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An Overview on Road Transport with reference to Davangere Division in Karnataka

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1. Introduction

The Mysore Government Road Transport (MGRDT) was established on 12th September 1948. By the end of the year 1948, the Department was operating services on 81 routes, with a fleet of 120 buses and with an invested capital of Rs. 17.77 1akhs. Nationalization of Road Transport was also initiated in Bombay State in 1948, and by State Transport buses. The urban and suburban services in Mysore City and Bangalore Metropolis were nationalised in October 1955 and October 1956 respectively. At the time of Re organisation, the new State inherited 438 nationalised routes with 530 buses from Bombay State, 30 nationalised routes with 80 vehicles from Hyderabad State and 310 nationalised routes with 215 buses from Mysore State. In the wake of Reorganisation of States, the MGRTD grew overnight phenomenally and became the fourth biggest undertaking in the country.

Karnataka State Transport Corporation was statutorily established on 1-1-1961 under the provisions of the Central Road Transport Corporation Act of 1951 and was being managed as a Government Department, as a wing of the Home Department for nearly 13 years since its inauguration. The Objectives incorporated behind the establishment of the corporation are:

1. To provide the the people with road transport facilities marked by high consistency, reasonable comfort and moderate cost within the offered technological and economic constraint.
2. To constantly explore the newest and the latest technological development in the field of road transport in order to provide better, safer and cheaper mode of road travel to the traveling public, and
3. To build up and maintain a high technological capacity in the Corporation to keep the ever-growing fleet in an excellent condition.

At present, KSRTC has been divided into four sub corporations.

- KSRTC (Karnataka State Road Transport Corporation) with its head quarters at Bangalore to take care of the inter-State and inter-State services originating from Bangalore and the other adjoining southern districts.
- NWKRTC (North West Karnataka Road Transport Corporation) with its head quarters at Hubli to serve the northern and western districts.
- NEKRTC (North East Karnataka Road Transport Corporation) with its head quarters at Gulbarga to serve the Hyderabad- Karnataka region.
- BMTC (Bangalore Metropolitan Transport Corporation) with its head quarters at Bangalore to take care of the City services.

With these, KSRTC has ten divisions such as 1. Bangalore centre 2. Bangalore Rural, 3. Chikmagalore, 4. Davangere, 5. Hassan, 6. Kolar, 7. Mangalore, 8. Mysore Urban, 9. Mysore Rural, and 10. Tumkur. The performance of the government bus network improved in certain areas after these were created, although they were never really cash rich.

2. Statement of the Problem

Mobility has become a key concept in the modern Welfare State, so that it is almost regarded as a basic value in a modern society. Consequently, mobility rates alone sometimes taken as one of the performance indicators of an economic system. The workings of different transport systems in India especially for passenger transport have received considerable attention since the later half of 1950's.

State Transport Undertakings (STUs) in India have a special responsibility to provide road-based passenger mobility, as they are the biggest undertakings in the hands of the respective State Governments. It is believed that there are economies of scale in the size of undertakings. This leads to the assumption that STUs are operating on increasing returns to scale and their average cost declines with increase in the level of production. Providing such an undertaking with an exclusive franchise is then rationalized as a means of protecting it from unfair competition and thus of increasing its viability.

In Karnataka, KSRTC (Karnataka Road Transport Corporation) is such State transport undertaking to provide road - based passenger mobility throughout the State. Thus, the present micro-level study entitled *"Performance of State Owned Road Transport Corporation - A Case Study of Davangere Division"* intends to analyse the strengths and weaknesses in physical and financial performance. The study is also aimed at pointing out the quality of service of the Division.

3. Rationale of the Study

Till now, public attention in India has been focussed too much on the performance of the centrally-sponsored public undertakings with the result that the performance of innumerable units promoted and managed by the various State Governments went almost unnoticed. There are thousands of

public enterprises attached to State Governments that interact more directly with the public, such as road transport corporations whose study has been neglected. It will be a good idea if research is initiated in the functioning of Government Companies under the control of different States. The studies of individual public enterprises in India have two-fold contributions to the research effort on the subject. First, these studies have thrown up a good deal of closely relevant data not available, otherwise, particularly outside. Secondly, they pinpoint individual problem areas of different enterprises and suggest the way in which these problem areas should be dealt with. Performance review is a feedback device, which provides a documented log of experience that is highly valuable for future decision-making. Profitability is the conventional calculus used to assess the performance of business enterprises. But in the case of public sector enterprises, profitability as the criterion for measuring the performance is being discounted since there are decisions, which are made outside the enterprise to which the particular enterprise has to conform. The overriding social objectives and other environmental constraints are, therefore, stressed more often in the performance evaluation of public sector service-oriented organizations like State road transport undertakings.

There is thus a primary need to distinguish between the performance viewed from the narrow commercial angle and from the wider macro economic angle. In view of this, performance evaluation of a State transport undertaking sandwiched between service and trade is a complex process. A host of performance parameters are, often used to represent the physical, financial and social dynamics of Transport Corporation. There is usually some meaningful inter-relationship that exists between the various performance indicators. It is inappropriate to study each of these in isolation especially since an interpretation with respect to single indicator may occasionally give a misleading picture of the overall performance. So a single indicator approach is not sufficient to evaluate the performance of State transport undertakings. Instead, the adoption of a package of multiple indicators would help us to understand the operational as well as the achievement levels of a transport undertaking.

4. Methodology

Area of the Study

The present study covers Davangere Division as a case study, which is one among the ten KSRTC divisions, for an intensive and indepth analysis. The Davangere Division *covers* three districts such as Shimoga, Chitradurga and Davangere which is consisting totally 21 taluks (blocks) in it. This Division maintains total 328 buses (Rural-115, Express-211, and Semi-Luxury - 2) and nine mini buses. In addition to these, 30 private buses also acting together with this division for rent. It has nine major bus stop, two miner bus stop, and two control points in Honnali and Sagar. The Transport operators, commuters and crews of the system are in the focus of attention in the study.

Sources of Data

The study covers the period from the inception of Davangere Division from 1992-93 onwards and it is based on primary as well as secondary data. Further, the study covers the performance of the corporation considering before and after the bifurcation of the organization viz., 1992-93 to 1999-2000 and 2000-01 to 2006-07 so as to know the present status of the Corporation. The secondary data has been collected from Published Books, Journals, Periodicals, Newspaper, Government Records, KSRTC Annual Reports etc., to understand the composition of Road Transport Corporation and other information. The analysis of the efficiency of the services of the division is done on the basis of primary data. The primary data has been collected through the questionnaires and interview schedules from different respondents' *viz*., commuters, Crews and the operators.

Sampling Design

A total of 210 Commuters (Transport Users) at random belonging to different users categories were interviewed across the Division for the purpose of the study. In all 90 (60 KSRTC and 30 Private) employees in the system were interviewed and whose prescriptions about the system were analysed in the thesis. 20 Private bus operators were interviewed in the Division to elicit their views on the various issues pertaining to the bus transport operation in Davangere Division.

Classification of Transport

Transport can be classified from two-angle (1) According to the tracks or vehicles used (2) According to the used for moving the vehicles.

According to the tracks or vehicles used, transport can be divided as (a) Land transport- Road transport and Rail transport. (b) Water transport (c) Air transport.

According to the energy used for moving the vehicles, following four energies can be used.

(a) Human energy (b) Animal energy (c) Mechanical energy (d) Air energy.

Along with the advancement of civilisation 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. Transport by pack and draught animals continues to occupy an important place in undeveloped remote areas. In olden days when mechanical energy was not invented, air energy was used to move boats and small ships. The classification of subsequent paragraphs is noteworthy.

Road Transport

Road transport includes (a) transport by human energy,i.e., porters. (b) transport by pack and drought animals like mules, donkeys, horses, bullocks, camels or elephants which function in different regions where local conditions make them popular and economical to use. (c) transport by country carts. (d) transport by modern vehicles like automobiles, trucks and motor buses.

The foremost advantage of road transport is that roads are usually provided by State authority and any vehicle can used on payment of a certain tax fixed by law. Road vehicles are comparatively cheaper than railway services. Moreover the flexibility of road transport is a decided advantage over railway services. Door to door service is possible compared to the railways. Road transport is better suited for light traffic and

short distance. For long distances, and heavy traffic, railways are more economical.

Human porters and transport by pack animals still existing in undeveloped regions. Even now there is a surprisingly large amount of traffic, which uses these primitive transport techniques, but these are gradually being replaced by mechanical road transport, as the economic development of the regions progresses. Motor vehicles are the most popular means of road transport, how ever, in backward regions, horse carriage and bullock carts still hold their value. Bullock carts and horse carriages are cheep and economical for short journeys. It is much useful in congested places where delays in loading and unloading are considerable.

5. Road Development in Karnataka

Roads are always recognised as an 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 (as of March 2002), amounting to an average road length of 70 km per 100 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 developing of facilities for roads and bridges. Karnataka Road Development Corporation has been set up in 1999 with the expectation that the corporation would raise resources from market and financial institution, and take up economically viable and strategically important 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 Highways Project with World Bank assistance is under formulation for the improvement of 900 kms of State highways. An amount of Rs 520 acres was provided in the Annual Plan 2003-04 for this project to be carried out from July 2001 to December 2006. As far as rural roads are concerned, Rs. 106.40 crores have been provided during the Annual Plan of 2003-04 under Prime Minister Gramodaya Sadak Yojana (PMGSY). For the construction of rural roads through NABARD assistance Rs. 120 crore was is provided during the Annual Plan 2003-04.

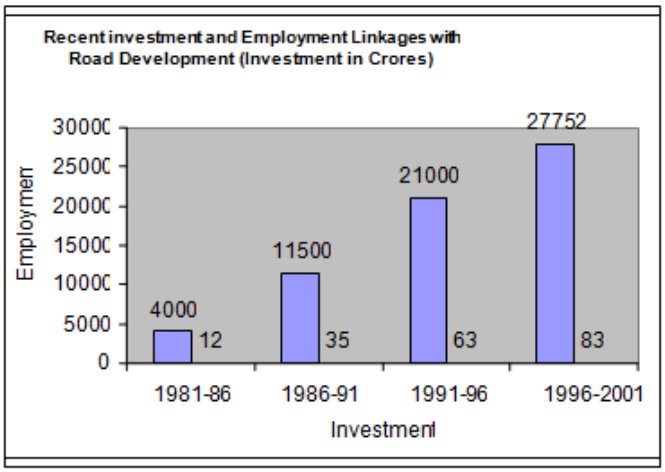
Studies indicate that there exists a very high correlation between road development and indicators of economic development such as gross domestic product, industrial and agricultural production. The investment in road sector generates greater employment than many sectors for the same investment. Investment on roads and employment generation can be viewed in Table.1 and Figure .1

Table 1:Recent Investment and Employment Linkages with Road Development

Year	Investment (Rs. in Crore)	Employment (Lakh Persons)
1981-86	4000	12
1986-91	11500	35
1991-96	21000	63
1996-2001	27752	83

Source : Karnataka Development Report, Planning Commission Government of India, New Delhi, 2004.

Figure.1



6. Current 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 road 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 division of the roads between and within the districts, is not balanced. The national standard envisages a road network of about 100 kms/ 100 sq. km of area. Thus, the Karnatka as a whole is lagging behind the suggested norms. The road developments by types of roads in Karnataka are shown in the Table 2.

Table 2 :Details of Growth in Road Length in Karnataka State

Category of Roads	Road Length (Km)			
	1991-92	1995-96	2000-01	2003-04
National Highways	1997	1997	3728	3967
State Roads	11288	11395	9829	9590
Major District Roads	18063	28311	28247	38247
Other District Roads	3179	2090	-	-
Municipal Roads	8056	8366	8366	8366
Other Roads	91494	8361	104034	94034
All Roads	133987	137520	145204	154164

Source : Karnataka Development Report, Planning Commission, Government of India, New Delhi, 2004.

In the rural segment there has been substantial improvement in the accessibility of villages by roads. As of 2003-04 there were only 27 villages which remain unconnected by roads in the State. In 1991-92, they were 199. 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-motorable roads from 7433 to 3501 in this period.

In order to develop roads and bridges in rural areas the State has utilised the Rural Infrastructure Development Fund (RIDF) under its different tranches. The road length improved

upto March 2003 was 1693 kilometres under RIDF-II, 2985 kilometres under RIDFIII, 2319 kilometres under RIDF- IV, 2535 kilometres under RIDF V. 2201 kilometres under RIDF-VI, 518 kilometers under RIDF- VII and 44 kilometers under RIDF 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 number of projects taken up was 391 in this period of which 339 were completed. Under the Pradhan Mantri Gram Sadak Yojana launched in 2000 in Karnataka, all unconnected rural inhabitations with a population of more than 1,000 persons is expected to be covered in the next 3 years. Funds for this programme are being provided by the Centre as additional central assistance and a sum of Rs. 416.66 crore have been spent upto December 2004 and a road length of 1,336 kilometres has been asphalted.

A number of departments are associated in the development of road network. Agency-wise break up of road length in Karnataka is shown in Figure 2. It should be noted that Zilla panchayats under the decentralised development have a larger share of responsibility in the development of rural roads in Karnataka (as seen from Figure 2.also). The quality of the roads viewed by the types of roads as shown in Table 2.

With respect to the lane width, out of the total 10,021 kms of State highways, single lane roads account for 59 per cent, intermediate lane roads 31 per cent, and less than 10 per cent are double lane roads. In case of major district roads, 93 per cent are single lane roads, 6 per cent intermediate lane roads and less than 1 per cent are double lane roads.

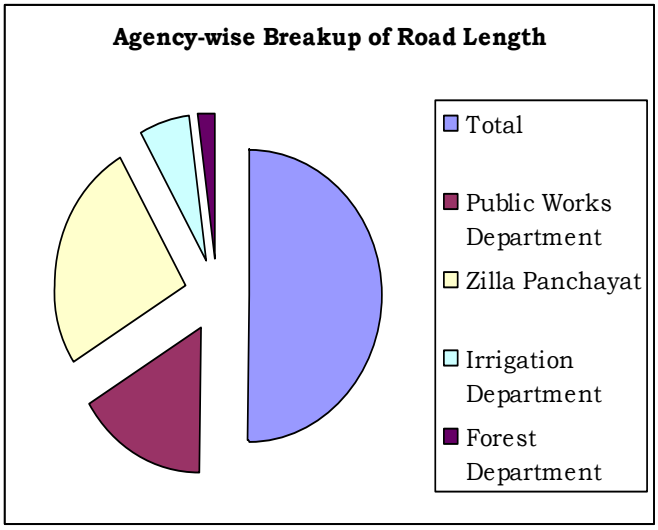


Figure 2 Source: Karnataka Development Report, Planning Commission, Government of India, New Delhi, 2004.

Table 3:Surface Type-wise Break-up of Different Categories of Roads

Length of Road Category -Km	Surface Type				Total
	Cement Concrete	Bituminous	Water bound Macadam	Others	
NH	90	3407	-	-	3497
SH	108	9899	08	06	10021
MDR	24	22626	5338	259	28247
ODR	-	1116	509	09	1634
Village Road	06	10712	24445	9846	4009
Taluk Devl. Road	-	368	6092	24686	31146
Irrigation Dept.	03	646	4791	3977	9417
Forest	-	15	490	2077	2582
Total	231	48789	41673	40860	131553

Source : Karnataka Development Report, Planning Commission, Government of India, New Delhi, 2004.

7. Organisational Structure on Road Development

Public Works Department (PWD)

PWD is one of the very old departments of the State. For a long time this is the only engineering department looking after all engineering related activities. Subsequently the original department was bifurcated into PWD (Roads and Buildings) and Irrigation Departments.

- Associated organisations with PWD are:
- Karnataka Road Development Corporation Limited (KRDCL).
- Karnataka State Highway Improvement Project (KSHIP).
- The Chief Architect, Karnataka, Bangalore (CA).
- Port and Inland Water Transport (PIWT).
- Karnataka Land Army Corporation (KLAC).
- Karnataka State Construction Corporation (KSCC).
- Karnataka State Police Housing Corporation (KSPHC).
- Karnataka Engineering Research Station (KERS).

The major activities of the Department are:

- Collection of field data on existing road network (NH, SH and MDR) and bridges for upgradation, improvement and maintenance.
- Traffic survey and preparation of database.
- Investigation, survey, planning, design, preparation of estimates, tendering, implementation of new road projects, upkeep and routine annual maintenance of existing roads including quality assurance/checking.
- Preparation of estimates, including structural designs, for the buildings of Government departments, construction including quality checking/assurance.

With increasing deterioration of roads, it is necessary to

concentrate more and more on maintenance. It is always felt that PWD should concentrate on maintenance activity of roads alone and leave the construction activity to other bodies/cells such as KRDCL and KSHIP. For instance, Karnataka State Highway Improvement Project (KSHIP) is a Special Project Implementation Unit (PIU) in the mainline PWD. The main functions of KSHIP are upgrading 991.38 km of State highways and major maintenance work of 2,268.50 km of State highways, costing around Rs. 2,030 acres (mainly funded by World Bank). KSHIP functions like a corporate entity with adequate financial freedom.

The Task Force for Road Works setup by Government of Karnataka in September 2000 felt that there is no synergy between the road maintenance activity and building maintenance activity, without building construction. Therefore, it is recommended that the buildings related activity be separated from PWD.

As an efficiency augmenting measure, there is a need to make a distinction between public provisions and public production. In case of PWD, while Government should provide, it need not always produce the entire service. Greater efficiency can be achieved if some of the services are contracted out to the private sector for production. In PWD, it is possible to explore several areas that can be entrusted to the private sector for greater efficiency.

The areas of outsourcing could be:

- Surveys and investigation,
- Quality control,
- Guest houses,
- Vehicles of the department, and
- Gangmen for maintenance

Karnataka Road Development Corporation Limited (KRDCL)

KRDCL, which is the wholly owned enterprise of the State Government, was created in July 1999 for the development of road infrastructure in Karnataka. It is governed by a Board, which is the final decision making authority. Main functions of KRDCL include:

- building roads and bridges,
- facilitate BOT entrepreneurship and collection of tolls
- to take up priority works, and .
- to borrow funds for the above.

The Corporation has taken up mini works and the important ones are:

i) Construction of 147 bridges on the various State highways and major district roads of the State.
ii) Maintenance of 7,038 kilometres of State highways,
iii) Strengthening and four-Laning of existing Bangalore Mysore State Highway in different phases, etc.

Most of the road construction activity is undertaken by KRDCL and KSHIP, leaving behind only the maintenance of the road network (State highways and MDR) to PWD staff. The improvements and maintenance of national highway is taken up by PWD staff under National Highway Zone with funds from Government of India.

Vehicular traffic in Karnataka irrespective of inadequate infrastructure facilities has increased phenomenally in the recent year. In 1990-91, the number of motor vehicles were 14, 33,000 and this increased more than four-fold to 48,76,000 in 2003-04. Motor vehicles per lakh of population have touched 6,879 in 2001-02 much above the all-India number of 5,723 but below that of Kerala, Tamil Nadu and Maharashtra.

Resource Allocation on Road Development

In efficiency in resource utilisation stems from the processes followed in the Government towards decision making and disbursement of funds. While funds do flow through the government, in case of the corporations/PIU, the funds are in the nature of a dedicated account and there is no uncertainty in terms of flow of funds. In the case of department, processes are too cumbersome, flow of funds is erratic, and disbursement of funds is influenced by several other considerations as can be seen from Table.4 It .can be noted that in case of State funded works, only 40 per cent of the Letter of Credits (LoCs) sought are released whereas in the case of NABARD, almost the entire amount was released.

The increased in growth in the traffic volume and the ever increasing loads cause greater distress on the road pavement, calling for higher outlays for the maintenance and development of the road network. Proper maintenance is essential to provide desired quality of riding and performance. The budgetary allocations both at national and State level always fall short of the requirements.

Table 4 :Distributed of Funds under Different Schemes (2000-01)

Month	LoCs Sought (Rs. in lakhs)		LoCs Released (Rs. in lakhs)	
	State	NABARD	State	NABARD
April 2000	273.1	700.0	0.0	0.0
May	258.0	900.0	25. 5	1600.0
June	253.0	500.0	0.0	0.0
July	278. 5	700.0	45. 5	1200.0
August	490. 5	500.0	236.0	500.0
September	475.0	600.0	147.0	600.0
October	446.0	525.0	112.0	516.0
November	529.0	350.0	63.0	350.0

December	521.0	600.0	205.0	587.0
January 2001	821.0	900.0	2.5	900.0
February	856. 5	500.0	306.0	0.0
March	1985.0	500.0	1746.9	1000.0
Total	7182.6	7275	2884	7253

Source : Karnataka Development Report, Planning Commission, Government of India, New Delhi, 2004.

The existing sources of financing are as under:

- Government budget including sovereign borrowings,
- Central road fund,
- Fee/toll on bridges,
- Market committee fee, and
- Other levies/surcharge.

The plan outlays and expenditure on roads and bridges showed a quantum jump from Rs. 953 crore during Ninth Five Year Plan period (1997-2002) to Rs. 3949.46 crore in the Tenth Five Year Plan period (2002-2007). In the annual plans of the Tenth Five Year Plan which was lower in the First Annual Plan 2002-03 at Rs. 602.39 crores was raised to Rs. 1,074.94 crore in 2003-04 and little less than this in 2004-05 at Rs. 1,057.89 crores. Similarly, in respect of outlays were enhanced progressively. But, as observed earlier, these are far inadequate to meet the ever increasing traffic volume in the State. This is revealed also in the budgetary allocation of the State. In Karnataka, budgetary allocations are not adequate to meet the growing demands. Budgetary allocations of the State in the last five years is shown in Table .5

Table 5 :Budgetary Allocation-PWD: Government of Karnataka (State Highways and Main District Roads) (Rs. In Lakhs)

		1995-96	1996-97	1997-98	1998-99	1999-00
Plan	Allocation	5437.11	5180.00	4449.00	2203.00	1830.00
	Expenditure	4605.10	7752.82	4376.48	1865.06	1272.46
Non Plan	Allocation	6149.66	6606.41	9500.00	11800.00	14782.62
	Expenditure	6620.33	7741.33	7466.04	9838.71	10092.70

Source: Karnataka Development Report, Planning Commission, Government of India, New Delhi, 2004.

Clearly, there is a need to enhance budgetary allocations on road developments. It is estimated that the funds needed to maintain the existing network in Karnataka are about Rs. 9,100 crores at 2000-01 price level. Thus, the budgetary allocations are quite insufficient to meet this demand.

In order to meet the ever-increasing demand for maintenance and to expand the road network, there is need to tap all possible sources of finance-public, private and foreign. It is, therefore, recommended to create a separate road fund for the State. The funds raised from every source may be credited into this fund.

- Levy of cess on transport related items-petrol, diesel, various engine oils, CNG used as fuel by automobiles, tyres and tubes, motor vehicle spares, etc.
- Toll on roads and bridges-developed out of dedicated fund.
- Special cess on the use of the roadway by agencies like electricity, telephone, water supply, sewerage, Internet service providers, cable operators, etc.
- Betterment levy on land and property where there is value addition due to formation of new roads.
- Commercial exploitation of land adjoining highways-hotels and resorts, service facilities, workshops, truck terminals, etc.
- Private participation and development of roads construction of bypasses, bridges, improvements of road on BOT, BOOT, BOST, BT, BOO, BOLT, etc.
- External aid-World Bank, ADB, OECF, borrowing from domestic financial institutions.
- Fines and penalties levied on vehicles carrying overload.
- Certain contribution/levies by industries such as cement manufacturers, vehicle manufacturers, etc.
- A cess on activities such as ore carrying, movement of granite blocks, etc. that causes higher distress to the road pavement.
- Open market borrowings by bonds, debentures.
- Road cess on first time registration in the State.
- Highway Infrastructure Savings scheme similar to NSCs, KVPs, etc.

It is advisable to give top priority for improvement in road maintenance standards in the State by making the required investment. A part of this expenditure may be recovered from the beneficiaries or the road users, by charging special levy or cess on petroleum products, tyres and automobile parts. This is in tune with the present day concept of user or beneficiaries to pay for the services.

The National Highway Act 1956 and Karnataka Highway Act 1964 have been amended to permit private entrepreneur to undertake National Highway and State road projects on build own and transfer (BOT) basis and recover the investments through tolls. Policies have been framed both by the Central and the State Governments extending financial support to investors. New road links such as bypass roads and major bridges may be opened for private sector under BOT system.

8. Towards Better Governance

New thinking on several counts are necessary if major shifts in road development and maintenance are to be scaled up. Capacity building and human resource development on a continual level is a must for development of any organisation. Side by side, one has to improve the capability for efficient delivery of programmes and this would need attention on several fronts, first being the FWD and KRDCL departments, directly concerned with roads.

Secondly, some alternative strategy is also worth 'experimenting. For sustained improvement in implementation of projects, development of contracting industry in the highways sector on healthy lines is imperative. A major push in the direction of improving the contracting industry in India came in 1985 when for the first time, the Government of India, while seeking loan assistance for roads from the World Bank (WB) accepted to adopt international competitive bidding (ICB) procedures for the highway projects forming part of the loan package. In order to encourage modernisation and mechanisation (both these words were considered synonymous), size of the project was kept at Rs. 100 to Rs. 150 million at that time. State PWDs and NHAI have huge road upgradation programmes in their hands. The volume of works envisaged is 5 to 6 times the current capacity of contractors in the highway sector. It will, thus, be necessary to create conditions of growth for domestic contractors and support from foreign contractors.

Thirdly, some changes in construction technology are also necessary. India's road construction technology was essentially labour-oriented till the 1980s. The strategy then suited the needs to absorb the unemployed in road construction and maintenance, working with small size of contract packages, and loaded with a policy of import-substitution, which prevented the State-of-art equipment to be imported into the country. The economic reforms introduced in 1991 have enabled a major impetus to import world-class road making equipments. The tightening of the specifications facilitated the use of modern equipment. The use of vibratory rollers for compaction has become common. Electronic sensor controlled. Asphalt pavers have replaced the old technology mechanical pavers.

Fourthly, there is a need for consistency in the quality of road construction and incorporation of quality aspects in the organizations and agencies entrusted with the task of road construction has assumed paramount importance. Adoption of ISO 9000 systems has a good impact on quality, productivity and cost reduction. Both the government departments and the private sector contractors and consultants are progressing in acquiring such certifications as a demonstration of their determination and resolve in supplying quality product and/or service.

The Indian Roads Congress have evolved guidelines on quality systems for roads and bridges. To facilitate preparation of appropriate quality system for individual road and bridge projects, application of these guidelines by all those involved in road building activity would lead to achievement of high quality in highway projects.

The major components of quality assurance consist of:

- supplier's quality policy,
- purchaser's quality policy,
- internal quality systems,
- documentation, and
- work culture
- 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 recognised fact that modernisation of infrastructure, specially transportation plays a vital role in enhancing the growth rate of any region. It is important to recognise the fact that road connectivity to rural areas is a must for improving the socio-economic conditions of rural people. The major objectives of the road sector development should aim at creating adequate capacity to match the demand, all weather roads for all villages, modernisation of construction activities and appropriate strategies to maintain the road networks.

The State is borrowing money from external agencies, specially 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 utilise these funds. Karnataka Road Development Corporation was set up in 1999 to undertake maintenance of 75,000 kilometres of road network and construction of ISO bridges and to borrow money from external agencies. Along with these privatised ventures, the PWD also requires a face lift. It should be made responsible only for road works, delinking from building maintenance activities.

A perusal of Public Works Department expenditure reveals that the meager amounts allocated to training and development of staff is not utilised. In this era of specialisation it is' essential to upgrade skill and competence of the staff of the department through 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 organisation 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 need to be reviewed and upgraded. It is felt that quality assurance activity may 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 a database very easily.

In order to derive 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 perspective plan covering a time period of 20 years. It helps in prioritising the road construction activities in different districts based on the resource availability.

There is' a necessity to augment the resources for highway projects 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 levies 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 may be created and all the revenues generated for the road development may 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.

9. Conclusion

The present study is an attempt to consider various aspects of physical and financial performance of State Owned Road Transport Corporation. The work has been analysed in detail within the objectives mentioned and exhausted almost all the secondary and primary sources for collation of data. Based on the findings of study few suggestions are being offered at the end. The suggestions, if implemented in good faith would certainly be helpful in improving the performance of the Public Road Transport System both in the Division and State.

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