of freight and helping millions of people to access workplaces and services every day. The network has very significant positive impact on society through stimulating growth, generating employment and helping to integrate the State, as well as some negative impacts by way of death and injury on the roads, environmental damage and social costs in terms of community severance or destruction of cultural property. Moreover, even the large sums of public funds going to the sector plus the collection of road-related tax and charges, all citizens have an interest as taxpayers in the working of the road network. Yet despite these significant direct impacts on the public, the level of effective dialogue between Government departments responsible for roads and the road users has traditionally been very limited and informal.

The PWD is responsible for the planning, design, construction and maintenance of SHs and MDRs, bridges and buildings, as well as the construction and maintenance of NHs on behalf of the Government of India (Go I). To manage and maintain the road network effectively and to meet the transport demands of a modernising economy, the PWD needs to improve its efficiency and develop a structure and incentive system that motivates its staff. To date, the performance of
PVD has been measured largely in terms of expenditure progress instead of benefits to road users. Road planning needs updating and in particular requires the systematic collection and analysis of data from the field.

The Government of Karnataka (GOK) has articulated its strategy for enhancing sector performance through publication by Government Orders of an Infrastructure Policy (1997) and the Policy on Road Development (1998). The Infrastructure Policy reiterates GOK's commitment to:

- Ensuring infrastructure expansion to meet growing demands,
- Welcoming and stimulating private investment and participation in infrastructure,
- Adopting an integrated approach to infrastructure development, and
- Allocating adequate Government resources to infrastructure development and maintenance.

In addition to these policy documents, a Task Force on roads was constituted in 1999 by the Government of Karnataka to identify constraints that restrict sector performance and to recommend solutions. It made a number of recommendations in 2000 which includes:

- Significant increase in the funding largely through the creation of a dedicated non-lapsable road fund which would levy a new cess on fuels, oils, auto spares and tires and
Creation and statutory empowerment of a road fund board, with 50% or more of its members coming from the Private sector and an independent chairperson, to manage the fund and be accountable for its use.

Karnataka State Highway Authority; an advisory committee has been constituted and a Road Users Board has also been constituted. Under its Economic Restructuring Program, the GOK is undertaking a comprehensive set of actions to improve fiscal performance and public service delivery. Some pilot actions have already been taken to improve the delivery of services with a large public interface such as maternity wards, transport, stamps and registration, including:

- User surveys or consultations to identify problems and benchmark progress,
- Improvement in business process/computerization,
- Grievance redresser mechanisms,
- Stability of tenure for those involved in restructuring, and
- Publication of "Citizen Charters".

A number of road agencies internationally are now placing more emphasis on meeting road user expectations and accordingly, are trying to measure customer satisfaction over time. The PWD wishes to pursue a similar approach. Hence, as part of a number of activities designed to enhance service delivery, the PWD proposed carrying out surveys of customer satisfaction in three stages between 2002 to 2006. First survey was conducted during 2002 and the report was...
submitted in November 2002. The PWD intended to take up the Second Road User Satisfaction Survey and TNS Mode has been contracted to carry out the Second Road User Satisfaction. The survey will be run once again prior to the end of CY 2006 to monitor progress made during the tenure of the Karnataka State Highway improvement Project (KSHIP).

2.11. Road Development in Karnataka

Road are always recognized as the infrastructure and arteries of the nation. Roads play a decisive role in initiating and accelerating the process of economic development. Road network of Karnataka is 1,34,062 km in length and spreads over a geographical area of 1, 91,791 sq. km of the state, amounting of an average road length of 70 km per sq. km. started initially with a substantial responsibility of the State Government in the recent years participation of the private sector has been initiated in financing and development of facilities for roads and bridges.

Karnataka Road Development Corporation has been set-up in 1999 with the hope that the corporation would raise resources from market and financial institution, and take-up economically viable and strategically improvement roads for development and earn returns. In addition to this, the Corporation under various Central/State financial assistance schemes has been provided for investment in roads and bridges. For instance, the Karnataka State Highway improvement Project (KSHIP) with World Bank assistance is under formulation
for the improvement of 900 kms of state highways. An amount of Rs 520 crores was provided under the Annual Plan 2003-04. This project was carried out from July 2001 to December 2006. As far as rural roads are concerned, Rs 106.40 crores had been provided during the Annual period of 2003-04 under Pradhan Mantri Gram Sadak Yojana (PMGSY). For the construction of rural roads, NABARD provided Rs 120 crores during the Annual Plan 2003-04.

This also indicates that there exists a very high correlation between road development and indicators of economic development such as Gross Domestic Products (GDP), industrial and agricultural production. The investment in roads sector generates greater employment then other sectors for the same investment. Investment on roads and employment generation is shown in table 2.7.

Table 2.7

<table>
<thead>
<tr>
<th>Year</th>
<th>Investment (Rs. In Crores)</th>
<th>Employment (In Lakh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986-91</td>
<td>4000</td>
<td>35</td>
</tr>
<tr>
<td>1991-96</td>
<td>11500</td>
<td>63</td>
</tr>
<tr>
<td>1996-01</td>
<td>27752</td>
<td>83</td>
</tr>
<tr>
<td>2001-06</td>
<td>34568</td>
<td>98</td>
</tr>
</tbody>
</table>

Source: Karnataka Development Report, Planning Commission Govt. of India New Delhi. 2007
2.12. Current Road Status in Karnataka

Total road length in Karnataka comprises of National Highways, state highways, important district roads, other district roads, ZP roads, and village roads. The total length of roads at present is of the order of 154 thousand kilometers in 2003-04, of which 62, 70 per cent is surface road. On an average, about 80 kilometers of road exists per every 100 sq.km of geographical area. However, the distribution of the roads between the districts, and within the districts is not at all balanced. National standard envisages a road network of about 100 km per 100 sq. km of area. Thus, the state as a whole is lagging behind the suggested norms. In road developments the types of roads which are there in Karnataka are shown in the table 2.8.

Table 2.8
Growth of Road Length in Karnataka

<table>
<thead>
<tr>
<th>Types of Roads</th>
<th>Road Length (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Highway</td>
<td>1997</td>
</tr>
<tr>
<td>State Highway</td>
<td>11288</td>
</tr>
<tr>
<td>Major District Roads</td>
<td>18063</td>
</tr>
<tr>
<td>Other District Roads</td>
<td>3179</td>
</tr>
</tbody>
</table>

In the rural segments there has been substantial improvement in the accessibility of villages by roads. As on 2003-04 there were only 27 villages which remain unconnected by roads in the state. The number of villages connected by all-weather roads is also progressing from 12649 in 1991-92 to 18,295 in 2003-04 and likewise, there has been a reduction in the number of villages connected by kutcha and non-memorable roads from 7433 to 3501 in this period.

In order to develop the roads and bridges in rural areas, the state has utilized the Rural Infrastructure Development Fund (RIDF) under its different trenches. The road length improved from March 2003 was 1693 kilometers under RIDF-II, 2985 kilometers under RIDF III, 2319 km under RIDF V, 2201 km under RIDF VI, 518 km under RIDF VII, and 44 km under VIII, out of 1, 535 number of road project works taken up under all these trenches, 1,336 projects have been completed in respect of bridges, the numbers of projects taken up was 391 in this period of which 399 were completed. Under the Pradhan Mantri Gram Sadak Yojana launched in 2000 in Karnataka, all unconnected rural habitations with a population of more then 1,000 persons is expected to be covered in the center as additional central assistance and sum of Rs 416.66 crores have been spent upto December 2004 and a road length of 1,3336 kms has been asphalted.

2.13. Policy and Vision for the Future

Karnataka is one of the well developed states of India. However, the growth of Road network in the state of Karnataka has not kept pace with the requirements. It is a recognized fact that modernization of infrastructure, especially transportation plays a vital role in enhancing the growth rate of any region. It is
important to recognize the fact that road connectivity to rural areas is a must for improving the socio-economic conditions of the rural people. The major objectives of the road sector development should aim towards creating adequate capacity to match the demand, all weather roads for all villages, modernization of construction activities and appropriate strategies to maintain the road networks.

The state is borrowing money from external agencies, especially from World Bank to the tune of Rs 2,300 crore for maintenance and upgradation of state highways. Government of Karnataka has created a special cell, known as Karnataka State Highway Improvement Project (KSHIP) as a project implementation unit in the mainline Public Works Department to utilize these funds. Karnataka Road Development Corporation was set up in 1999 to undertake the maintenance of 75,000 kms of road network and construction of ISO bridges to borrow money from the external agencies. Along with these privatized ventures, the PWD also required a face lift from building maintenance activates.

A perusal of Public Works Department expenditure reveals that the meager allocated to training and development of staff was not utilized. In this area of specialization it is essential to upgrade refresher courses, long-term training and research. There is no human resource policy followed in rewarding the performers in the department. There is an urgent need to upgrade capacity building and human resource development in the organization associated with road development.

There is also a need to change the current practices in the contracting industry and construction technology. Quality systems for different components of the road sector needs to be reviewed and upgraded. It was felt that quality
assurance activity might be outsourced for better quality control. The state does not maintain a well-developed database covering the road network, traffic data, accident records and maintenance information. Development of such a database helps in preparing long-term maintenance management plans. Being an IT hub in the country, the state can develop such database very easily.

In order to drive optimal benefits from scarce resources it is essential to develop master plans for roads in each district, based on the guidelines developed by Indian Roads Congress. Combining all the district, Master Plans could develop a prospective plan covering a time period of 20 years. It helps in prioritizing the road construction activities in different districts based on the resources availability.

There is a necessity to argument the resources for highway project by allowing Private sector participation in highway projects. It is estimated that to maintain the existing road network in Karnataka, about Rs 9,000 crore are required at 2001 price level. Furthermore, a number of additional levels on transport related activities such as additional cess on petrol/diesel, motor vehicle spares, etc., could be considered. It is felt that a Karnataka Road Fund could be created and all the revenues generated for the road development might be transferred to this fund. In order to encourage professionalism for the road sector, this fund may be managed by a group of experts drawn from different stakeholders.

The vision for the state should be to raise the road coverage to around one km per one sq. km area such a vision should be targeted in the next 10 years, ahead of other developments.