CHAPTER-II

INFRASTRUCTURE AND DEVELOPMENT OF ROAD TRANSPORT

National Scene :

Road transport sector has a very important role to play in the development of rural areas as well as urban areas in our country like India. Roads and road transport are essential infrastructures for the growth and development of any economy. Its role in the development of a developing economy like India cannot be over emphasised. It provides men from one place to another place and it is essential for round the corner economic growth of our country, social and emotional integration, cultural development. It helps in generating more economic activity.

In recent years road transport has emerged as a significant carrier of passengers in India. The vast rural and urban area can be opened up and brought into the main stream of the economic activity only through an integrated system of roads and road transport.[1]

Road transports are the basic prerequisites for the development of the economy. In fact, the entire structure of industry and commerce rest on the well-laid foundation of transport. By proper dispersal of divisions, depots and maintenance facilities, the public sector transport industry could generate considerable employment potentialities in the rural areas as well as urban areas of our country.

The other social advantages resulting from road transport, such as the spread of education, medical facilities, family planning etc. cannot be evaluated in terms of money. The development of road transport also exposes the Indian population

to new influences. The rural population in particular can drive large benefits from the road transport. The rural and urban population of our country could have increased their standard of living through the net work of roads and road transport. All over the world roads and road transport have contributed significantly to the growth of the National Product of a number of countries while our country remained backward in this respect. There have been threefold increase in surfaced and unsurfaced roads since independence, while the availability of roads both in terms of area and population is woefully inadequate. The Indian road system is one of the largest in the world. The total kms. on March 31, 1951 was 4,00,000 kms. of which 1,57,000 kms. were surfaced roads and the rest 2,43,000 kms. were unsurfaced. The following table gives an idea of progress of road system since 1950-51.[2]

Table-- 2.1

progress of Roads (,000 kms.)

year	Surfaced Roads	Unsurfaced Roads	Total
1950-51	157	243	400
1960-61	231	448	679
1970-71	420	540	1022
1979-80	630	980	1610
1984-85	830	940	1770
1991-92	1071	969	2040
1995-96	1382	1021	2403

source : Motor Transport statistics of India 1950-51 to 1995-96, Ministry of surface Transport, New Delhi.

From the above table (2.1), it is clear that surfaced road is increasing year after year and unsurfaced road also increasing year after year because of the growth of population. In 1931, the population was 31 crores, in the year 1971, it was 55 crores, in the year 1981, it was 68 crores and in 1991 it was 84 crores.

The share of road trnsport in passenger traffic increased at a much faster

rate than that of Railways in India. In India, the Railways accounts for 74% of the total passenger traffic carried by rail in 1950-51.The respective share declined to 20% in 1996-97. The share of road transport increased from 26% in 1950-51 to about 80% in 1996-97. The growth and relative share of rail and road transport in passenger traffic is shown below.[3]

Table - 2.2 (Billion passenger kms.)

year	Rail	Road	Total Rail+ Road	% of share Rail	% of share Road
1950-51	66	23	89	74	26
1955-56	62	31	93	67	33
1960-61	78	57	135	58	42
1965-66	96	95	191	50	50
1968-69	107	140	247	43	57
1970-71	118	169	287	41	59
1973-74	136	208	344	40	60
1974-75	126	219	345	37	63
1975-76	144	225	374	40	60
1976-77	164	235	399	41	59
1977-78	177	250	427	41	59
1996-97	402	1608	2010	20	80

Source : Report of National Transport policy committee Government of India, Planning Commission, p. 18. and Rail Transport Journal, April-- June 1998.

Table - 2.3

Mobility parameters for different States as on 31.03.95

Sl. No	State /UT	Area in Sq. Kms.	Population in Lakhs (1995)	Rd. Length (in Kms) as on 31.3.95	Auto vehicles (Nos) as on 31.3.95	Pass buses (Nos) as on 31.3.95	Rd. length per Lakh of papu-lation	Auto vehicles per Lakh popu-lation	Buses per Lakh of popu-lation
1.	A. Pradesh	275068	279.18	138911	2212363	24774	190.50	3034	34
2.	Assam	78438	237.72	64664	368135	20288	272.02	1549	85
3.	Gujarat	196024	465.28	76819	3021166	31487	168.36	6621	69
4.	Behar	173877	943.34	84915	1246132	17211	90.02	1321	18
5.	Haryana	44212	185.33	15831	899442	7100	139.38	4853	38
6.	A. Pradesh	55673	57.50	24031	104939	40400	417.93	4825	70
7.	Jam. Kas.	222236	85.46	13093	163665	10689	153.21	1914	125
8.	Karnataka	191791	495.63	153102	2014141	29060	308.90	4064	59
9.	Kerela	38863	330.01	212858	1005922	34862	645.00	3048	106
10.	M.Pradesh	443446	727.45	128010	2069646	30507	175.97	2845	42
11.	Manipur	22327	20,59	6573	58342	1521	319.23	2834	74
12.	Maharastra	307713	868.05	216733	3621331	38512	249,68	4172	44
13.	Meghalaya	22429	19.83	6226	41963	1825	313.97	2116	92
14.	Nagaland	16579	14.57	8031	77756	2036	551,20	5337	140
15.	Orissa	155707	344.19	173636	594140	9916	504.48	1726	29
16.	Punjab	50362	222.81	54096	1769754	13767	242.79	7943	62
17.	Rajasthan	342239	495.18	111786	1584776	31455	225.75	3200	64
18.	Sikkim	7096	5.14	1544	687600	273	300.39	13377	53
19.	T. Nadu	130058	599.40	193618	2423448	34115	323.02	4043	57
20.	Tripura	10491	31.11	14078	321035	1151	452.52	1032	37
21.	U. Pradesh	294411	1530.80	188076	2537915	26788	122.86	1658	17
22.	W. Bengal	88752	743.93	61494	1198733	25575	82.66	1611	34
23.	Andaman Nikobar	8249	3.28	772	132831	269	235.37	4050	82
24.	Arunachal Pradesh.	83743	10.67	7128	10225	353	668.04	958	33
25.	Chandigarh	114	8.37	1472	350613	1421	175.87	41889	170
26.	Dadra, Nagar Havali	491	1.48	315	6161	160	212.84	6190	108
27.	Delhi	1483	112.77	18835	24332925	26200	167.02	21569	108
28.	Goa	3702	12.22	5878	192684	2454	481.01	15768	201
29.	Daman Diu	112	1.10	——	15840	94	0.00	14400	85
30.	Mizoram	21081	8.29	3417	163405	795	412.18	1971	96
31.	Pondicheri	492	11.92	2429	115269	925	212.63	9835	79

Source: State Transport undertaking, profile and performance, Pune, India, 1994-95, 95-96, issue.

From the above table 2.2 it is clear that importance of road transport is increasing overtime relative to the rail. Among the rail and road the importance of road is increased more than the rail. But this increase is not so much as the growth of population. The following table 2.3 shows the inequal distribution between the population in different states and bus transport per lakh of population upto 31.03.95.[4]

From the above table 2.3 it is clear that bus per lakh of population in different states has not increased with the same pace of population. It is also clear from the above table that the road length per lakh of population is significantly lower than the road length (in kms.) in different states of India.

However it is not true to suggest that there is any clearcut policy of the Government regarding the transport policy. It is necessary to point out that the percentage share of transport in Indian's National Domestic product over the years is increasing. It has increased steadily from 2.81 percent in 1950-51 to 5.92 percent in 1983-84, where the percentage share of the transport sector in the United States Gross National product over the same period is decreasing from 5.61 to 3.63.[5] in a sense, it may be said that the law of increasing return to transport sector is operating in India but in the United States the law of diminishing return has set in. Therefore, the potentiality of transport sector in terms of contributing to National Domestic product is still very high. When the components of transport sector in India are taken seperately the percentage share of railways in National Domestic product is more or less constant over the years where as " other means " is increasing. In the share of transport the claim of " other Means " is dominent.The increasing activities of manufacturing industry have been found to have greater link in the rise in percentage share of transport by " other means " where in road transport probably plays a major role.

When transport, communication and trade are taken together then the share of transport is also found to be increasing over the years. In the 1st. five year plan the share was 12.2 percent, in the Sixth five year plan was 17 percent and it became 31.30 percent for road and road transport of the total outlay while for road transport alone the investment is 8.66 percent in seventh plan. This clearly shows that road transport again has been paid scant attention in the seventh plan.

In case of United States the share of transport, communication and trade together were 25.2 percent in 1950 and it came down to 22.7 percent in 1986. Though the percentage share of transport, communication and trade in the National Domestic Product is on the increasing trend, the percentage share of transport and communication in total outlay is on the decline. In the sixth Five Year plan the share of transport communication and trade was 17.6 percent but in the same period the same percentage share in plan outlay on transport and communication was made in the Second Five Year Plan.[6]

Of all the modes of transport i.e. Air, shipping, Railways and Road Transport, the road transport suits well to the Indian context. For this reason the Indian Government is trying to develop the all types of road from the beginning of 1st.plan period and which will be clear from the table 2.4 given below.[7]

Table- 2.4

Road length catagorywise in India 1951-1996. (in kms.)

Year as on 31st March	Highways maintained by P.W.D. N. H.	S.H.	Other P.W.D.	Panchayat Raj Roads	Urban Roads	Project Roads	Total
1951	19811	@	173723	206408	—	—	399942
1956	20835	@	190612	227303	—	—	470504
1961	23798	@	257125	197174	46361	—	524470
1966	24036	@	281099	249821	89046	126149	770152
1971	23835	56765	276833	354539	72120	138093	914979
1976	29132	89215	340499	484790	97490	163745	1204851
1981	31671	94359	421985	628865	123120	185511	1491101
1982	31777	95654	438882	651975	126095	187882	1530165
1983	31767	96969	455174	675392	129801	190003	1579106
1984	31817	97041	463210	693760	132416	202260	1620504
1985	31852	99262	489807	727077	135299	203651	1686948
1986	32088	100461	500869	747710	138647	206276	1726051
1987	32305	100970	525264	773421	141618	207014	1780592
1988	32445	115989	484052	864414	143537	207332	1847770
1989	32886	123131	488512	909556	157193	210607	1919885
1990	33479	124266	497476	941410	187171	206065	1983867
1991	33650	127311	509435	949662	186799	209737	2016594
1992	33666	128662	521028	955832	189352	212485	2040895
1996	34508	135187	763959	1021807	210660	237513	2403634

included in other P. W. D. roads.

Source : Motor Transport Statistics of India 1997, Ministry of Surface Transport, New Delhi.

From the above table 2.4, it is clear that the highways, panhayat roads, urban roads and project roads are increasing from the 1st. plan period, but the pace of growth is neither very even nor satisfactory.

In India, the length of road is increasing rapidly; but the number of public sector buses have not increased significantly though the number of private sector buses have increased. If we see the following table (2.5), we will see the importance of public sector can not be under estimated. The following table shows the growing importance of the public sector in India.[8]

Table - 2.5

Ownership pattern of buses by private and public sector.

Year	Total No. of buses	% of public sector	% of private sector
1960-61	56792	31.6	68.4
1965-66	73175	36.2	63.8
1970-71	106349	40.0	51.0
1976-77	116939	47.9	52.1
1977-78	117449	49.5	50.5
1984-85	N. A.	N. A.	N. A.
1994-95	424945	25.9	74.1

It appears from the above table that the growth of private sector buses is more than the public sector in India. It is also clear that the pace of increase in private sector is more than the public sector buses. So it is necessary that there is clear cut policy of the Government regarding the transport for all round development in India.

We can also say that the growth of population in India is relatively high, because in India there were only 2400 lakh population in the year 1901. According to census, it was 3100 lakh in the year 1931, then it was 3600 lakh in the year

1951, then again it was about 5500 lakh in the year 1971, it was 6800 lakh in the year 1981 and last it was 8400 lakh in the year1991. So we can understand from the above figures that India is perhaps an over populated country. At present the percentage of population growth per year in India is about 2.3. If the present growth of population keep intact, India's population will become 10,000 lakh in the year 2001. But in India, the growth and composition of Motor Vehicle population is higher than the population growth during the study period. Because in India, the rate of growth of population is 2.3 percent. Table 2.6 will give clear picture about this matter given below.[9]

The table 2.6 shows that the growth and composition of motor vehicle population is 2.7 percent where as the rate of population growth is 2.3 percent. So there is a need for infrastructure and development of road and road transport in India.

Table--2.6

Growth and composition of Motor vehicle population (in '000 number)

Year	All vehicles	T wo wheelers	Cars, Jeeps and Taxies	Buses	Goods vehicle	Others
1951	306	27	159	34	82	4
1956	426	41	203	47	119	16
1961	665	88	310	57	168	42
1966	1099	226	456	73	259	85s
1971	1965	576	682	94	343	170
1976	2700	1057	779	115	351	398
1981	5391	2618	1160	162	554	897
1982	6055	3065	1243	173	613	961
1983	6973	3654	1385	185	675	1074
1984	7949	4351	1455	199	742	1202
1985	9170	5179	1607	223	822	1339

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Table 2.6 Contd.

1986	10577	6245	1780	227	863	1462
1987	12618	7739	2007	245	984	1643
1988	14818	9300	2295	269	1114	1840
1989	16920	10965	2486	278	1179	2012
1990	19152	12611	2694	298	1238	2311
1991	21374	14200	2945	331	1356	2533
1992	23507	15661	3205	358	1514	2769
1993	25299	17026	3330	381	1599	2963
1994	26464	17936	3446	390	1791	2901
1995	27299	18166	3630	412	1901	3120
1996	33558	23111	4189	449	1785	4024
1997(E)	37581	25915	4682	512	2265	4207

Source : Motor Transport statestics of India 1998 Ministry of Surface Transport, New Delhi.

Socio-Cultural aspect of urban people :

India is a big country. According to the census of 1991, the population of India is about 84 crore. Among the 77% people live in 6 lakh villages and rest 23% people live in about 4 thousand towns. The people of towns earn their lives through various types of jobs, services, bussiness etc. The population of India has increased very rapidly and so also the rate of urbanisation.

The urban people are working in offices, court and various types of factories. Some of them also are involved in business organisations. But the distances between their homes and working places in some cases is long and therefore, they avail of various types of transport such as bus, tram, train, motorcycle etc. Most of the middle class people depends on bus or train, only those who are well-off use their own vehicle.

But at present the country seems headed for a virtual transport collapse in its cities. Traffic in town is projected to quadruple by the turn of the century (traffic projection usually falling short of actual), while the urban road structure can improve marginally in most places. The resultant traffic bottlenecks and chaos on

roads in urban areas can well be imagined.

In India, about 2 crore 8 lakh two wheelers are on our roads, with 40% of these concentrated in the 12 big cities. At present, two wheelers touch 2 crore 10 lakh 23 thousand and all of them circulating in urban areas. Hordes of cycle rickshaws and cycles, tempos, tongas carts, buses are used by the urban people.

Now-a-days urban people are facing various types of problem due to the heavy traffic jams in towns. That is the cause which lay behind the multiplicity of the vehicle types and resultant traffic bottlenecks. They are often incompatible, because of mixing of the fast and slow vehicles.

Nature and scenario of urban Transport :

The nature of urban transport is entirely different from that of rural transport. In the country side there is no problem of passenger transport and the problem of goods transport is also not very complex. Urban transport on the other hand is very different.

The nature and intensity of transport problems in the urban areas depend upon various factors, like the distance to be covered, nature and volume of trade, nature of industries, size and nature of population, administrative offices, pilgrimage centres, schools, colleges and universities, medical colleges, courts, nature of feeder transport etc. In metropolitan cities like Mumbai, Chennai, Calcutta, Bangalore, Hyderabad and Delhi, where long distances are to be covered. So city is over crowded and for this reason fast and cheap transport services is required. In the big or medium size cities like Jabbalpur, Kanpur, Agra, Varanashi, Allahabad etc. different transport system is required. If the city is smaller still less speedy transport may serve the purpose.

Cheap, efficient and fast transport is needed in the cities for passengers and goods. In big cities like Mumbai, Delhi, Calcutta, Bangalore etc., people have to go their work places from a distance from 30 to 40 kms. everyday. The labour to factories, businessmen to the shops, employees to the offices, students to the colleges and various such groups have to commute every morning and come back

every evening. Moreover on account of long distances in the city people require some means of transport for various other purposes like marketing of items of daily use, seeing pictures, meetings relatives and friends or visiting places of interest. These cities need passenger transport service for this purpose i.e city transport service for feeding railways and passenger buses to feed other modes of transport.[10]

The urban transport scenario may be discussed in following way.

1) The increasing rate of urbanisation & city size and urban land uses have tremendous influence on urban transport. The urban population has increased significantly from 62 million in 1951 to 217 million in 1991 & it is estimated that by the turn of the century the urban population would increase to 236 million. In terms of percentage of total population, the urban population has gone up from 17% to 27% during 1951 to 1991. Consequently, the number & size of cities have also increased considerably. The most disturbing feature of urbanisation is of uneven concentration of population in different size/ class urban centres. The major metropolitan cities are attracting large number of population, with the result, the number of metropoliton cities which were 12 in 1981 has increased to 23 in 1991 and the population in metropolitan cities during the same period has increased from 41 million to 71 million registering about 69% increase. About 32% of total urban population is concentrated in 23 metropolitan cities. This along with floating population creat manifold demand for traffic and transportation which is not possible for the existing transport system to cope up. Further there is concentration of more vehicles in large cities and problems are compounded by mixed traffic– slow and fast.

ii) There were more than 21.5 million vehicles in the country in 1991 of the total vehicles two wheelers accounted for 65%, car/jeep/taxies 13.8% and bus 1.5%. The average annual growth-rate during 1981-1991 was 29.5% for all vehicles, 44% for two wheelers, 15.2% for car/jeep/taxies & 10.4% for buses. The vehicular population, it's type and ownership varies widely from city to city. The 23 metropolitan cities in India had more than 7.4 million registered vehicles in 1991 which accounted for 35% of total registered vehicles in the country. Of all the

metropolitan cities the first four major mega cities Calcutta, Mumbai, Chennai and Delhi had 3.5 million vehicles in 1991 and accounted for 47% of total registered vehicles in metro cities. The number of vehicles in Delhi are more than three megacities i.e., calcutta, Mumbai, Chennai put together of the total vehicles. The personalised vehicles like two wheelers and cars have increased at a tremendous pace during the last two decades. The percentage share of two wheelers in 1991 in Calcutta, Mumbai, Delhi & Chennai was 43%, 41.5% , 67% & 73% respectively. In addition the increasing number of goods vehicles are creating demand for more road space and adding congestion. This cosequently puts tremendous pressure on the available road space because there is no significant increase of land under roads. Further the transport net works are not designed to accomodate high volume of traffic.

iii) The vehicular ownershp in India is very low compared to the other developed nations. There were 25.5 vehicles/1000 vehicles/1000 population in metropolitan city level in 1991. In comparision, in 1991,there were 533, 546, 623, 315 and 197 Motor vehicles per 1000 population in France, Germany, Japan, Malayasia and Singapore respectively.

iv) The travel demand in almost all the cities has increased tremendously. This is estimated to increase from 335 billion passenger Kms(bpkm) in 1991 to 1905 (bpkm) by 2001 for seventeen towns as per study by Tata Energy Research Institute (TERI). Average trip length, varying from 12.7 to 13.5 km. in the top four metropolises, has also given up along with per capital trip rate of more than one. The annual growth of travel demand is increasing at the rate of 2.2% in Calcutta, 4.6% in Mumbai, 9.5% in Delhi and 6.9% in Chennai. There is also change in the pattern of trip distribution, more and more trips are being made in urban areas for work followed by education and by motorised vehicles. More than 60% of the total trips in Mumbai are meant for work and 31% for education.

v) Though mobility and accessibility have increased tremendously in the urban areas, these are however not free from problems. Delay, congesion, accidents, high level of air and noise pollution, over crowding of transport systems, energy wastage etc., have some disquieting effects. The speed of the vehicles have

appreciably gone down because of inadequate carrying capacity of the road net work. The development of roads and infrastructural facilities have not kept pace with the growth rate of vehicles.

vi) The vehicle operating speed in many roads in Mumbai and Delhi have declined ranging from 15% to 50% between 1962-72. Indian cities are considered more accident prone inspite of very low ratio of vehicle population per 1000 people and due to low availability of road space per 100 sq. kms. It is as low as 147 kms. in Calcutta and 119kms. in Jaipur. Overcrowding in the public transport system is more pronounced in large cities and it is an usual sight that the buses which are supposed to carry 60-70 passengers generally carry doubled of their capacity during the peak hour.

vii) The dependent on gasoline based vehicles, has led to energy wastage, heavy import bill, etc. More than 30% of the import bill are related to import of petroleum products. Matters of serious concern in the emerging urban transport scenario are unabated increase of less energy efficient personalised vehicles and very slow growth of multi-modal public system. Two-wheelers and cars together constitute more than 91% in Kanpur, 88% in Hyderabad, 86% in Nagpur, whereas buses constitute 0.5,0.52,0.37 percent respectively. All India level, the percentage of buses has decreased from 11.5% in 1960-62 to 1.9% in 1989-90.

viii) Through the transport sector contributes a significant percentage of revenue directly to the exchequer in terms of levies and taxes, this sector is always short of funds. Funding of transport projects is difficult as these are capital intensive. It is often difficult for Central Government as well as for State Government to provide funds. Municipality of agencies in urban transport sector is yet another hindrance for efficient organisation and management of traffic and transportation.

ix) Of late, because of awarness of environmental pollution, eco-friendly modes like cycles are receiving renewed interest world wide as a transport mode. The cycles play a significant role in urban transportation and varies widely from one urban place to another urban place. In small and medium size cities where the trip lengths especially for work and education purposes are small, the cycles

becomes the primary mode of convenience and fulfills about 70% to 80% of total travel demand. In large cities the modal share of cycle varies according to city structure, size and functions. In Delhi cycle fulfills 17% of the total travel demand. But in Calcutta and Mumbai, the share of cycles is very negligible. In other cities like Kanpur, Lucknow, Hydrabad, Bangalore, Pune etc. the cycle plays an important role.

x) Of all trips, 27% trips are performed on cycles (1981) at Pune. The walk trips are excluded, it comprises more than 46% of all vehicular trips. Survey reveals that average trip length by cycle is 4.05 km. and time taken is 19.07 minutes, 37% of accidents are cycle related.

xi) The city of Pune prepared a cycle net work plan for the safety of cyclists and pedestrians. Altogether 2 light concrete bridges, 12 subways and priority for cycles at signals and several intersections have been planned along with seperate cycle tracks.

xii) By and large exclusuve infrastructures facilities for cycle traffic is generally missing in India towns. Some efforts in Delhi have been made but these are now not operational because of many reasons like encroachments, poor quality, and conflict with other modes. This component of traffic needs in depth study on scientific basis. The city Pune had implemented some schemes in late eighties and early nineties. However, these are now mostly used by two -wheelers. Cycling and walking will have to play an important role in urban trnsport. If proper care is excercised in land use planning by ensuring that work place and residences are not seperated by long distances, this mode, though has poor image, could play a meaningful role in urban transport.[11]

Significance of urban Transport :

Transport is a basic necessity. This is mere true in case of urban transport. The significance of urban transport is as follows :

i) The urabn / city area is spread over long distances. The housing problem is very acute and it is not possible to get residential accomodation in the crowded

markets or other centres. Even if to some extent it is possible it will create over-crowding, congestion etc. and various other socio-economic problems. Hence the efficient transportation enable people to live at distance places and makes decentralisation possible .

ii) The urban areas require cheap transportation service for passengers otherwise a large amount will be spent on transport cost and expenses.

iii) Urban life is very busy and frequent transport services are not provided at the convenience of the passengers, it will cause innumerable hardships to the people. They have to reach the work places in time. If they are delayed or have to waste time in waiting for a urban /city bus, this will create many difficulties.

iv) Since the people have to travel long distance fast service is essential in the urban areas. Bus transport can provide it.

v) City / urban transport must also be adequate particularly at peak hours in the morning and evening to avoid overcrowding and rush.

v1) For maintaining law and order, existingushing fires, avoiding accidents, traffic control in busy and crowded streets, efficient system of transportation throughout the city is needed.

vii) City transport services are feeders to railways, trucks etc. If the efficient transport services are not available, the buses will not get traffic and the passengers and shippers will be put to hardship.

viii) Cheap city transport is essential otherwise the whole structural of commerce and industry will collapse.

In brief, the significance of urban transport is great in all walks of life-economic, social or political. The urban life become miserable if efficient and cheap system of urban transport is not available.[12]

Effect on Transport congestion : (in urban areas)

Urban transport congestion in turn leading to immense losses in travel time and human energy, is a cause of critical concern to authorities everywhere. Even

U.S.A with its fabled federal structure and such a surfeit of private cars, has an urban mass transportation Act 1964. Under it grants and loans are given to States,local bodies and other agencies for running urban bus services, as a part of decongesting urban roads. Financial aid is extended not only for capital costs, like aquisition of new buses, workshop facilities or passenger shelter or bus shelters but even to meet a portion of the recurring costs. Of course, its all conditional on meeting certain minimum norms of efficiency, the quality and coverage of service and the fare structure.An expert technical cum commercial evalutation is made for extending the subsidy scheme and the service monitored closely thereafter. The source of funds is the Highway Trust funds to which all federal fuel taxes and other highway related taxes are credited.

Some thing of a similar sort has become an urgent requirement for our towns. It can be urgued why add to the centres burden, then city bus services are managing to limp along? May be the subsidy scheme can be tailored more to expansion and its introduction in new places. Another suggestion that instead of direct inputs, city buses may be given part relief from the heavy taxes on fuel, tyres and from other levies , may not work such concession are quite capable of being misused through surreptitions diversions. The scheme, again, should embrace not only public sector buses but privately operated too, if these have been incorporated into city operation after the due approval. In view of the massive investment called for in introducing bus services to all our towns, the private sector bus to be intensively involved, more so far smaller places. Depending upon local conditions, severl combinations can be tried; all public sector buses in Mumbai, a mix of public and private of the Delhi pattern or Calcutta pattern or totally private like in some towns in the south.

It is often urgued that the private operator, in this endavour to maximise profits, resorts to unacceptable over crowding, neglecting non paying routes, flouting time tables and employing bad old buses. Yet it is possible, and has been successfully demonstrated in some places to observe certain stipulated norms, through strict impartial supervision aided by self regulation among operators. Here again the uncertainties of Government policies encourage deviant behaviours.

For instance, with long term arrangements on employment of buses and a higher rate of fare and adjustable to costs, private operators of DTC can be persuaded to put in DTC type buses (with a different colour scheme). This will be a vast improvement on the present inconvenient mofussil type buses.

Today our cities are growing in size and the spatial separation between work places, shopping centres on one hand and residences on the other, are increasing day by day, and it will further increase with the passage of time in future, making them beyond the normal walking distances, even beyond cyling distances. The per capita trip rates by mechanical modes of transport have increased at faster rate and are increasing further. This will obviously due to spatial expansion of cities resulting in increased commuting distances making it very necessary to use the mechanical modes. Moreover, our cities have economic activities traditionally at the core and around this residential areas are developed and located. In majority of the cities densification of economic activities is taking place in the core areas, sometimes even at the cost of displacing the residents from inner areas to outer areas. This trend if allowed to continue, would increase the transport demand further in our urban areas. Inspite if the poly-central concept adopted in the development of Delhi, the average trip length has increased from 6 kms. in 1969 to about 12 kms. in 1991. This will further increase in future. This will true in all other metropolitan cities too. A rough estimate indicates that the urban population by the turn of the century would be over 300 million and about 100 million of these would be living in the metropolitan cities performing unevén number of trips by vehicular trips daily. The average trip length is expected to be about 8 kms. resulting in a total trend of 800 million passenger kms. daily. Apart from this the middle order and lower order cities where per capital trips would be ranging from 0.40 to 0.70 will also be generating huge demand for urban transport. The projected travel demand in the five selected metropolitan cities has been presented in Table- 2.7. The study group on alternative system of urban transport has estimated the trip rate by city size are given in Table-2.8. The future colossal transport demand cannot be met with the private modes of transport on the limited capacity urban road net work.[13]

Table-2.7

Travel Demand in the Metropolitan cities.

City	Passengers PTPD 1980	Kilometres (in million) 2001	Percent Increase
Calcutta	111.8	182.0	66
Bombay	112.2	204.1	82
Delhi	95.9	225.1	135
Madras	47.2	82.2	74
Bangalore	18.4	54.8	198

Source : Government of India Report of National Commission on urbanisation, Vol. iv 1998.

Table- 2.8

Trip rate by city size

City size (in lakhs) of population	Daily per capital 1991	Trip rate 2001 projected figures.
>50	1.25-1.26	1.26-1.27
25 to 50	1.18-1.22	1.21-1.24
10 to 25	0.94-1.10	0.99-1.13
5 to 10	0.66-0.90	0.97-1.05
< 5	0.59-0.74	0.69-0.82

Source : Report of study group on "Alternative system of urban Transport", Government of India, february 1989.

Socio-cultural aspect of rural people :

India is a big country, At present about 73% people live in the country side. Most of them are directly related with agriculture. But now among them some people earn their livelihood by teaching, sevicing in various types of offices, or some small scale industries. Some rural people earn money for their life as a carpenter, potter, cobbler, masson etc. In the country side, people has social and

human value with each other.

But now it is noticed that the villagers are suppressed by various types of social and cultural problems. Because the economic condition of the rural people are not so significantly improved or developed as the urban people. Most of the rural people work in other's agricultural land as daily paid labour. For these poor economic condition cultural improvement is interrupted. But various types of fair and festival is celebrated by the rural people and they become very much happy in those days. They enjoy those days by heart & soul.

But the economic condition of the rural people is changing slowly and with this the social & cultural condition is also changing. To connect the villages with their nearest towns many new roads are constructed. Some of those roads are surfaced and some are unsurfaced. Above all for this reason the rural people are able to fulfill their duties & resposibilities. The exchange of socio-cultural feeling and aspect is possible due to the improvement of transportation. At present the rural people do not make the cities over crowded because the condition of them is changed such as before the educated and intelligent rural people are trying to improve the villages with the local resources and so different types of socio-economic problem is solved.Due to the improvement of roads and transportation in rural areas many industries have been created in those areas which are mainly dependent on agriculture. For this reason huge amount of scope for employment has been created and at the same time the socio-cultural condition has been changing and the over all improvement of the villages is possible.

Now-a-days market, electricity, telephone, T. V. are available in all villages and due to this reason the standard of living of the rural people has been improved too.

Today the system of panchayat is established. Electing the representatives the rural people themselves send them there and they are trying to well-known about their own areas. They are trying to solve the problems by consulting with each other. This panchayat has created the scope of employment by various plans. In this way the over all improvement of social and cultural aspect of the rural

people has been improved.

Scenario of " Rural Transport ".

Several means of road transport are used in India, It can be classified in urban transport and rural transport. India is basically an agricultural country. It's large population lived in the villages. More than 73% of the population lives in villages and 70% population depends upon the agricultural activities. But the communication system in our villages is very much poor, bad and primitive. The difficulties of transport system caused backward agriculture and agricultural marketting. What are happening in the modern world are totally unknown to the villagers. Many villages of our country are not linked up with the modern transport facilities.

There is no liaison during the rainy season among the villages and with the cities. Due to bad transportation system in the villages many people transfer themselves to the cities and this is the cause of several socio-economic problem, baqckward education, bad health and other activities. The development of road transport is the only means of development which is possible systematically. Modern planning techniques can be applied to the integrated rural development of a relatively backward area. The aim of integrated rural development is promotion of social and economic activities with a view to achieve full utilisation of the available physical and human resources which in turn, would result in higher income and better quality of life for the village people. Since the predominant economiic activity in rural India is agriculture, development must start with more efficient, productive, employment generating and stable agriculture. It is thus important to provide growth inpulses so that the bebefits of increased productivity may accrue to the rural population. The economic, social as well as political progress of the villages of our country exclusively depends on the progress of transport system. Efficient transport system is a vital link to promote agriculture, agriculture based industry, internal trade between cities and villages and above all reduce the horror of famine among the village people. In fact these are indispensible part for the development of our villages. Therefore, our village economy cannot

survive on this earth without an efficient and quick system of transport. In the modern era without modern transport village economy will be going to ruined gradually. It is the fundamental system to the economic growth of villages as well as cities. There must be road link up with urban areas or growth centres. According to Chambers " An improved tarmac or all weather surface can bring buses, electricity, telephone, piped water supply and better access to market, to health facilities and schools, offices, shops and official markets all tend to be at the sides of main roads. Even agricultural development has a road side bias.....[14]. Though it is very costly but in economic terms development of roads is very much essential. So the plan of road will be prepared in such a way that we can get maximum benefits from the rural transport. Rural Transport means of animals and animal carts like bullok cart, ekka, camel cart & these are the principal means of communication in the country side or villages. Even today though mechanised motor takes place in most of the state but bullok cart has significant role for the rural transport. India is a country of cart and not of cars. The railways have a different sphere of transportation carrying heavy goods from one place to another place and also carry bulky goods to long distances and cannot become a popular means of rural transport. The motor transport too is not suitable because it requirs good roads and relatively large amount of traffic on regular basis which the road system in the country side does not provide for their economic and convenient operation. The operation of inland water transport system is extremely limited to its routes in the country side. For these reasons the inevitable choice is bullok cart which can provide cheap, easy, convenient transport on the unplanned, unsurfaced, narrow roads of our country. For this motor transport could not replace it even today. They occupy premier place among all the means of rural ransport and their number is not less than a crore because the road condition of our village is very bad, most of the roads are kachcha road or unsurfaced narrow, rough and uneven which is not suitable for motor transport but this type of road is very convenient for bullok cart, it can runs very easily on this type of road.The rural transport is short distance transport, local agricultiral product are transferred from one village to another village, from one village to mandis, or firms and so bullok cart is very much convenient and ply on this roads. The volume of traffic is generally very

small for which the bullok cart is quite sufficient, while the operation of motor truck and bus will prove very costly. Bulloks are kept by the villagers for their agricultural purpose and it remains idle in other time. So when required for running the carts then bullok are used for the carts and no extra capital and running expenses are needed. In the countryside there is no regular system of transportation and hence some means of transportation is required which may be owned and used by the village people for their convenient. It is easily affordable by the poor villagers because it is constructed locally and repaired easily.

Traditionally bullok carts are the important modes of transport in rural areas. The carrying capacity of an Indian bullok cart ranges from 350 kg. to 1400 kg. depending upon the strength of the bulloks and the condition of the road.[15] This cart can carry goods, foodgrains, local commodities, ration goods, rice, paddy, other agricultural product, manures, household commodities from one village to another village, to another growth centre. They also serve for passenger traffic, village passenger can travel one place to another place with the help of this cart very easily and conveniently. It can carry villagers to many places like cities, pilgrim centres, exibitions, fairs, cinema hall, district headquarter or any other places of short distances from their villages.

According to the estimate of the sixth Plan there are 13 million bullok carts, 70 million bulloks and 10 million other work animals in the country. The volume of freight traffic handled by animal power annually is estimated at 10 billion tonne kms.[16] Bullok carts is the part of the Indian economy. It is also very important as the railways. Its existance will never be ended in the near future because of their cheap and convenient service, their low repairing and manufacturing cost and can ply on rough and bad roads, and also for their flexibility and versability of service. The conditions of rural transport can be improved by adopting the measures of concrete roads, pneumatic tyres, better springs and wood and use of wider iron rims. The Government of India should undertake various steps for the improvements of bullok carts and village conditions. Though central Road Research Institute is now conducting many research in this regard. Besides bullok carts, the other means of rural transport is horse carriages, camal carts, motor, buses, cycle,

cycle rickshaws and two and three wheelers. Among them horse carriages are not very important means of rural transport. It is occationally used for carrying goods and passengers. Horse carriages are still important means in small towns although they are slowly and graduallu being replaced by rickshas for local traffic and by motor buses and tempos for long route traffic. But camel carts are used in many villages in India but their use is limited. It can carry foodgrains, vegetables from one place to another place. It generally run at night and can travel 50 to 60 kms. This type of carts are mainly used in Rajasthan and western U. P. For rural transport the use of motor bus or truck is very limited. It can only ply which village is situated or linked up with national highways or state highways. In general the use of motor transport is negligible in the countryside mainly because of poor road conditions. But the current scenario has been changing gradually. Many concrete roads are now constructing with the help of Gram Panchayat or Zilla Parishad. And now many motor buses and trucks are plying between villages and towns. In this way our village economy has been growing rapidly, cycles and two wheelers are equally important in rural side as they are in the urban side. It is mainly used for individual purpose, sometimes people can carry vegetables, milk etc.

The road mileage in rural areas is extremely deficient. They require 1,47,017 miles of roads (1,33,124 miles kachcha and 13,393 miles pucca roads); while the available mileage is only 44,924 (44,181 miles kachcha and 743 miles pucca roads); adequate only for 34% of the total requirements of the people. Thus about 66% or 2/3 of their transport needs remain unfulfilled and they require 1,02,093 miles of more roads (88,943 miles pucca and 13,150 miles of kachcha roads). Hence any one who happens to be familiar with rural surroundings, very well known why rural roads be given importance for development. It is on account of the greater need of road communications to the rural India that in Nagpur plan, the proportion of village was 37% and in twenty years road development plan it is 34% of the total mileage to be constructed in the country. If we take into account the minor district roads since they are meant mostly to serve the rural economy, the proportion of rural roads goes up to 63% in the Nagpur plan and to 60% in the twenty year road development plan.[17]

But now rural transport is developing slowly. Now the vast acreage of land are using for cultivation and lying land is cultivated due to developed rural transport. Mechanised transport is gaining popularity in the rural areas on account of its obvious characteristic of greater speed and efficient service. Bus and trucks are now playing very vital role for the development of rural areas which is no longer controversial matter and inspite of the absence, the demand for mechanised Motor Transport inreasing day by day. Motor lorries and maxi taxi are now carrying marriage parties quickly and economically from one village to another village or cities. They also carrying straw, vegetables, potatoes, guava, mangoes etc. from villages to nearly mandies. Due to the advantages of mechanised transport service is to acquiring greater and greater popularity in rural areas. Rural transport are increasing as metal roads are being constructed in these areas. Jeeps and small trucks are now plying in these areas.Many small scale industries are setting their unit in the villages due to development of rural transport and communication. Many State Governments has set up industrial and technical education institute, many cottage industries, close relationship between the forest department and the industrial department. In this way capital and labour mobilised to much extent in rural area. Many co-operative societies are set up in the rural areas . Such societies are very much helpful in cultivating the habit of unity, brotherhood and co-operation among the rural community. These societies are now financing to the village people for the upliftment of village economy through the co-operative banks.

Development of Transport during the Planning period.

Some considerable funds helped India to witness a gradual and phonemenal increase. This was happened in the network of transportation in the time of planning era. The achievement is landable to the sector in all the plans. The growth in the transportation net work during the different plans is shown in table-2.9

1. First plan (1951-56)

The planning commission, during the 1st plan period, felt " It is evident that progress in road development cannot take place at the rate envisaged in the Nagpur plan, but it is important that it should be steady , balanced and continious ".[18] Of the Rs.

Table - 2.9

Public sector investment in Roads and Road Transport

Plan	Total outley (Rs. in crores)	Invesment in roads (Rs. in crores)	Percentage to Total expenditure	Investment in road Transport	Percentage to Total expenditure
First plan (1951 - 56) Expenditure	1,960	135	6.9	147	33.8
Second Plan (1956 - 61) Expenditure	4,672	224	4.8	242	22.0
Third Plan (1961 - 66) Expenditure	8,577	440	5.1	27	1.4
Three Annual Plans (1966 - 69) Expenditure	6,652	309	4.6	55	5.3
Forth Plan (1969 - 74) Expenditure	15,779	862	5.5	128	5.1
Fifth Plan (1974 - 79) Expenditure	28,991	1198	4.1	461	8.5
Sixth Plan (1980 - 85) Expenditure	97,500	3439	3.5	1,195.55	9.9
Seventh Plan (1985 - 90) Expenditure	1,80,000	5200	2.9	1,190.10	8.6
Two Annual Plans (1990 - 91)	58,369	1731	3.0	N.A.	N.A.
Expenditure (1991 - 92)	64,751	1925	3.0	N.A	N.A.
Eithth Plan (1992 - 97) outlay	4,34,100	12833	3.0	2,640.69	8.9
Nineth Plan (1997 - 2001) outlay	N.A.	N.A.	N.A.	N.A.	N.A.

Source : 1. Basic Road statistics of India, 1980 - 81, 1995, Transport Research Division, Ministry of shipping and Transport, New Delhi, and 2. The seventh five year plan, planning commission, Government of India, New Delhi.

135 crores meant for road development, Rs. 28 crores were to be spent on the National Highways and the rest mainly on state roads. In the 1st plan Rs. 93 crores were alloted for the development of state highways. The planning commission of India was laid down great emphasis on the rural road development for rural areas. During this period about 16 to 17 thousand miles village roads had developed through the community efforts, and satisfactory progress was made in this respect during the plan period.

Actually Rs. 131 crores was spent to develop the roads at the end of the plan. To improve the road transport Rs. 12 crores was alloted in the 1st plan period. The total fleets was expended from 8,000 to 11,000 in the nationalised services during the plan period. It is found when the plan period is completed that the number of nationalised passenger services were about 25% and it is also dound that Rs. 147 crores was actually spent. It is higher than the amount which was alloted.

2. Second Plan (1956-57 to 1960-61)

The share of transport was the highest in the total plan layout during the second plan, out of all plans, Rs. 1384 crores was spent as the outlay for the transport, which was roughly 29% of the total plan outlay. Railways, roads, and road transport received a major share with Rs. 1,163 crores in the plan outlay during the second plan period but only Rs. 965 crores were spent against plan outlay.

Nearly Rs. 224 crores was spent for the develpoment of road instead of Rs. 263 crores which was earmarked during the period of second plan. It was found that the length of all roads increased to approximately 4.4 lakh miles among those roads. Surfaced were 1.47 lakh and unsurfaced 2.94 lakh miles. Rs. 55 crores was expended to develop the national highways and Rs. 164 crores was expended for the improvement of State highways.

During the second plan Rs. 242 crores was expended for the purpose of road transport. The new corporation under the road transport Corporation Act. 1950 was introduced in most of the States during the second plan period.

3. *Third Plan (1961-62 to 1965-66)*

The rupees which was spent on transport in the third plan period was more than the outlay and it was very much interesting. But the share of transport in the total outlay declined during the 3rd plan. The total transport expenditure was more than 50 percent of which railways and roads put together their major share. The actual expenditure on roads was Rs. 440 crores, which was spent on numerous schemes taken up in the wake of the Chinese attack on the country.[19]

The Government of India spent Rs. 27 crores on road transportation during the plan period. The nationalised undertakings were added about 75,000 vehicles to their fleets. The planning commission of India advised all the states to set up corporation under the Road Transport Corporation Act. 1950 if not already done during the 3rd plan period.

4. *Annual Plan (1966-67 to 1968-69)*

It is interesting to note that , the actual amount spent was only 1,222 crores, though an amount of Rs. 1,277 crores was allocated for transport sector during the three annual plan period.

The amount of Rs. 309 crores was spent on roads during the annual plans, though there is a provision of Rs. 291 crores. By the end of annual plan, 17 missing major bridges in spite of the efforts in earlier years all over the plans and more or less 400 kms. of missing road links had done by the national highway system.

5. *Fourth plan (1969-74)*

RS 862 crores was spent on roads during the 4th plan period. In the case of National Highways, there was an increase in the missing road links owing to the addition of new roads to the National Highway system 3,656 kilometres missing road links and 217 bridges were constructed at the end of the fourth plan.

6. *Fifth Plan (1974-79)*

The Government of India had huge increase in the total outlay of the fifth plan. The allocation was made for railways was almost doubled during the fifth

plan period.. It should be noted here, that the allocation made for ports and light houses, shipping, inland water transport and civil aviation was increased during the fifth plan period.

The main emphasis was given on completion of spill over works of the fourth plan, which consisted of a number of missing bridges and road links during this period in respect of road transport. The State Government also given emphasis on completion of the spill-over works so that investment already made fructified early. Thr Government also made a provision for the development of rural roads under the minimum needs programmes.

7. Sixth Plan (1979-85)

The Government of India had huge increase in the total outlay of the sixth plan. There was an increase in the public sector from Rs. 28,991 crores to Rs. 97,500 crores. Rs. 3,439 crores was spent on roads during this period. There was an expansion in the national highway system. During the sixth plan, Rs. 1,195.55 crores were spent on road transport.

8. Seventh Plan (1985-90)

During the seventh plan period, it was noticed that total outlay in the public sector has been jumped from Rs. 97,500 crores to Rs. 1,80,000 crores. The importance was given to fulfill the spill over works of sixth plan, which includes a number of missing bridges and road links in this period. To develop the roads Rs. 5,200 crores was spent. During this plan period Rs. 1190.10 crores was spent for the road transport.

Division of investment among the various modes of transportation in the seventh plan document is shown in Table 2.10. Railways has got the major share of investment which was an entirely state owned undertaking among the various modes of transport in which the total outlay was Rs. 22,971.02 crores. Shipping and inland water transport gots Rs. 757.84 crores. Roads and road transport gots Rs. 7,190.14 crores which was 31.30% of the total outlay in which 8.66% invested for road transport alone during this period. From the above it is clear that the great

importance was given for the development of road transport.

Table- 2.10

Total planned expenditure for seventh plan in Transport sector

(in crores)

Sl No.	Head of Investment	Total	Centre	State	UTs.
1.	Transport	22971.02	16459.37	5772.50	739.15
2.	Railways	12334.55	12334.30	0.25	—
3.	Roads	5200.04	1019.75	3666.98	513.31
4.	Road transport	1990.10	230.92	1744.73	41.45
5.	Ports and light houses	1260.42	1134.79	97.31	28.32
6.	Shipping	826.88	693.42	7.00	126.46
7.	Inland water Transport	225.73	155.00	67.20	3.53
8.	Civil aviation	757.84	730.21	24.72	2.91
9.	Tourism	326.16	138.68	164.31	23.17
10.	Farakka Barrage	49.30	49.30	—	—

Source: Seventh plan document, Government of India, Vol. 1.P.28.

SUMMARY.

The object of this chapter is to deal with the urban bus transport and rural bus transport in India and development of road transport during the plan period. It includes national scene of urban transports, socio-cultural aspects, nature and scenario of urban transport, significance, effect of congestion and future of urban transport. This chapter also includes socio-cultural aspects of rural people, roads and modes of transport in rural area, and future of rural transport. It further includes growth of transport in different plan period.

Roads and road transport are essential infrastructures for round the corner economic growth and development of our country. Road transport can keep pace

the development of rural areas with the other areas. The rural and urban populations of our country have increased their standard of living with the help of road transport in India. The roads and road transport is very much inadequate in respect of population in India. In 1950-51 the total road length was 4,00,000 kms. and it became 20,70,000 kms. in 1991-92 but the population was 84 crores. So i is clear that the growth of population is much higher than the length of roads.

Passenger road transport is more flexible than railways. In 1950-51 Railway was carrying 74% passenger, and passenger road transport was carrying only 26% passenger. But after that road transport was carrying more passengers than railways. In 1977-78 railway was carrying 41% passengers but road transport was carrying 59% passengers. So it is clear that importance of road transport has increased over time.

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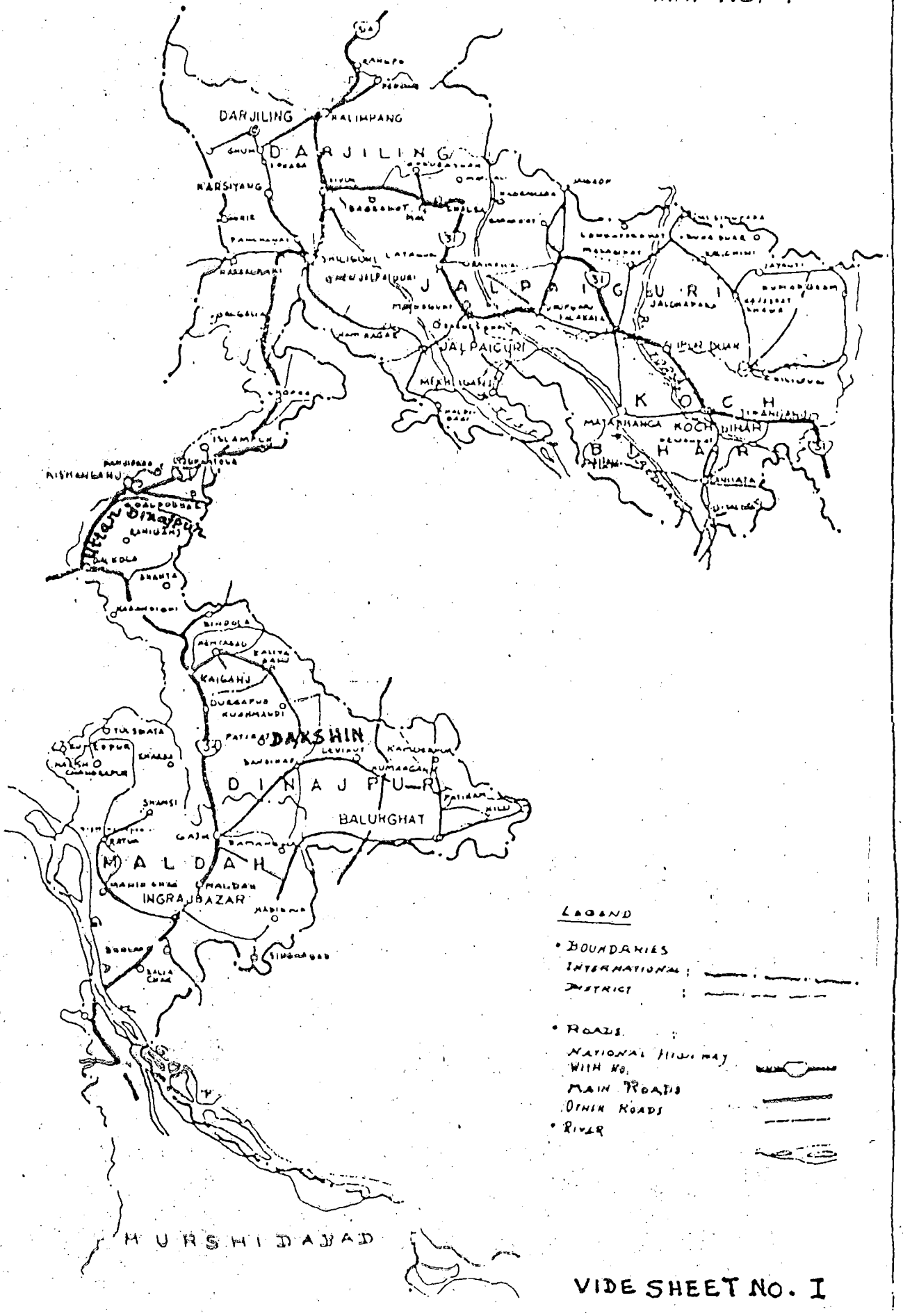
ROADMAP OF NORTH BENGAL

MAP NO. 1



VIDE SHEET NO. I

MAP SHOWING N.B.S.T.C. BUS ROUTES

MAP NO. 2

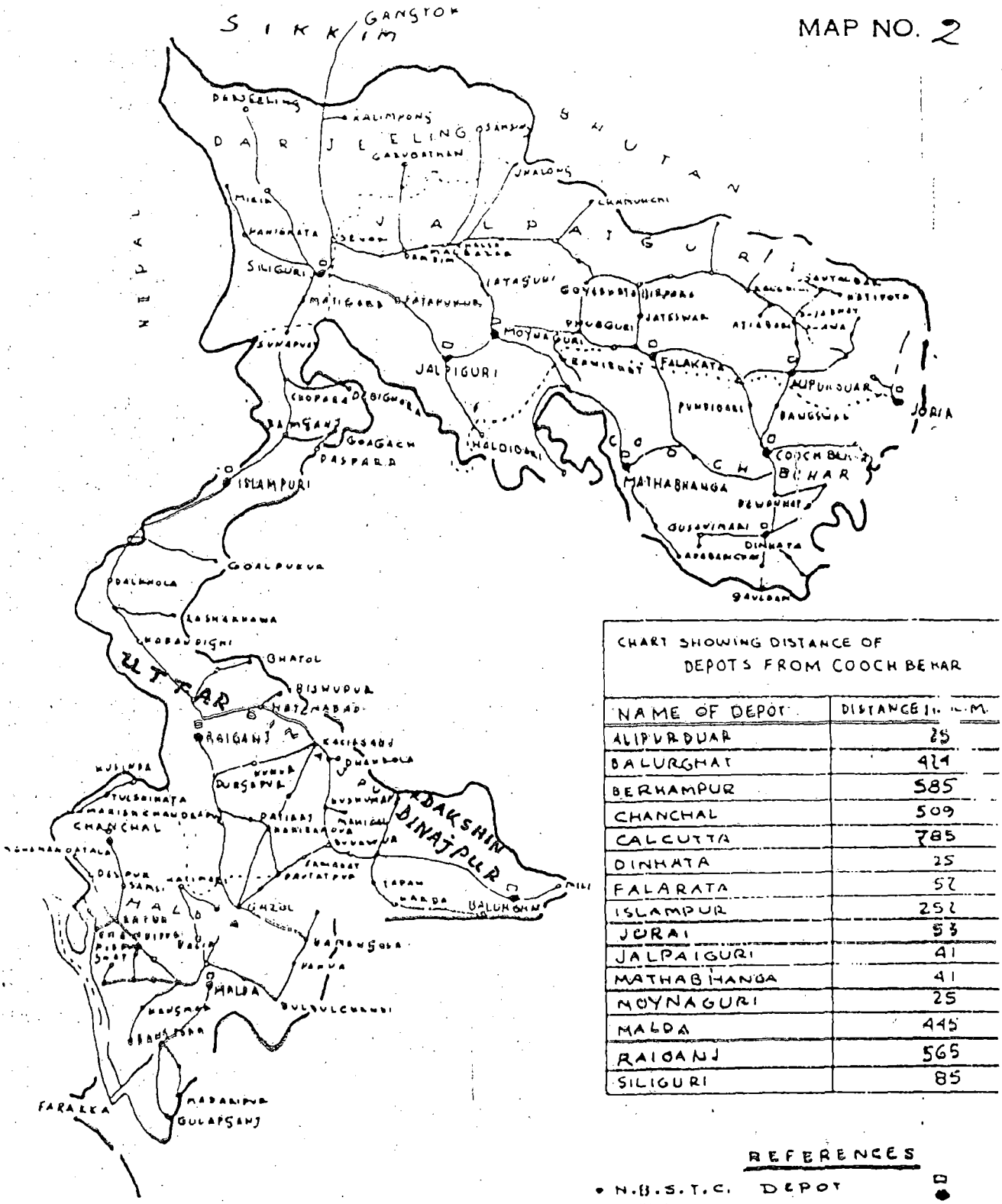


CHART SHOWING DISTANCE OF DEPOTS FROM COOCH BEHAR

NAME OF DEPOT	DISTANCE in K.M.
ALIPURDUAR	25
BALURGHAT	414
BERHAMPUR	585
CHANCHAL	509
CALCUTTA	785
DINHATA	25
FALARATA	57
ISLAMPUR	252
JORAI	53
JALPAIGURI	41
MATHABHANGA	41
MOYNAGURI	25
MALDA	445
RAIGANJ	565
SILIGURI	85

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- N.B.S.T.C. BUS ROUTES

TO CALCUTTA VIA BERHAMPUR

VIDE SHEET No. II