CHAPTER III

AGENCIES INVOLVED IN THE CREATION OF TRANSPORT AND POWER INFRASTRUCTURE - PRIVATE PARTICIPATION IN INFRASTRUCTURE DEVELOPMENT
3.1. INTRODUCTION:

Social overhead is the main factor for the socio economic development of a country. In a welfare sate, Governments responsibility towards the development of infrastructural facilities cannot be denied. Economic activities cannot be operated without congenial infrastructural facilities. Thus, there is a direct relation between infrastructural facility and the economic development. The countries that cannot establish the linkage they cannot expect proper economic development.

Investment in public utility programme i.e. infrastructural project require huge fund and for long period. Gestation period of these projects is very long. Now a days cost benefit analysis is carried out to find out cost and benefit derived from the project. If the cost is higher than the benefit, such projects generally are not accepted.

The argument that Government should develop the infrastructure facilities for upliftment of economic activities as the financial outlay involved are beyond the reach of the private sector now undergone a change. In the current fiscal situation it is not possible for the Government to raise
resources for budgetary support, to the development of public sector enterprises engaged in infrastructure development.

3.2. AGENCIES INVOLVED IN DEVELOPMENT OF TRANSPORT AND POWER INFRASTRUCTURE:

Different agencies are associated with the development of infrastructure in various dimensions. This study confined with transport and power infrastructure only.

3.2.1. AGENCIES FOR DEVELOPMENT OF ROADWAYS:

3.2.1a. ROAD ADMINISTRATION:

The administrative power over roads transport in India is decentralised. At the top, the Central Government has the overall responsibility over administration, framing of policies, procedures of rules in India and construction of national highways. At the second level the State Government, which has the responsibility for construction of State highways. At the bottom level, the local self Government has very little authority in construction of roads. It depends on Central Government and State Government for funding its operational expenses for maintenance of local roads.

3.2.1b. ROAD ADMINISTRATION AT THE CENTRE:

Since the Central Government has taken over the responsibility for national highways with effect from 1st April 1947, it has established a
Central Roads Organisation under the Ministry of Shipping and Transport. The main purpose of establishing the above organisation is to achieve coordination between the road development activities of various states. Financed from the Central Road Development Reserve Fund, the organisation maintains contact between the different states and their public works departments so that it may advise the states on detailed road programmes and technical matters like grants, research, training, statistics etc. The organisation looks after the annual programmes of the development of national highways. It also reviews and revises the national highways works periodically in respect of each state.

3.2.1.c. ROAD ADMINISTRATION IN THE STATES:

Before 1947, only the state government were responsible for construction and maintenance of all types of roads. But since April 1, 1947, the national highways are the responsibility of the Central Government. The state highways, other P.W.D. roads are constructed and maintained by the Public Works Department of the states.

3.2.1.d. LOCAL ADMINISTRATION:

For looking after the district and village roads, engineers are separately appointed in the local bodies/authorities such as, the Zila Parishad, Panchayat Samittees and Village Panchayats. The roads falling
under the Forest, Irrigation Department and Tea Gardens areas are being managed separately by it.

The Public Works Department (P.W.D.) in the state is the main administrative department to look after various road programs undertaken by the state government.

The following authorities do development and maintenance of roads in India.

National Highway- National Highway Authority of India.

State Highway and other P.W.D Roads- Public Works Department (PWD).

Municipal Corporation/Town Committee.

Panchayat and Rural Development- Panchayat Samittees, Village Panchayat.

North-Eastern council for North-Eastern Region.

Border Roads Organisation.

3.2.1.e. NATIONAL HIGHWAY AUTHORITY OF INDIA:

National Highways are being adopted, maintained and managed under an agency system. The over all responsibility including planning, budgeting, standardisation is handled by the Ministry Of Surface Transport (MOST).
The National Highway Act 1956 empowered the Central Government with the responsibility to develop and maintain all the National Highways.

Under an act of Parliament in 1988, the Government of India has established the National Highway Authority of India (NHAI) for developing, maintaining and managing National Highway as a single agency. It is the central Government agency to construct National Highway to connect all the state capitals of the country. It maintains roadways to various ports, linking foreign countries and meets the need of defence services. They provide the basic framework for the entire road network of the country. The execution of works and day-to-day management are looked after by the public work departmental of the respective state governments, some section of the National Highways are maintained and managed by the Central Public Works Department (CPWD). Roads in border areas are developed and maintained by Border Roads Organisation. The Ministry Of Surface Transport, Government of India (MOST) has overall responsibility including planning, budgeting and standardisation of National Highways.

In order to give a boost to economic development of the country a massive programme of four lane of 14,000 KM of National Highway has been taken up since 1999 under the National Highway Development Project (NHDP) and is targeted to be completed by December, 2007 at an estimated
cost of Rs 54000 crore and the recently launched “Pradhan Mantri Bharat Jodo Priojana (four lane of 10,000 Kms) will connect all state capitals and major centres of economic importance with four lane highway. National Highway Authority of India is implementing the project. NHDP has two components:

i) Quadrilateral Comprising National Highways connecting the four (4) Metro cities having total length of 5846 Km.

ii) North South Corridor comprising the National Highway Connecting Srinagar and Kanyakumari including Kochi-Salem Super and East-West Corridor comprising the National Highways connecting Silchar to Porbandar. These would cover a total length about 7300 Kms.²

The National Highway Authority has covered the four (4) lane highways, which is shown with the help of a map of India.

3.2.1.f. EFFECT OF (NHDP) NATIONAL HIGHWAY DEVELOPMENT PROJECT:

HUGE SAVING FOR THE NATION:

Golden Quadrilateral, when completed will contribute huge, amount of saving solely on fuel and vehicle wear and tear cost. The benefit of speedy, saving in movement of passengers and goods are additional.

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1. India 2004, Page 646, A reference Annual Publication Division, Ministry of Information and Broadcasting, GOI.
2. India 2004, Page 646, A reference Annual Publication Division, Ministry of Information and Broadcasting, GOI
INDUSTRY PICKED UP MOMENTUM:

Highway development has provided a big boost to cement, steel, road construction automobile and tourism industry with increased turnover.

REVITALISING RURAL ECONOMY:

Four-lane highway will facilitate quicker access to markets, thereby enhancing the export potential of firm produce and perishable remuneration for farmers.

INCREASE JOB OPPORTUNITIES:

Construction of highways has brought employment for over a large number of people everyday. With additional projects on the anvil, employment potential will increase further. The indirect employment generation is many times more.

With a view to strengthen infrastructure network of the country, four lanning of about 400 KM roads providing connectivity to the ports of Paradip, Haldia, Visakhapatnam, Chennai and Ennore, Tuticorin, Cochin, New Mangalore, Mormugaon, Jawaharlal Nehru Port and Kadla is envisaged to be implemented by NHAI. Work on development of connectivity to Kodla has been completed. Apart from capacity augmentation by four lane National Highways under NHDP the government has also undertaken the

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3. India 2004, Page 646, A reference Annual Publication Division, Ministry of Information and Broadcasting, GOI
programme for improvement of Riding Quality of National Highways. The
programme was commenced in 1999. At that time it was assessed that about
33,000 Km of National Highways (balance length apart from NHDP) needed
improvement of riding quality. About 30,000 Kms National Highway have
been improved upto 31st Dec., 2003\(^4\) under the programme.

3.2.1.g. FOUR LANNING OF NATIONAL HIGHWAYS IN ASSAM:

Building more than 1400 kms of four lane highways in Assam, with
over Rs. 5600 crore of investment. The scheme of National Highways in
Assam formulated by the Ministry of Road Transport and Highway,
Government of India is as under.

Length of National Highway in Assam \hspace{1cm} 2836 Kms.
To be four lane under NHDP and PMBJP \hspace{1cm} 1431 Kms
Total fund sanctioned for National Highways in Assam \hspace{1cm} Rs. 232 Crore
Under central Road Fund (CRF) amount sanctioned
for 49 works for improvement of state roads and
major district roads in Assam \hspace{1cm} Rs. 82.24 Crore

The National Highway Authority has covered the four-lane Highway
in Assam, which is shown in Road map of Assam.

\(^4\) India 2004, Page 646, A reference Annual Publication Division, Ministry of Information and
Broadcasting, GOI
3.2.1.h. PRADHAN MANTRI BHARAT JODO PARIYOJANA:

The state capital not covered under National Highway Development Project will be connected with four (4) lane National Highways.

This will especially benefit the North-Eastern states. The National Highway to be four lanes under Pradhan Mantri Bharat Jodo Project in Assam are —

<table>
<thead>
<tr>
<th>Sl. No.</th>
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<th>NH</th>
<th>Length (KM)</th>
</tr>
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<td>1.</td>
<td>Dabaka-Nagaland Border</td>
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<td>120</td>
</tr>
<tr>
<td>2.</td>
<td>Arunachal Border-Baihata Chariali</td>
<td>52</td>
<td>323</td>
</tr>
<tr>
<td>3.</td>
<td>Silchar-Mizoram-Tripura Border</td>
<td>54</td>
<td>40</td>
</tr>
<tr>
<td>4.</td>
<td>Meghalaya Border-Tripura Border</td>
<td>44</td>
<td>164</td>
</tr>
<tr>
<td>5.</td>
<td>Silchar-Assam/Manipur Border</td>
<td>53</td>
<td>53</td>
</tr>
</tbody>
</table>

*Source - Ministry of Road transport and Highways, Government of India.*

Development of Highways-helps Assam in different dimensions like—

1. Reduction in travel time, lesser fuel consumption.

2. Quicker access to big cities and markets to fetch better prices for farmers.

3. A big boost to Industries in Assam.

4. New direct and indirect employment opportunities.

5. Better road connectivity – a boon for tourism industry.

6. Cost of carriage would be lower.
3.2.1. PROBLEMS OF NHDP IN ASSAM:

1. The NHDP in Assam is not covered the tea, oil plywood producing areas of Assam (like Digboi, Margherita), which has been playing important role to the economy of Assam.

2. The Project is also not covered some important places for tourist interest like- Dibru Saikhowa, Namdopha Tiger project etc.

   The progress of NHDP works in Assam is not satisfactory. The NHAI has been criticised for being, because the pace of work has been abysmally slow. Only about 20 Kms has been transformed into four lanes, which is 1.39 percent of proposed 1431 Kms of works and was proposed to complete by 2007.

   A senior engineer with P.W.D. said a road bridge over the Brahmaputra close to the one at Saraighat is to be constructed as part of the East West Corridor. Till now, the NHAI has done no substantial work in this front. Without the new bridge, the one at Saraighat with its two-lane traffic capacity would continue to constrict the growing flow of traffic.

   The ninth plan (1997-2002) laid emphasis on co-ordinated and balanced development of road network in the country. During this period, the Government also earmarked on a massive National Highway Development Programme (NHDP), which has made substantial progress.
During the Tenth plan (2002-2007) road development considered an integral part of the total transport system of the country with emphasis on strengthening three functional groups, the primary system (National Highway and Expressway) Secondary system (State Highway and Major District Roads) and rural roads.

3.2.2. NINTH PLAN ON ROAD DEVELOPMENT PROGRAMME:

The focus of road development programme would be on:

1) Strengthening and improving the crucial section of Highway networks through phased removal of deficiencies and multilane of high-density corridors.

2) Improving the road communications in remote areas such as the North-East and

3) Providing all weather connectivity to remaining villages and promoting energy conservation, safety and environment protection.

There was considerable growth in the National Highways networking during the Ninth Plan (1997-2002). The targets and achievements are shown in Table 3.1.
Table 3.1

HIGHWAY DEVELOPMENT IN THE NINTH PLAN.

<table>
<thead>
<tr>
<th></th>
<th>Target</th>
<th>Achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Widening of lanes - 2 and 4 lanes (km)</td>
<td>2730</td>
<td>2750</td>
</tr>
<tr>
<td>b) Strengthening of weak 2 lanes (km)</td>
<td>3040</td>
<td>3510</td>
</tr>
<tr>
<td>c) Bypass</td>
<td>59</td>
<td>30</td>
</tr>
<tr>
<td>d) Major and minor bridge</td>
<td>633</td>
<td>442</td>
</tr>
</tbody>
</table>

*Sources - Tenth five year plan (2002-2007) Vol.-II, P - 948*

Though much has been achieved, a lot more, however, has to be done to improve the road system in India. Only 50 percent of road length in the country is provided with a proper surface. Even in the case of National Highway, 30 percent of road length has a single lane road pavement. About 30 percent of village in the country do not have road connection and over 65 percent of village without all weather roads. The road grid as a whole suffers from serious capacity constrains, delay, congestion, fuel wastage and higher vehicle operating costs.

Out of the total length of 58110 km of National Highway network; about 25,000 km. is under severe strain due to high volume of traffic.\(^5\)

The Tenth plan outlay for the central sector Road Programme is Rs. 59,490 crore (which includes Rs. 500 crore for Roads on Inter. State and economic importance)

\(^5\) Ministry of Road Transport and Highway, Govt. of India.
3.2.3. STATE SECTOR ROADS:

The state Highways and District and Rural Roads are under the responsibility of the state Governments, these are developed and maintained by various agencies in state and union territories, such as P.W.D., Zilla Parishad, Rural Development and Panchayat. The states are also assisted through financial assistance from Central Road Fund for development of selected roads which are have inter states and economic importance.

In Assam the main agency for construction, maintenance and developments of roads is Public Works Department (PWD) The National Highways are constructed and maintained under the supervision of Central Government through CPWD/NH Division of respective state government. Besides, Municipality, Panchayat and rural development of Assam also take part for construction of municipality and village roads under various scheme of central and state Government. The fund for construction of road is provided by the government to the respective agencies through Five-Year Plan outlay on Transport and Communication.

Under the successive Five year Plan in Assam, the plan outlay on transport and communication varied significantly. The table given below shows the relevant figures.
Table 3.2

PLAN OUTLAY ON TRANSPORT AND COMMUNICATION, ASSAM
(Rs. In lakhs)

<table>
<thead>
<tr>
<th>Plan</th>
<th>Plan Outlay</th>
<th>Outlay on Transport and Communication</th>
<th>Percent of (3) to (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Plan</td>
<td>2051</td>
<td>349</td>
<td>17.0</td>
</tr>
<tr>
<td>Second Plan</td>
<td>5448</td>
<td>655</td>
<td>12.0</td>
</tr>
<tr>
<td>Third Plan</td>
<td>13244</td>
<td>785</td>
<td>5.9</td>
</tr>
<tr>
<td>Ad-hoc Plan</td>
<td>8551</td>
<td>414</td>
<td>4.8</td>
</tr>
<tr>
<td>Fourth Plan</td>
<td>19839</td>
<td>2598</td>
<td>13.1</td>
</tr>
<tr>
<td>Fifth Plan</td>
<td>55120</td>
<td>5560</td>
<td>10.1</td>
</tr>
<tr>
<td>Sixth Plan</td>
<td>128200</td>
<td>10577</td>
<td>8.2</td>
</tr>
<tr>
<td>Seventh Plan</td>
<td>210000</td>
<td>16220</td>
<td>7.7</td>
</tr>
<tr>
<td>Eight Plan</td>
<td>467200</td>
<td>29484</td>
<td>6.3</td>
</tr>
<tr>
<td>Ninth Plan</td>
<td>824528</td>
<td>84436</td>
<td>10.2</td>
</tr>
<tr>
<td>Tenth Plan</td>
<td>831520</td>
<td>54048</td>
<td>6.5</td>
</tr>
<tr>
<td>All Plan</td>
<td>2565701</td>
<td>205126</td>
<td>7.9</td>
</tr>
</tbody>
</table>

Source: P&D Department, Government of Assam. As reproduced by Dhar P.K. The Economy of Assam, page 402,452

The table 3.2 reveals that the transport and communication did not received much priority under the successive plans in Assam. Although 17 percent of the total plan outlay was allocated on transport and communication during first plan but then this share of outlay was progressively declined to 4.8 percent during Ad-hoc plans. The share of outlay on transport and communication again increased to 13.1 percent during the Fourth Plan and then gradually declined to 10.1 percent and 8.2 percent during the Fifth and Sixth Plan respectively. Again the share of outlay on transport and communication sector has further declined to 7.7
percent and 6.3 percent during Seventh and Eight Plan respectively and the same share further increased to 10.12 percent during Ninth Plan and again declined to 6.5 percent during Tenth Plan. Taking all the plans together an amount of Rs. 2051.26 crore is being spent and provided for the development of transport and communication system of the State which is about 7.9 percent of the total plan outlay during these plans.

Although there was progressive increase in the absolute amount of plan outlay on transport and communication but the planwise percentage of increase in the actual outlay on this sector lagged behind that in the total in the case of all plans except the Fourth Plan of the state.

3.2.3.a. ACHIEVEMENTS IN RESPECT OF ROAD DEVELOPMENT BY P.W.D. UNDER SUCCESSIVE PLANS:

FIRST FIVE-YEAR PLAN –

At the end of First Plan period, Assam had only 10,944 Kms. of roads as against the target of Nagpur Plan to have 21,243 Kms. of road within a period of twenty years (1943-63). Further, length of new surfaced roads including National Highways increased to 1,685 Kms. in 1956 as against 1529 Kms. in 1950-51, which shows an increase of 10.20 percent.

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6. In 1934, the Indian Road Congress was established as semi official organisation which gave advise or help to the Government for the road development in the country. In 1943, the Government of India, convened a conference of road engineers at Nagpur for future road development in India.
SECOND FIVE-YEAR PLAN –

During the Second plan period, a total road length of 13,015 Kms. were constructed. However, out of this total road length, only 10,590 Kms., were motorable excluding 2,425 Kms. on earth road. After adding 1,184 Kms. of National Highways constructed during this period the total road length constructed during this period was 11,774 \(^7\) Kms.

THIRD FIVE-YEAR PLAN –

Major road works completed during this plan period under the Central plan. Central bodies and on the basis of sharing cost between State and Central Government were as follows: National Highways number 31, 37 and 38 falling in the state were completed at the cost of Rs. 31 crores, completion of the Road-cum-Railway bridge over the Brahmaputra upon N.H. 31 at the cost of Rs. 16 crores was one most significant achievement of the Third Plan. Besides R.C.C. bridges on North Trunk road were constructed over rivers Dikong, Subansiri, Jia Bhorali at the cost of 2.44 crores.

Besides construction of roads and bridges the Third Plan were consisting of formation of road to the extent of 1,542 Kms. metalling and black topping 285 Kms. improvement in the low standard road 566 Kms.

7. Third Five Year Plan (Assam) Vol. I; p.98.
construction of rural roads to the extent of 1000 Kms. and construction of a major bridges.

Due two executions of all these programmes, the total road length of P.W.D. roads including National Highways in Assam increased to 19,024 Kms. at the end of the Third Plan.\(^8\)

**AD-HOC PLANS:**

In respect of construction of roads, about 488 Kms. of new roads, gravelling of 71 Kms. of roads, metalling and black toping of 84 Kms. were completed.\(^9\)

**FIFTH PLAN:**

During Fifth Plan period, 1592 Kms. of total road length was constructed against the target of 1871 Kms. of which 47 Kms. was surfaced and the rest 1545 Kms. was unsurfaced.\(^{10}\) Besides more than 1000 Kms. of village roads were also constructed under the Minimum Needs Programme (M.N.P.)

**SIXTH PLAN:**

During the Sixth Plan, total length of road constructed under P.W.D. increased to 26,353 Kms. and out of which 5773 Kms. was surfaced.

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\(^8\) Third Five Year Plan (Assam), Areview of Progress. p-59.
Moreover, the Forest Department constructed about 3,988 Kms. of road in 1983-84.

SEVENTH PLAN:

During this period, 3633 Kms. of road were constructed till 1989-90 as against the total plan target of 5457 Kms.

The pattern of habitation in Assam is rural oriented. The population of Assam is 226 million according to 2001 census. Giving connectivity by all weather roads to the rural habitations is a paramount importance for all socio economic development of the state. Assam has 22,963 number of habitation in 220 blocks and 7177 numbers of habitations are connected with all weather roads. The balance of 15,786 numbers not connected with all weather roads. 11 While the rural roads connected to get attention from the very inception of planning, the first major thrust was in 5th plan (1969 - 74) when construction of roads for providing accessibility was included in the package of Minimum Need Programme. The other central assistance programmes like NREP, RLEGP, JRY etc., and included construction of rural roads for infrastructure facility with the other objectives of rural employment. Population wise accessibility levels, expected to be reached by

11. Rural roads: connectivity, PMGSY Chief Engineer (R) PWD, Assam.

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the end of 9th plan for rural roads was not satisfactory for the following reasons.

1) Basically these programme of construction of rural roads were from employment generation.

2) More stress on labour intensive technology, earth roads were constructed.

3) Lack of Master Plan for rural roads streamlined strategy for sufficient flow of fund and implementation plan etc.

Later MNP was merged in 1996 with Basic Minimum Services formulated by Government of India, where road component provides connectivity to the unconnected habitation. Besides this, rural roads are also constructed from state plan through other schemes. The roads constructed through poverty alleviation schemes in rural areas were earth or gravel roads and are fair weather roads. In Assam’s conditions black topped roads are considered the most economic all weather road.

3.2.4. CONNECTIVITY STATUS OF VILLAGE WITH ALL WEATHER ROADS IN ASSAM:

The connectivity status of villages with all weather roads in Assam (assessed on census data of 2001) is shown in Table 3.3.
Under the recently launched **Pradhan Mantri Bharat Jodo Pariyojana** the State Capitals not covered under National Highways Development Project will be connected with 4-lane National Highways. This will especially benefit the North-Eastern States. The NH Sections to be 4-laned under PMBJP in Assam are:

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**National Highways in Assam**

- Length of National Highways in Assam: 2836 km
- To be 4-laned under NHDP and PMBJP: 1431 km
- Total funds sanctioned for National Highways in Assam during last 5 years: Rs. 232 Crore
- Under Central Road Fund (CRF), amount sanctioned for 49 works for improvement of State roads and major district roads in Assam: Rs. 82.24 Crore
Table 3.3
CONNECTIVITY STATUS OF VILLAGE WITH ALL WEATHER ROADS IN ASSAM (ASSESSED ON CENSUS DATA OF 2001)

<table>
<thead>
<tr>
<th>Population Category</th>
<th>Total No. Village</th>
<th>No. of villages already connected by all weather road</th>
<th>% of connectivity with respect to total villages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 and above</td>
<td>9252</td>
<td>3103</td>
<td>13.5%</td>
</tr>
<tr>
<td>5000 and above</td>
<td>6096</td>
<td>1900</td>
<td>8.27%</td>
</tr>
<tr>
<td>250 and above</td>
<td>3951</td>
<td>1152</td>
<td>5.02%</td>
</tr>
<tr>
<td>less than 250</td>
<td>3664</td>
<td>1022</td>
<td>4.45%</td>
</tr>
<tr>
<td>Total</td>
<td>22,963</td>
<td>7177</td>
<td>31.25%</td>
</tr>
</tbody>
</table>

Source - Rural, Road Connectivity, Chief Engineer Office, P.W.D. (R) Assam

The connectivity status of villages with all weather roads in India upto 2001 is 92% for more than 1000 habitations and 54% in for less than 1000 habituation.\(^{12}\)

According to 2001 census 79 percent of the roads in Assam are fair weather road and blacktopped roads in the state are only 21 percent against the national average of 52 \(^{13}\) percent. These fair weather roads are causing immense trouble to progress in Assam. Not withstanding the efforts made, at the state and central level, through different programmes about 40% of the habitations in the country are still not connected by all weather roads. Even where connectivity has been provided, the roads constructed are such quality

\(^{12}\) Secretary P.W.D. (R&B), Govt. Of Assam.

\(^{13}\) Ibid.
that they cannot be categorised as the all weather roads. All weather roads connect only 31.25 percent of the total village in Assam. It is painfully slow progress compared to the number of habitations where people have yet to see a metalled road.

3.2.5. PRIME MINISTER GRAM SADAK YOJANA:

Government of India have launched the Pradhan Mantri Gram Sadak Yojana (PMGSY) on 25\textsuperscript{th} December 2000 with a view to providing road connectivity through all weather road to all unconnected habitations having a population of more than 1000 persons plains and more than 500 persons in hills by the year 2003 and those with a population of more than 500 persons in plains and more than 250 persons in hills by the end of the tenth plan period (2007). The State P.W.D is implementing the programme by engaging contractors.

A total of 1600 kms of rural roads have been constructed till 2003-04\textsuperscript{14} under PMGSY Assam.

The PMGSY covers only the rural roads. The objective of PMGSY is that every habitation the designated population of size should have one all weather road connectivity. The emphasis under PMGSY is to provide new connectivity to unconnected activity. If there is no unconnected habitation in

\textsuperscript{14} Rural Roads Connectivity, PMGSY, Chief Engineer (R) PWD, Assam.
the District of the designated population size up gradation to prescribed
standard of WBM roads can be taken up under the programme. It is to be
noted that under this programme.

i) An unconnected habitation is one with a population of more than 500
persons and located at a distance of at least 500 metres or more from an
all weather road or a connected habitation.

ii) The unconnected habitations are to be connected to nearby connected
habitation or to another existing all weather roads.

iii) PMGSY envisages single road connectivity to a habitation based on
utility value and road index value.

Assam is one of the underdeveloped states in respect of road
infrastructure where the rural road network in the state is poor. It has
impacted the people badly by restricting access to quality education, health
care, markets for agro products etc. The PMGSY could have proved a
godsend opportunity for Assam Government to transforms the face of the
State the majority of whose population live in village.

But implementation of rural road project is poor in the state.
According to the sources revealed by Chief Engineer Officer (R) Chandmari,
Assam, 291 habitations in the state were covered under the PMGSY scheme
in 2000-01. Rs 75 Crore was released for the purpose and Rs. 72.38 crore
has been spent in building 212 Kms. roads. In 2001-02, 477 habitations were connected by 285 Kms. completed roads at a cost of Rs. 143.97 crore against the released amount of Rs. 154.92 crore. Another 27 habitations were covered under the PMGSY scheme in 2003-04 bringing the total number of habitations covered to 568 at a total cost of Rs. 133.74 crore and taking the total length of roads built under the scheme to 800 Km. The target set for 2004-05 is to bring a total of 1766 villages under the PMGSY scheme.

The preparation of District Rural Roads, the master plan of the district rural roads is the main essential component of PMGSY. The district rural road plan covers the geographic, demographic and socio economic profile of the district with all the road data, habitation data, block maps with detail data of infrastructure facilities. The identification of basic access to a habitation and establishment of 'Core Network' providing connectivity to all habitations with market centres, health centres and other important service centre in the final stage of planning. Local needs, weight to service facilities and local representative's suggestions are taken into consideration in this final stage of planning. The district Rural road plan prepared for each district have a tremendous bearing on the all round socio economic development of the districts.
Assam is the first state to prepare the block wise District Rural Road Plan and the Core-Network, on the basis of which the requirement of an amount of Rs. 3800 Crore for giving connectivity through roads to 1000 + habitations and an amount of Rs. 4300 crore to convert the timber bridge to concrete is under active consideration of MORD, GOI. ¹⁵

In the road sector, Assam has created an asset of Rs. 6500 Crore, which is not properly maintained will go into disrepair. An amount of Rs. 227 Crore is annually required to maintain these assets. As per sources available, P.W.D., Chief Engineer(R), Assam the Government has accepted the Road Maintenance policy and a road Board and a Dedicated Road Fund with corpus of Rs. 225 crore is being created for maintenance of roads.

The North Eastern Council has Sanctioned Rs. 551 Crore for 12 Projects for the tenth plan period, the surviving for which being standard, 41 nos. of RCC bridges and 60 Km. of road formation and 38 Km. of road pavement have been completed at a cost of Rs. 26.27 Crore till 31st March 2004. ¹⁶

As the executing agency for National Highway, the State PWD, has completed works as follows¹⁷ during 2000-01 to 2003-04; widening 23.48 Kms., raising 5.57 Kms., Strengthening 22.73 Kms improvement of riding

---

¹⁵. PWD, Chief Engineer (R), Guwahati, Assam.
¹⁶. Ibid
¹⁷. Ibid
quality 138.62 Kms., periodical renewal 199.09 Kms., Special renewal 24.50 Kms., footpath cum drain 3.38 Kms. The construction of all weather roads connecting all parts of the state is the pre requisite of a good road transport system in Assam. But the cost of road construction in Assam is comparatively higher due to peculiar physical conditions, heavy rainfall and floods, necessity of levelling the uneven surfaces, circulating of roads in the hill areas and necessity of construction of numerous bridges and culverts.

3.3. BORDER ROADS ORGANISATION (BRO): *

It was during the Chinese aggression, a central government agency was formed with sixty combinations of civil and military personnel that took up the construction and maintenance of roads and bridges related to security of the nation. But subsequently the Central Government engaged the agency for construction works during peace hours.

Since inception (1960) upto March 2003, it has completed 31,061 km of formation works, surfaced 37,037 km roads, executed Rs. 3090 Crore worth of permanent works and constructed permanent bridges totalling a length of 19,544 running meters. In addition to the National Highways and permanent bridges, the BRO is doing commendable works in the field of
snow clearance on roads of around 2600 kms in high attitude areas both during summer and winter.18

A prestigious project of development of 160 kms long Tamu-Kalemyo road in Myanmar to intermediate with specification was taken up in 1997, was completed and handed over to Myanmar PWD in February 2001.19

Border Road Organisation is executing the works in various states including a inter alias the following Four-Lanning of the stretch of NHAI from Pathankot to Srinagar a part of the country’s North-South Express under the NHDP, nine km long alternative Route to Leh whose works commenced in May 2002. The Border Road Organisation has been engaged in construction of roads for the North-Eastern Council (NEC) for improving Inter-State connectivity. Upto March 2003, it has completed formation of 3,125 Kms. and surfacing of 2,697 Kms. for the NEC. Another important work of the Border Road Organisation on the construction of Indo-Bangladesh Border (IBB) Roads fencing (phase-I) has made substantial progress. The works of phase -II following 720 Kms. of road construction and 1,337 Kms. of fencing has been taken up.20 Border Road Organisation has the charge of developing and maintaining the part (113 Kms) of the

18 . India 2004; page 648, compiled and edited by Research Reference and Training Division. Ministry of information and broad casting, GOI
20 . India 2004, p-648
National Highway 52 from Baihata Charili of Kamrup to Thelamara in Sonitpur from the state Public Works Development (Roads) NH division.\textsuperscript{21}

Moreover the border roads organisation has already undertaken the responsibility of improving many important roads like Tangla-Dimakuchi, Tamulpur - Udalguri, Barpeta - Bashbari, Chariali- Nagrijuli, Ambagan - Barigaon; Sub Soil Investigation (SSI) for Chamuapara - Purandia, Udalguri - Kharupetia,\textsuperscript{22} and conversion of four Sal plank timber (SPT) to RCC, one bailey bridge (Mangaldoi river), in near future with lots of employment opportunities to local people. Improvement of roads in this area will automatically ease the insurgency problem.

3.4. NORTH-EASTERN COUNCIL (NEC):

The North Eastern Council was constituted under the North Eastern Council Act. 1971 and council was formally come into existence with effect from 1st August 1971 under a presidential order as a regional body to look after the common economic interest of the different states of the region.

In the various NEC plan the council gave topmost priority on the programme for removal of the inadequacy of transport and communication. During fifth and sixth plan, council for its improvement and construction approved nearly 5,872 Kms. of roads. Till the end of March 1990 the NEC

\textsuperscript{21} Chief Engineer PWD (R), BRO
\textsuperscript{22} Ibid
nearly spent Rs. 467 crore on the construction of roads and bridges. During the last five years i.e. from 1999-2000 to 2003-2004, P.W.D., Assam constructed and improved 1086.96 Kms. of roads in Assam and completed 53 bridges Under North Eastern Council Scheme. The construction of the second Bhomoraguri Bridge over Brahmaputra was fully financed by North Eastern Council at a cost of Rs. 92.04 crore. The third bridge over the river Brahmaputra, Naranarayan rail cum road bridge at Jogighopa partly financed by North-Eastern Council, was completed in April 1998. Again fourth bridge at Bogeebil near Dibrugarh has also partly financed by the North Eastern Council. The 12 airports of North East Region are being improved with 60 percent fund from North Eastern Council. It can be said that the NEC has been taking important role in road development of Assam.

3.5. ROAD TRANSPORT AGENCY:

State Governments and private operators undertake schemes for road transport. Since independent, most governments have nationalised the bus transport system either completely or partially. The important segments given in favour of nationalisation of bus transport are as follows.

I. Road transport is a public utility service and as such should be in the hands of state.

23. Chief Engineer PWD (Roads) Assam, Chandmari.
24. Dhar P. K. - The Economy of Assam-2005, p-577
II. Road transport brings in large revenue for the state, which can be used for economic development.

III. Nationalisation of road transport help to bring about co ordination between road transport and railways. It also estimates between bus transport companies.

IV. It brings in advantage of large-scale operation. Facilities, which are not available to small bus companies, are available to large Government road transport companies.

V. The state road undertaking can offer better facilities to the passengers and good working conditions to the employees.

In the past, private bus operators tried to maximise profit and did not care to provide quality services. However every one of the above arguments in favour of nationalisation of bus transport can be easily answered. In fact whatever the governments wants to achieve can also be done through proper regulation and control of road transport.

There are currently 60\textsuperscript{25} state road transport undertaking in India with a total fleet of 1,00,000 buses. The physical and operating efficiency of state road transport undertaking as a whole is low, and most of them are running with a loss. The major causes of those are: gross inefficiency, extensive

pilferage of stores, poor maintenance of buses, absence of cost based fare structure and lack of timely adjustment of fares in response to changes in input prices, operation of uneconomic of routes for social reasons etc. while private operators are flourishing, most states road transport undertaking are running badly and accumulating huge loss year after year. There is a strong public feeling that State Governments by and large are unfit to run bus services efficiently and should hand them over to private operators.

The public and private both are important transport operators in Assam. The Assam State Transport Corporation, a state Government undertaking only the public sector transport agency mainly for the movement of passengers on nationalised routes of the state. The private sector road transport operators are involved in the intra state and inter state movement of goods and passenger traffic through out the year.

3.5.1. ASSAM STATE TRANSPORT CORPORATION (ASTC):

The “State Transport” was started by the Assam Government in the year of 1948 with 4 Nos. of buses, which was converted into corporation viz. the “Assam State Transport Corporation” on 30-03-1970 with objective for providing economical and coordinated transportation to the commuters. Now Assam State Transport Corporation has been running with certain constrains like overstaffing, uneconomic fare structure mushroom growth of private
buses, providing survives on social obligation at the cost of economic loses etc.26 These factors had led to gradual deterioration of the corporation. The position of Assam State Corporation can be shown with the help of the table 3.4.

Table – 3.4

ASSAM STATE TRANSPORT CORPORATION FLEET STRENGTH, NUMBER OF EMPLOYEES, NATIONALISED ROUTE LENGTH AND NUMBER OF PASSANGER FOR THE FIVE YEARS 1999 - 2000 TO 2003 - 2004

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total. Number of vehicles</td>
<td>640</td>
<td>542</td>
<td>534</td>
<td>471</td>
<td>361</td>
</tr>
<tr>
<td>a) Bus</td>
<td>589</td>
<td>492</td>
<td>487</td>
<td>347</td>
<td>347</td>
</tr>
<tr>
<td>b) Others</td>
<td>51</td>
<td>50</td>
<td>47</td>
<td>24</td>
<td>14</td>
</tr>
<tr>
<td>2. Nationalised Route Length</td>
<td>8130</td>
<td>8130</td>
<td>8130</td>
<td>8130</td>
<td>8130</td>
</tr>
<tr>
<td>3. ASTC under operated buses</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1055</td>
<td>1437</td>
</tr>
<tr>
<td>4. Average number of passenger travelled daily (in Lakh)</td>
<td>1.7</td>
<td>1.02</td>
<td>1.02</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>5. Average number of employees</td>
<td>5412</td>
<td>5129</td>
<td>4042</td>
<td>2967</td>
<td>2967</td>
</tr>
</tbody>
</table>

Source - Assam State transport Corporation, Assam

The above table 3.4 shows that the total route length covered by the Assam State Transport Corporation remain same during the five years i.e. from 1999-2000 to 2003-04. The fleet strength has been gradually decreasing from 640 in 1999-2000 to 542 in 2000-01, to 534 in 2001-02, to

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</tr>
<tr>
<td>b) Others</td>
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<td>50</td>
<td>41</td>
<td>24</td>
<td>14</td>
</tr>
<tr>
<td>2. Nationalised Route Length (in Kms)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
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<td>8130</td>
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<td>-</td>
<td>-</td>
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</tr>
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<td>1.02</td>
<td>1.02</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>(in Lakh)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Average number of employees</td>
<td>5412</td>
<td>5129</td>
<td>4042</td>
<td>2967</td>
<td>2967</td>
</tr>
</tbody>
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471 in 2002-2003 and 361 in 2003-04 indicate a poor position of fleet strength. The average number of passenger travelled daily by ASTC was 1.7 lakh in 1999-2000 but the same was decreased to 1.02 lakh in 2000-01 and 2001-02 but increased to 1.3 lakh in 2002-03 and 2003-04 indicate a good position regarding average number of passenger travelled. The average number of employees engaged in this organisation has been decreasing from 5412 in 1999-00 to 2967 in 2003-04 indicate a good position in the sense that the organisation could solve the over employment problem and it also help to enhance revenue of the organisation. This improvement is made due to the steps taken by the Government of Assam during 2001 for revival and reorganisation of the corporation as mentioned below:

i) Introduction of “Voluntary Scheme” with fund provided by the Government. A total numbers of 1781 employees availed voluntary retirement thereby saving around Rs. 80.00 lakh per month on Salary.

ii) Implementation of “Self employment Scheme 2001” The private buses are taken in for operation under ASTC and so far more than 1437 Nos. of such buses have been registered under the scheme.
iii) Repairing of shut down buses and purchasing new buses. The ASTC is now operating a fleet of 347 numbers of buses of its own.

iv) A scheme for proving "Scratch Card" is introduced to attract the passengers purchasing ticket worth Rs. 75.00 or more in ASTC buses and private buses under ASTC. The scheme is helping in generating better revenue.

v) The scheme for advertising on bus bodies and hording at prime location with commercial utilisation of spaces has been taken up the ASTC for generating revenue.

vi) The cargo and courier services have been started. Thus ASTC has generated employment avenues for about 6000 unemployed youth through the above scheme and services.

As per data available from Commissioner of Transport, Assam, the earning per kilometre was Rs. 11.09 in 2002-2003 as against Rs. 8.45 in 2000-2001. The average monthly income was Rs. 10.00 lakh in 2002-2003, which increased to Rs. 35.00 lakh during 2002-2003. Further the monthly income from other sources like cargo/courier services and rental advertisement etc. of the order were Rs. 1.10 lakh and Rs. 6.16 lakh respectively during the year of 2002-03 indicate a good position.
From the above analysis it can be said that the scheme taken by the state government for revival of Assam State Transport Corporation is correct and able to revive the organisation.

3.5.2. PRIVATE OPERATORS:

Though the public and private are important operators, other than bus services, all services i.e. goods services are operated by the private operators. The commodity moved by the private operators was dominated by a few items such as food grains, coal, mineral oil, tea, timber, building materials, cement, iron and steel and miscellaneous products. Due to the absence of accurate data it is difficult to state precisely the growth of goods traffic by private road transport. As regards bus services also private operators hold major share. Not to speak of Assam, but in National level also major share of bus services are held by private operators. The position of private and public operators in Assam and some other states as well as national level can be shown with the help of the following table 3.5.
Table 3.5

BUS SERVICES HELD BY PUBLIC AND PRIVATE SECTORS OF SOME STATES AND IN INDIA AS A WHOLE AS ON MARCH 2004

<table>
<thead>
<tr>
<th>States</th>
<th>Buses held by Public Sector</th>
<th>Buses held by private sector</th>
<th>Total buses held</th>
<th>% share of buses held by public sector to total buses held</th>
<th>% share of buses held by public sector to total buses held</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>18327</td>
<td>44225</td>
<td>62552</td>
<td>29.30</td>
<td>70.70</td>
</tr>
<tr>
<td>Assam</td>
<td>361</td>
<td>10332</td>
<td>10693</td>
<td>3.40</td>
<td>96.60</td>
</tr>
<tr>
<td>Delhi</td>
<td>3286</td>
<td>44617</td>
<td>47957</td>
<td>6.85</td>
<td>93.15</td>
</tr>
<tr>
<td>Haryana</td>
<td>3520</td>
<td>1600</td>
<td>5120</td>
<td>68.75</td>
<td>31.25</td>
</tr>
<tr>
<td>Karnataka</td>
<td>10263</td>
<td>50182</td>
<td>60445</td>
<td>16.98</td>
<td>83.02</td>
</tr>
<tr>
<td>Maharastra</td>
<td>22169</td>
<td>40960</td>
<td>63129</td>
<td>35.12</td>
<td>64.88</td>
</tr>
<tr>
<td>Orissa</td>
<td>271</td>
<td>14790</td>
<td>15061</td>
<td>1.80</td>
<td>98.20</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>4413</td>
<td>46609</td>
<td>51022</td>
<td>8.65</td>
<td>91.35</td>
</tr>
<tr>
<td>West Bangal</td>
<td>3048</td>
<td>19228</td>
<td>22336</td>
<td>13.65</td>
<td>86.35</td>
</tr>
<tr>
<td>Chandigarh</td>
<td>417</td>
<td>1075</td>
<td>1492</td>
<td>27.95</td>
<td>72.05</td>
</tr>
<tr>
<td>India</td>
<td>114689</td>
<td>554136</td>
<td>668825</td>
<td>17.15</td>
<td>82.85</td>
</tr>
</tbody>
</table>

Source - Infrastructure CMIE March 2005, page 151

Above table shows that private sector operators dominated the bus service in 9 states including Assam out of 10 states as well as India. Only the state Haryana showed an exception that public sector dominated the bus services. In Assam 3.40 percent share of buses are held by public sector and 96.60 percent share held by private sector. India as whole also only 17.15 percent share of bus services is held by public sector and 82.85 percent is
As in other parts of India, Private Road Transport in Assam has been playing an important role in the economy of Assam. Private Road Transport in Assam is an important player, which has contributed a major share in the total transport needs of the state. It is creating employment opportunities to a large number of people directly and indirectly. Regarding direct employment opportunity each passenger bus employs 4 persons (as stated by the private bus owners, Agencies such as Blue Hills Travels, Network Travels, Royal Tour and Travels etc.). The total number of bus registered in Assam at the end of 2004 is 10,332\(^2\) (Bus 8076, Omni bus 822, Mini bus 1434). Considering the total number of buses the employment opportunity provided by the private road transport (bus) is (10,332 x 4) 41,328. The operating organisation also employs a considerable number of youths in clerical and administrative jobs.

As regards indirect employment the establishment of booking centres (Commission basis) engagement of casual labour, growing of commercial centres at different bus stations of the state, establishment of repairing sheds, hotels and restaurants, automobile and motor parts selling centres etc. have

\(^{27}\) Statistical Handbook, Assam 2004. p-138
evolve and contributed to economic activities. Adabari Bus Station, Paltanbazar (Guwahati) can be cited as example. Most of the private bus agencies are situated at Paltanbazar, where the Railway Station and ASTC Head office existed. Large number of Hotels, Restaurant and other commercial centres are growing up in Paltanbazar area, which is the main connecting place to different places of Assam, North Eastern region and India.

In Adabari, Guwahati also carrying in average, 10,040 number of passengers daily by 251 buses coming from different parts of Assam delighted and proceed to their destinations by City Bus, Auto Rickshaws, Rickshaws etc. as a result of which it also has become a commercial important centre with various activities like hotel, restaurant, light vehicle, vehicle repairing shed, selling centre of automobile parts and other necessary articles etc. Thus, the private transport operators contributed a lot for the growing development of other places of Assam.

The position of five private operators as regards passenger travelled, total number of buses operated and revenue earned are shown in table 3.6.
<table>
<thead>
<tr>
<th>Operators</th>
<th>Nos. of buses</th>
<th>Average number of passenger travelled daily (in thousand)</th>
<th>Average amount of revenue earned during 2004 (Rs. in lakh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Passenger</td>
<td>Cargo</td>
</tr>
<tr>
<td>Blue Hills Travels</td>
<td>202</td>
<td>8.08</td>
<td>13.92</td>
</tr>
<tr>
<td>Net Work Travels</td>
<td>193</td>
<td>7.72</td>
<td>12.49</td>
</tr>
<tr>
<td>Royal Tour &amp; Travels</td>
<td>148</td>
<td>5.92</td>
<td>10.01</td>
</tr>
<tr>
<td>Blue in Travels</td>
<td>114</td>
<td>4.56</td>
<td>8.51</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>814</strong></td>
<td><strong>32.56</strong></td>
<td><strong>54.45</strong></td>
</tr>
</tbody>
</table>

*Source:* Private bus operators of Assam, (Field Survey)

The table 3.6 shows that the five operators held 814 buses and they carry 32.56 thousand passengers daily to and from Assam and North Eastern Region and certain parts of West Bengal and Bihar. They employed about 3256 numbers of youths apart from clerical and administrative jobs.

**Constrains:**

i) Due to road congestion and poor maintenance of roads, operating cost increases and road accident occurs.

ii) Dacoity at different parts of Assam and North-Eastern Region at nighttime as revealed by the passengers and bus employees hamper the smooth and safe running of the buses.
iii) Extension of the service of passenger train from Guwahati to Dibrugarh and Tinsukia threatened the bus operators as revealed by the employees and owners of the bus agencies. Due to extension of service of Brahmaputra Mail from Guwahati to Dibrugarh and Tinsukia, the numbers of passengers is decreasing in night super buses, because the people prefer train services specially in long journeys as train journey is secured and comfortable to bus journeys.

The total revenue earned by the Department of Transport in Assam during 1999-2000, 2000-01, 2001-02, 2002-03 and 2003-04 were Rs. 75.99 Crore, 84.26 Crore, 102.23 Crore, 128.81 Crore and 140.49\(^{28}\) Crore respectively and thus the increase in revenue collection was 9.0 percent in 2003-04 over the previous year.

Besides to provide fast services to the commuters of the Greater Guwahati, and to create self-employment among the unemployed youth, Trekkers Service has been introduced recently.

Sources revealed from the Transport Department, Government of Assam that 2000 jobs have been created by the introduction of trekker service in Guwahati. Licenses for Automobile and Emission Testing Services to 84 private parties have generated 3 jobs in each case. The rural

cab scheme is expected to generate a lot more employment. Similarly direct employment at the rate of about 3 per vehicle, on the average, will be created from the licenses issued for 124 maxi cabs, 58 tourist cabs, 295 all Assam tourist taxis, 111 contract carriage buses working under ASTC, 354 stage carriage buses and 259 Tata Sumo vehicles. All these must have improve the road transport system and generated lot of employment both directly and indirectly. Besides these, 200 permits are being issued for plying of air-conditioned taxis in the district headquarters towns of the state.

3.6. MANAGEMENT STRUCTURE OF INDIAN RAILWAY:

Prior to independence, there was state owned managed railways, state owned and company managed railways and company managed company owned railways along with the railway lines run by the Indian princely states. At the time of independence, there were 42\textsuperscript{29} different railway companies varying in mileage, traffic equipment operating in India. After partition, with the Indian union the ownership of all these railways were transferred to Ministry of Railway, Govt. of India. The Railways function as a department of the Government in the Ministry of Railways and the Railway Board functions as its secretariat and also as the top executive and

\textsuperscript{29} Acharya B B., Ghosh Sandip- Transport 1997, p-49
policy-making body. The administrative machinery on the Railways functions at three levels such as-

a) The Railway Board,

b) The General Manager and

c) The Divisional Manager

a) Railway Board: It is the apex administrative and executive body, which assists the Railway Ministry in day-to-day control and operation.

b) General Manager (Zonal Railway): To manage the Railway Zones, General Managers are appointed. The General Manager of a Zonal Railways is responsible for the implementation of the policies of the Railway Board and for efficient and economical running of Railway.

c) Divisonal Manager: Each Zone is divided into five to seven divisions to look into day-to-day operation of the railways and headed by Divisional Railway Manager.

Indian railway have grown into a vast network of 6856 stations spread over a route length of 63140 km. with a fleet of 7739 Locomotives 39236 passenger service vehicles, 4827 other coaching vehicle and 216717 wagons and employing nearly 1.6 million staff as 31st March 2003.\textsuperscript{30} For long haul freight government in bulk and long distance passenger traffic, and for mass

\textsuperscript{30} India 2004 – A Reference Annual Publication Division Ministry of information and broadcasting GOI Pare 641.
repaid transportation in suburban areas, railway occupy a unique position in the Indian economy.

3.7. TREND TOWARDS MODERNISATION OF INDIAN RAILWAY:

The data given in table 3.7 indicate the trend towards modernisation since 1950-51. In terms of route length, the railway network has grown by 1.2 times between 1951 and 2003 but freight traffic increased by 5.5 times and passenger movement by 3.5 times. The steam locomotives are being gradually replaced by diesel, electric locomotives. Diesel and electric locomotives carry over 95 percent of the total goods traffic. Modernisation and improvement of signalling and telecommunication are also going ahead.

**Table 3.7**

PROGRESS OF RAILWAYS IN INDIA UNDER THE PLANS

SINCE 1950-51 TO 2002-03

<table>
<thead>
<tr>
<th>Particulars</th>
<th>At the end of</th>
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<tbody>
<tr>
<td></td>
<td>1950-51</td>
</tr>
<tr>
<td>1. Route length (km)</td>
<td>53,600</td>
</tr>
<tr>
<td>Of which electrified (km)</td>
<td>390</td>
</tr>
<tr>
<td>2. Passengers carried (millions)</td>
<td>1290</td>
</tr>
<tr>
<td>3. Freight traffic carried (million tones)</td>
<td>93</td>
</tr>
<tr>
<td>4. No. of locomotives</td>
<td>8210</td>
</tr>
<tr>
<td>Of which diesel</td>
<td>17</td>
</tr>
<tr>
<td>Electric</td>
<td>72</td>
</tr>
<tr>
<td>5. No. of coaches</td>
<td>19630</td>
</tr>
<tr>
<td>6. No. of wagons ('000)</td>
<td>206</td>
</tr>
</tbody>
</table>

**Source** - Explanatory Memorandum Budget, 2003-04
3.7.1. TREND OF RAILWAY ROUTE LENGTH OF SOME STATES AND INDIA:

The data given in table 3.8 indicate the trend of Assam and some other states and India as a whole in respect of railway route length from 1998-99 to 2002-03. The railway route length has increased by 125 km in Assam between 1998-99 and 2002-03 against 645 km in India as a whole. In Delhi the route length remain constant during the above period and in Andhra Pradesh the same has increased by 39 km only. In percent share of total route length in India, Assam’s is 3.98 percent in 2002-03, Andhra Pradesh 8.23 percent Delhi 0.32 percent, Haryana 2.45 percent, Gujrat 8.41, Karnataka 4.71 percent indicate a favourable position in respect of route length.

Table 3.8

RAILWAY ROUTE LENGTH OF ASSAM, SOME OTHER STATES AND INDIA AS A WHOLE (IN KM) FROM 1998-99 - 2002-03

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total route</td>
<td>% Share</td>
<td>Total route</td>
<td>% share</td>
<td>Total route</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>5058</td>
<td>8.09</td>
<td>5057</td>
<td>8.05</td>
<td>5079</td>
</tr>
<tr>
<td>Assam</td>
<td>2392</td>
<td>3.82</td>
<td>2392</td>
<td>3.81</td>
<td>2516</td>
</tr>
<tr>
<td>Delhi</td>
<td>200</td>
<td>0.32</td>
<td>200</td>
<td>0.32</td>
<td>200</td>
</tr>
<tr>
<td>Haryana</td>
<td>1551</td>
<td>2.48</td>
<td>1548</td>
<td>2.46</td>
<td>1548</td>
</tr>
<tr>
<td>Karnataka</td>
<td>2974</td>
<td>4.76</td>
<td>2974</td>
<td>4.73</td>
<td>2974</td>
</tr>
<tr>
<td>Kerala</td>
<td>1050</td>
<td>1.68</td>
<td>1050</td>
<td>1.67</td>
<td>1050</td>
</tr>
<tr>
<td>Maharasthra</td>
<td>5465</td>
<td>8.74</td>
<td>5447</td>
<td>8.67</td>
<td>5396</td>
</tr>
<tr>
<td>Orissa</td>
<td>2186</td>
<td>3.50</td>
<td>2340</td>
<td>3.73</td>
<td>2317</td>
</tr>
<tr>
<td>West Bangal</td>
<td>3769</td>
<td>6.03</td>
<td>3786</td>
<td>6.03</td>
<td>3720</td>
</tr>
<tr>
<td>India</td>
<td>62495</td>
<td>--</td>
<td>62809</td>
<td>--</td>
<td>62759</td>
</tr>
</tbody>
</table>

Source - Infrastructure CMIE, page 151, March 2005
But the present railway service is not satisfactory. Lack of development in regards to amenities, safety and punctuality is more evident in railways of Assam and lag far behind in rest of the country. The infrastructure of Rangia Division is yet to complete. The services of long distance train to the South from Guwahati are not satisfactory.

3.7.2. ROLE OF N. F. RAILWAY:

In Assam Indian Railway has created an infrastructure of 2517 Kms of Route length till the end of 2003-04. The double track Broad Gauge route construction is also completed from Siliguri to New-Bangaigaon. Construction of infrastructure facilities of double track in Kamakhya station is going to complete. 53 nos. of Mail/Express Passenger trains has been rendering services from Assam to different parts of India. The N.F Railway is responsible for implementation of policy in Assam and North-East region.

3.7.2a. PASSENGER TRAFFIC:

The rail transport no doubt benefited local short distance passenger traffic within the state, although this was less profitable from the point of railway enterprise. The mail or express trains have conferred more benefit to the inter-state passenger of upper middle class who can go neither by air nor by passenger train, more so in areas poorly served by road transport. Owing to general backwardness of the state the people here did not move for
pleasure, mostly they moved where it was urgent. As such standard
amenities provided by Railways in Assam is not high. Yet then passenger
carried by N.F. Railway increase to 34.19 millions in 2001-02 in comparison
to 25.57 million in 2000-01, it results an increase of 8.64 millions of
passenger in 2001-02 over 2000-01.\(^{31}\)

The earning from passenger kilometres also increased from Rs.
201.58 crore in 2000-01 to Rs. 222.60 crore in 2001-02 and it indicate an
increase of Rs. 21.02 crore in 2001-02 over 2001-02.\(^{32}\)

3.7.2b. AGRICULTURE:

SUPPLY OF INPUT:

The railways helped in supplying input to the agricultural sector. In
fact owing to the existence of railways the plain districts did not have any
major problem of implementing better seeds, manures, agricultural
equipments, insecticides cattle etc. During 1999 N.F. Railway carried
39,04,634 (inward) quintals and 2,86,936 \(^{33}\) (outward) quintals of fertiliser
and organic manures of all kinds.

MARKETING FACILITIES:

Major impact was felt when railways started moving agricultural
produces from surplus to deficit areas and from centres of production to the

\(^{31}\) Statistical Hand Book of Assam 2003 and 2004, p-150.
\(^{32}\) Statistical Hand Book, Assam 2003, 2004, p-150
centres of consumption. This set in motion of a series of favourable consequences. The problem of storage was reduced and farmers tended to get better price. Consequently incentives to produce more and to produce cash crops also developed in different regions depending on institutional factors. Before the extension of railways in Assam production and consumption centres were widely dispersed and the surplus areas could not send produce to deficit areas effectively. However extension of railways in Assam this difficulty was ease to a certain extent.

Available record show that extension of railway route were definite advantage for better marketing of local produce, although it is difficult to assess exactly the quantum of benefit derived from railway and alternative transport.

Role played by N.F. Railway in its transportation of agriculture produce as seen from the table 3.9.

34. Transport system and Economic Development, S.B. Medhi p-110. It has been rightly described in Lardner's Law of squares in transport and trade that as the area of circle varies as squares of its radius the improvements in the mechanism or the organisation of transport, which increase the distance over which trade in certain goods can be carried at a given expenses, are prima faci likely to increase in the square of that ratio, the area over which the trade can be conducted profitably.
Table 3.9
MOVEMENT OF SOME AGRICULTURAL PRODUCTS DURING 1999
BY N.F. RAILWAY
(in Quintals)

<table>
<thead>
<tr>
<th>Products</th>
<th>Inward</th>
<th>Outward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice not in husk</td>
<td>9093027</td>
<td>880753</td>
</tr>
<tr>
<td>Gram and Gram Products</td>
<td>229298</td>
<td>--</td>
</tr>
<tr>
<td>Wheat</td>
<td>3939748</td>
<td>177395</td>
</tr>
<tr>
<td>Bidi leave</td>
<td>---</td>
<td>220</td>
</tr>
<tr>
<td>Teak wood</td>
<td>---</td>
<td>20510</td>
</tr>
<tr>
<td>Other timber</td>
<td>42162</td>
<td>453505</td>
</tr>
<tr>
<td>Jute-Ravi</td>
<td>---</td>
<td>80000</td>
</tr>
</tbody>
</table>


The impact of rail transport was more prominent in import of Rice not in Husk, Gram and Gram products, Wheat and other timber but was more prominent in export of Jute, Bidi leave and Teak wood.

One of the major impacts of railway in opening of market with the extension of railway tended to shift in favour of agriculturist. For they not only got better price for produce sent out, but cheap manufacture goods from abroad also became available to them in proportion to demand. Another noticeable impact was increasing monetisation of the rural sector as the riot able to store rupee instead of goods.

As regards transportation of industrial goods N.F. Railway was carried 621114 (inward) quintals and 792837 (outward) quintals of
Kerosene; 2096323 (inward) quintals and 68577 (outward) quintals of Cement; 2891391 (inward) quintals and 180 (outward) quintals of Iron and Steel; 1813 (outward) quintals of Tea during 1999.35

Apart from helping tea, oil industry and agriculture sector in movement of their inward and outward the N.F. Railway also helped in importing food items such as sugar, salt etc. which are product manufacture. During 1999 N.F. Railway carried 1898563 (inward) quintals and 374 (outward) quintals of sugar; 651638 (inward) quintals and 3330 (outward) quintals of salt. However the Railway would not have been able to play such a role without the initiative of the State Government.

3.7.2c. NEW RAILWAY PROJECT:

The Union Government has now decided to accord top priority to the development of rail network in the North-East and accordingly approved a large number of projects for this area. The projects include (a) conversion Simalaguri-Moranhat and Mariani-Jorhat-Farkating branch lines. (a) Construction of a new B.G. lines from Dudhnoi to Depa in Meghalaya (c) Conversion of 198 Km. Lumding-Silchar Hill Section into Broad Gauge (d) construction of a new 123 Km. line from Diphu to Karong (c) Construction

of a new 35 Km. line from Harmuti to Itanagar (f) construction of a rail-cum-road bridge over Brahmaputra at Bagibil, (g) construction of new 119 Km line from Kumarghat to Agartala.

After the completion of all these new projects, substantial improvement is likely to take place in the railway network of the state in the coming years, which would meet a long felt necessity of the people of the state as well as this region.

3.8. INLAND WATER TRANSPORT AGENCIES

Inland water transport Comprising Rivers, Canals Backwater, Creeks etc., are the cheapest mode of traffic both over long and short distance. From the point of view of energy consumption Inland Water transport, unlike other modes of transport no huge investment is needed here. It is a labour intensive mode of transport and benefits weaker section of the community.

3.8.1. DIRECTORATE OF INLAND WATER TRANSPORT, ASSAM:

The Brahmaputra and Barak are two most important navigable rivers of Assam. There are also numerous tributaries of these two rivers mainly the Subansiri, Dihing, Burhi Dihing and Dekang, which are navigable by country boats. The Inland water transport Department of Assam is operating its commercial cargo services between Guwahati and Kolkata exclusively
for movement of goods.\textsuperscript{36} The Inland Water Transport, Assam has also transported over dimensional cargo meant for Numaligarh refinery Ltd., Assam, and Hydropower Project Manipur from Kolkata. The Neemati Kamalabari Ferry services are connected with Nagaland in the South and Arunachal Pradesh in the North via Lakhimpur District. The Dibru-Sonary-Burisuti ferry services are connected with Arunachal Pradesh and are one of the most important shortest routes between Assam (Upper Assam) And Arunachal Pradesh.

Water transport of Assam attained a big boost during the British period and maintained its progress until the introduction of railway in North-Eastern region of the country.\textsuperscript{37} Moreover navigational channels had to face considerable damage due to the earthquake of 1950 and later on the Indo-Pakistan war.

Although the importance of water transport has started diminishing with the development of railway but water transport is as cheap and available mode of transport in the state like Assam, which constitutes nearly 14 percent of the total navigable waterways of the country, the development of water transport as an alternative mode of transport has a special importance. In 2003-04 Government of Assam took steps to develop the

\textsuperscript{36} Economic Survey, Assa, 2004-05; p-56
\textsuperscript{37} Dhar, P. K.- The Economy of Assam, p-440.
abandoned vessels converting to enterprise of river cruise floating restaurant, marriage hall with private sector participation, to introduce 34 new Commercial Cargo services, India’s first long distance Deluxe Cruise “MV Charaidew” to cater the needs of river tourism, Medium distance Deluxe river cruise “RPL Ushaban” between Tezpur and Kaziranga for foreign and domestic tourist, river cruise services between Guwahati - Pabitara and other nearby places. This is a novel venture of State Inland Water Transport and Assam Bengal Navigation Company. During 2001-02 and 2002-03 thirty-two vessels have been leased out to private parties.38

But the vessels are again lying unused as they are too old and after renovation also it is not floating for a long time. It indicates the failure of the above scheme of State Government.

3.8.2. INLAND WATERWAYS AUTHORITY OF INDIA:

The Inland Waterways Authority of India came into existence on 27th Oct 198639 for development and regulation of Inland waterways in the country and to act as advisor to the central and state Governments on matter relating to Inland Water Transport. The authority undertakes various schemes for development of IWT related infrastructure on national waterway.

38. Directorate of Inland Water Transport, Assam.
The Sadia-Dhubri-stretch of river Brahmaputra in Assam has been declared as a national waterway in 1988 and the entire responsibility of improving and maintaining river to make it suitable for all weather navigation has been shouldered completely by the Central Government. But the stretch has not yet developed. In 2003 Ministry of Shipping proposed to improve floating terminals in Dhubri, Jogighopa, Pandu, Tezpur, Nimati, Saikhowa and Dhansirimukh at cost of Rs.13.58 crore and acquiring a cutter section dredger. It also proposed to include 24 hours navigation at Guwahati, Dibrugarh and Sadia at estimated cost Rs. 10 Crores. But no effective initiative is evident until now.

3.8.3. CENTRAL INLAND WATER TRANSPORT CORPORATION:

The Central Inland Water Transport Corporation [CIWTC] with its headquarter at Kolkata was set up as a public sector undertaking in May 1967. The CIWTC is mainly engaged in transportation of goods by inland water in the Ganga-Bhagirathi-Hoogly, Sundarban and Brahmaputra rivers. They operate Cargo services between Kolkata-Pandu-Karimganj; Kolkata-Bangladesh and Between Haldia and Patna.

In conclusion it can be said that there is a vast scope of inland water transport in Assam. But due to some constraints such as siltation, more

40. Directorate of Inland Water Transport, Assam.
emphasis by Government for development of roadway and railways and lack of proper initiation of Government in this respect this sector is not properly developed.

3.9. AGENCIES INVOLVED IN AIR TRANSPORT:

This sector has three main functional division- Regulatory, Infrastructural and Preparational. In operational side Indian Airlines, Alliance Air (subsidiary of Indian Airlines) private scheduled operators provide domestic air services while Air India and Indian Airlines provide international air services, Pawan Hans Helicopter Ltd. provide helicopter services to ONGC in its off shore operations and to inaccessible areas having difficult terrains. India has a number of International Civil Aviation Organisation (ICAO) and is in the council of ICAO since its inception. There are two scheduled Airlines namely Jet and Sahara operating in the domestic network providing passengers with a wide choice of flights.

There are number of agencies which are involved in providing civil aviation services in India. Which are Air India, Indian Airlines, International Airport Authority of India (IAAI) and Directorate General of Civil Aviation (DGCA) provide infrastructural facilities.

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41. India, A Reference Annual, p-657
The data given in the table 3.10 indicate a phenomenal increase in the volume of air traffic in the last two decades.

**Table 3.10**

**TREND OF KM FLOWN AND PASSANGERS CARRIED OF CIVIL AVIATION IN INDIA BETWEEN 1990-91 AND 2002-03**

<table>
<thead>
<tr>
<th></th>
<th>DOMESTIC</th>
<th></th>
<th>INTERNATIONAL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>KILOMETRES FLOWN (Mn)</td>
<td>48.7</td>
<td>163.8</td>
<td>51.1</td>
<td>84.2</td>
</tr>
<tr>
<td>PASSANGERS CARRIED ('000)</td>
<td>7464</td>
<td>13935</td>
<td>2436</td>
<td>4172</td>
</tr>
</tbody>
</table>

*Source - Tata Services Ltd. Statistical Outline of India (2003-04)*

Above table shows that kilometres flown of domestic traffic has grown by more than three times in 2002-03 in comparison to 1990-91, and in international air traffic has increased more than 1.5 times in the same period. Similarly in passenger carried also domestic as well as international traffic has increased by 2 times in the above period.

3.9.1. AIR INDIA:

Air India owns a fleet of twenty aircraft and operates to 37 stations (12 domestic and 25 international). Also under various code shares/Block space agreements, Air India services a total of 18 International destinations, during 2003-04 Air India carried a total of about 3.3 millions passengers on its schedule flights.42

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42. *India 2004 - A Reference Annual, Compiled and edited by Research, Reference and Training Division page-660.*
3.9.2. INDIAN AIRLINES:

Indian Airlines is the major domestic air carrier of country. It operates 59 domestic stations with its wholly owned subsidiary Alliance. Air India Airlines also operates to 16\textsuperscript{43} international stations viz.- Bangkok, Singapore, Kualampur, Yangon, Kathmandu, Colombo, Dhaka, and Male etc.

3.9.3. PAWAN HANS HELICOPTER LIMITED:

Established in 1985, Pawan Hans Helicopter Limited has emerged as one of the Asia's largest helicopter operators having a well-balanced fleet of 31 helicopters. In addition to this, it also operates and maintains helicopters of other customers.

Since inceptions Pawan Hans has flown over 3,00,000 hrs, 1.15 million landing and carried over 52 lakhs passengers.\textsuperscript{44} Its operations ranges from oil rig support to ONGC at Mumbai High and Hardy Explanation at Chennai, VIP transportation for Ministry of Home Affairs in North East, regular passenger services under the aegis of state Governments of Arunachal Pradesh, Meghalaya, Sikkim and Tripura.

\textsuperscript{43} India 2004 - A Reference Annual, Compiled and edited by Research, Reference and Training Division page-660.
\textsuperscript{44} India 2004 - A Reference Annual, Compiled and edited by Research, Reference and Training Division page-660.
In March 2004 Directorate General of Civil Aviation were allowed the Jet Airways and Air Sahara to operate regular flight to Colombo, Dhaka and Kathmandu.

In Assam, air services are operated by Indian Airlines through six airports of the State. Besides this Jet Airways, Sahara Airways also served. Though six airports are there in Assam and is well connected with rest of the country through air transport but position of air transport is not significant as regards the passenger handled by air transports. Table 3.11 indicate the position of passenger handled by some of the airports in India and three airports in Assam and in India as a whole.

Table 3.11
PASSANGER TRAFFIC AT SOME OF THE AIRPORTS IN INDIA AND THREE AIRPORTS IN ASSAM

<table>
<thead>
<tr>
<th>Airports</th>
<th>Passenger handled [Number]</th>
<th>% Share of total traffic</th>
<th>% Change in 1990-00 2000-01 2001-02 2002-03</th>
<th>% Change in 2000-01 2001-02 2002-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ahmedabad</td>
<td>818372 84605 768135 818018 1.92 1.86 3.45 -9.27 6.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangalore</td>
<td>2156028 244379 2267776 3026716 5.67 6.88 13.33 -7.19 33.47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chennai</td>
<td>3647378 405589 3784242 4161346 9.46 9.46 11.47 -6.93 9.97</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delhi (Indira Gandhi International)</td>
<td>8313651 8933750 8493209 9096548 21.25 20.68 7.46 -4.86 7.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dibrugarh</td>
<td>67333 77790 79161 82179 0.20 0.19 15.53 1.76 3.81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guwahati</td>
<td>408808 450567 433564 508719 1.08 1.16 10.21 -3.77 17.33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kolkata</td>
<td>2598881 266400 2561302 2826794 6.40 6.43 3.37 -4.65 10.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mumbai</td>
<td>11560477 12177320 11471431 12260284 28.68 27.87 5.34 -5.80 10.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patna</td>
<td>171448 176916 156490 162800 0.39 0.37 3.19 -11.55 4.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silchar</td>
<td>73905 75852 75843 77558 0.19 0.16 4.04 -0.01 2.26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India (All air ports)</td>
<td>39034548 42026620 4003057 43988321 100 100 7.67 -4.81 9.96</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source - Infrastructure CMIE, page-253, March 2004
Above table shows that in percent share of traffic in three airports of Assam to the total traffic in 2002-03 are Dibrugarh 0.19, Guwahati 1.16 and Silchar 0.18 as against Delhi 20.68, Chennai 9.46, Bangalore 6.88 Ahmedabad 1.86, Kolkata 6.48, Mumbai 27.87 position of all these airports are higher than all three airports of Assam indicate a poor position of Assam in terms of percent share of traffic to total traffic in India. Regarding the percent change in three airports of Assam in 2002-03, Dibrugarh showed 3.81 Guwahati 17.33 and Silchar 2.26 as against Delhi 7.02 Channai 9.97, Bangalore 33.47, Ahmedabad 6.49, Kolkata 10.37, Mumbai6.88 and India as a whole 9.96. All airports showed a positive change. Though Guwahati airport showed higher percent of change than Delhi, Chennai, Ahmedabad, Kolkata, Mumbai and India as a whole other airports of Assam showed lower percent of change. It indicates that, as a whole Assam’s position is not good as regards percent change of air traffic.

Guwahati airport has elevated to international airport and renamed as Lokapriya Gopinath Bardoloi International Airport. One international flight was also introduced on April 2002 from Mumbai to Bankok via Kolkata touching down Guwahati once a week. But the arrangement has now been withdrawn making the airport infrastructure useless and causing great
hardship to the people of Assam and North-Eastern region. Again the process is being made to introduce the above flight.

In conclusion it can be said that though Assam has sufficient number of airport i.e. six number of airport but as regards passenger traffic the position of Assam is not good. Again though Guwahati has been elevated to international airport but in respect of international aircraft the position of Assam is inadequate.

3.10. AGENCIES INVOLVED IN POWER SECTOR:

The Ministry of power is primarily responsible for the development of power in the country. The Ministry is concerned with positive planning, policy formulation, processing of projects for investments decision, monitoring of implementation of power projects, training and manpower development and administration and enactment of legislation with regard to thermal and hydro power generation, transmission and distribution. In all technical and economic matters the Central Electricity Authority assists Ministry of power.

The construction and operation of generation and transmission project in central sector are entrusted to Central Power Corporation viz. the National Thermal Power Corporation, The Hydroelectric Power Corporation, the North Eastern Electric Power Corporation and Power Grid Corporation of
India limited. The power grid is responsible for all the existing and future transmission projects in the central sector and also for formation of National Power Grid. The construction and operation of State Sector is entrusted to State Power Department and State Electricity Board.

3.10.1. NATIONAL THERMAL POWER CORPORATION:

Incorporated in 1975, the National Thermal Power Corporation (NTCP) is the single largest generator of electricity in India. It operates 19 percent of the total installed capacity in the country and generates about 26 percent of the total electricity. As on 31st March 2003, the corporation had a commissioned capacity of 20,935 M.W.\(^45\) It intends to achieve a capacity of 25,000 M.W. by 2007 and 40,000 M.W. by 2012.\(^46\)

3.10.2. NATIONAL HYDROELECTRIC POWER CORPORATION:

Also incorporated in 1975, the National Hydroelectric Power Corporation (NHPC) is the largest hydropower-generating organisation in the country. It has installed capacity of 2175 M.W.\(^47\) from eight operational projects. The target is to add 7000 M.W. by 2007 another 11,000 M.W. by the end of the Eleventh Plan period (2012)

\(^{45}\) India 2004, p-228
\(^{46}\) Ibid.
\(^{47}\) Ibid.
The Power Grid Corporation of India Limited [PGCL] is a government enterprise; operate regional and national power grids to facilitate transfer of power within and across the regions. On 31st March 2003 the POWERGRID exchange 12000 Mus energy between different regions of India.

3.10.3. NORTH EASTERN ELECTRIC POWER CORPORATION:

The North Eastern Region is blessed with the highest hydro potential in the country, which is estimated at about 58,971 M.W. Out of which less than 2 percent of this potential, has so far been harnessed.49 Besides this there is considerable thermal power potential, mainly in terms of gas reserves. Considering the huge power potential in North Eastern Region the Central Government constituted a central agency in 1976, North Eastern Electric Power Corporation with the aim of developing the electric power potential of the region. The Corporation started the construction and with commissioning of 150 M.W. Kopili Hydro Electric Project in Assam. The corporation is now all set to plan, promote, survey, design, construct, generate, operate and maintain different power station in the region.

The installed capacity of North Eastern Electric Power Corporation as on 31-03-03 is 1,105 M.W. comprising 730 M.W. of Hydro powers and 375

48. Ibid.
49. India 2004, p-232
M.W. of Gas based power. The North Eastern Electric Power Corporation has got sufficient scope to grow further and is now playing an important role for the development of power project in this backward region of North East India.

3.10.4. STATE ELECTRICITY BOARD:

There are 30 State Electricity Board and Electricity Department in India controlling nearly 2/3rd of the installed generation capacity but the Boards has been running with various problems.

The critical problems are in the power sector is the poor performance of the state electricity Board which generate and distribute power, set power tariff and collect revenues from the users and high transmission and distribution losses.

The high transmission and distribution losses are due to sparsely distributed load over a large area, particularly in the rural sector, under investment in the transmission system, inadequate billing and substantial pilferage of power. These transmission and distribution losses have been around 20 to 22 percent.

The most serious weakness of State Electricity Boards is their inability to arrive at implement and economic power tariff. Because of the

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50. India 2004, p-232
52. India, National Infrastructure Report 1998, p-27
powerful agricultural lobby in all the States, State Electricity Boards are unable to raise the power tariff. Both agriculture and domestic sector are highly subsidised and State Electricity Boards are incurring heavy losses on their sale of power to agriculture and domestic sectors. Gross subsidy involved on account of sale of electricity to these two sectors rose form Rs. 7450 crore in 1991-92 to Rs. 34950 crore in 2001-02\textsuperscript{53}. To some extent these heavy losses have been brought down through.

a) **Surplus revenues generated from sale of electric power to industrial, commercial and other sector at high prices.** The surplus is used to cross subsidies the losses on account of sale to agriculture and domestic categories.

b) **State Government sharing a part of the subsidy by providing an aid (Government grant) mainly for rural electrification.**

Even then the State Electricity Boards are left with heavy uncovered subsidies, which are increasing with every passing year. For instance, uncovered subsidy, borne by boards amounted to Rs. 3230 crores in 1991-92 and rose to Rs. 22,210 crore in 2001-02\textsuperscript{54}.

At the time of independence, Many State Electrical Boards were headed by strong power plant technologists and engineers, but for the last

\textsuperscript{53} Economic Survey of India 2002-03, p-183.
\textsuperscript{54} Economic Survey of India 2002-03, p-183.
several years, most State Electricity Boards are manned by generalist IAS administrators with little or no experience in the power industry and simply carry out wishes of the state political leadership. Accordingly, State Electricity Board suffers from serious malice, such as over manning, construction and procurement contracts awarded to poorly qualified parties, poor project management leading to enormous delays and cost overruns, poor quality in construction and equipment selection resulting unsatisfactory performance, mismatch in generation and transmission capacities, extensive power thefts.

3.10.5. ASSAM STATE ELECTRICITY BOARD:

The Assam State Electricity Board, which was constituted in 1958 under Electricity (Supply) Act 1948 is taking prime responsibility of integrated power development in the state with the assistance of North Eastern Electric Power Corporation, established by the Government of India in 1976 for hydel and thermal generation of power in the region and Power Grid Corporation of India Ltd., established in 1989 for integrated transmission system in the country.

Assam State Electricity Board has been working as sole agency of power sector in Assam with many problems such as very low and declining plant load factor, extremely high operating cost, low level employees
productivity, time and cost overruns of various major projects, high transmission and distribution losses, large sale power theft, huge amount of revenue arrears particularly from government departments and municipalities, poorly managed and highly subsided rural electrification schemes.

Sources available from ASEB (Bijuli Bhawan, Guwahati) revealed that while the Assam State Electricity Board installed capacity is 574 M.W. it produces about 130-140 M.W. even best times depending largely on borrowed power from North Eastern Electric Power Corporation and other central undertaking for which it owes Rs. 627 crores in 2003-04 to North-Eastern Power Corporation only. The transmission and distribution losses of Assam state Electricity Board is 42-43 percent of the total power transmitted and distributed against the all India average is 20-22 percent. Its loan burden was Rs. 1550 Crore and fuel cost also about Rs. 1000 crore in 2003-04. Assam State Electricity Board is financing its projects with huge amount of loan. These loans and other liabilities make the ASEB sick. It requires modernisation and professional management to improve its functioning.

Considering the above and for development of power sector, the Assam Legislative Assembly passed the electricity Bill 2003 for power sector reforms and restructuring the Assam State Electricity Board.
The salient features of the Bill are competition, economy and efficiency to be promoted in best interest of consumers and the states economy, regulation of electricity industry in a fair transport, predictable and participative manner, transmission to be separated as an independent function for creation of transmission highway with non-discriminatory open access, compulsory metering for enhancing accountability and viability, special provisions for promoting access to rural areas, and economically weaker sections, stringent measures to minimise theft and misuse.

Government of Assam unbundling the ASEB into five different companies for ushering in a new deal in power generation, transmission and distribution system on the basis of Electricity bill 2003. But, with the disintegration of the parent body into different functional areas would be coordinated and regulated by state regulatory commission. By observing the present state of affairs of ASEB in context to the technical inadequacies and other malice, a control agency in the form of Assam Electricity Regularly commission (AERC) can only advice the Board.

It would be worth mentioning that government of Assam has taken over liabilities of ASEB of Rs. 500055 crore and invest, Rs. 2000 crore in

55. Department of Power, Government of Assam.
power sector taking loan from Asian Development Bank, which has sanctioned with a condition to restructure the ASEB.

In conclusion it can be said that, though Assam has abundant natural resources and is a strategic corridor for the North-East region but unreliable power supply from the state owned ASEB has hampered the industrial and economic growth. The lack of power is eroding the state competitiveness and preventing it from attracting industrial investment. Improve power sector at a reasonable cost is essential to revive the state’s industry and economy. Equally important in improving the financial sustainability of the power sector so that it is no longer a drain on state finance. Because of financial and technical constraints, ASEB operates below capacity and is unable to meet the total power demand. ASEB tries to fulfil the supply of shortage by purchasing power from neighbouring states and other government enterprises, but financial problems caused by its high cost structure and poor billing and collecting system are major constraints. In this connection it may be mentioned, to ease the collecting procedure, the Government of Assam has already purchased 493 No of spot billing machines.56

56. Department of Power, Government of Assam.
Due to the inadequate policy of Government and management of ASEB, 360 M.W. Amguri gas based thermal project was shelved in 1994, 240 M.W. Bongaigaon thermal power station remain inoperative since 1996, 60 M.W. Chandrapur thermal power station remain closed since 1999. Only one of the seven turbines of the 120 M.W. Lakwa Gas based Thermal Power Station is now running along with the four units of the 134 M.W. NTPS.

But the board is heavily dependable on state Government support, resulting is more use of public fund at the cost of education, health and other sectors.

The present ASEB consist of three distinct wings, namely generation, transmission and distribution apart from its civil wings and rural electrification planning wings. It has a separate material management wing also. Yet a distinct interface among these wings has to be emerged. In order to imbibe a healthy competition among these units, the Government of Assam has passed the electricity bill 2003 to segregate the board into three separate wings.

The change over to the new set up is not going to be easy or painless. First of all financial support for deploying the reform package has to be organised. The reforms can show result only after some minimum time lag.
Meanwhile there could be a lot of resistance to change from those who have a vested interest in existing system.

3.10.6. RURAL ELECTRIFICATION:

In order to stimulate the growth of small scale industries and promote a more balanced and diversified economy, rapid rural electrification was found necessary and was pursued vigorously at both Central and state level.

Under the rural electrification programme 497760 villages out of 587258 villages were electrified upto March 2003. The percentage of village electrified in India was 83.7 percent at the end of March 2003.\(^{57}\)

The total number of villages electrified in Assam was 19039 in March 2003, out of the 24685 inhabited villages. However, 4200 villages were de-electrified due to various reasons like natural calamities. Thus the percent of villages electrified in the state was 77.13 percent at the end of March 2003,\(^{58}\) which is less than national level. According to records maintained by ASEB, the total number of rural households of Assam is 4345167. Out of which about 1094715 households have been provided service connection till 31st March 2003.\(^{59}\)

According to the tenth five year plan, the villages yet to be electrified are mostly in Assam, Orissa, Uttar Pradesh, Madhya Pradesh, Rajasthan and

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\(^{57}\) India 2004, p-227.
\(^{58}\) Assam Electricity Board, Bijuli Bhawan, Paltan Bazar, Guwahati.
\(^{59}\) Ibid.
North Eastern states. The plan also pointed out about 62000 villages could be provided through conventional grid expansion but the balance of villages which are in the remote areas hilly terrain, deserts and Island could be provided economically through decentralised and non conventional energy sources like solar, wind, small hydro and biomass.

The rural electrification is very much essential for execution of development programme for both in agricultural and rural sector. Rural electrification also helps in diversification of rural economy through the establishment of agro-based industries and other small and cottage industries.

The ASEB and its transmission and distribution companies have identified the rural electrification of the state as an area requiring sustained efforts. As part of its action plan, the ASEB has taken up a scheme to extend electricity to cover at Districts, which include rural areas with fund amounting to Rs 2000 Crore, sources informed (ASEB)

In response to a Government of India Directive that all below poverty line connections should be provided by the state, The Assam Government has given 36726 connections so far.\textsuperscript{60} It is expected that these connections,

\textsuperscript{60} Deoartment of power, Government of Assam.
called Kutir Jyoti will usher in qualitative changes among the weakest section of the society.

Recognising the fact to upgrade essential infrastructure, the ASEB in its RE wings is establishing 23 substations of 11 KV funded by an ADB loan for the period 2005-06. The collections of bills at the village level has been sought to be streamlined by involving local agents.

The list of villages in the state both electrified and un-electrified is not at all comprehensive. Unless it is updated to the names of every single village, subsequent RE plans would be partial impact.

Efforts in implementing RE schemes, moreover, face constraints in remote villages located several kilometres away from existing grid. Any effort acts providing electricity to such villages would require identifying alternate power resources.

Knowledgeable sources state that because it would not be commercially viable to connect such villages through power lines, resources like biomass, mini hydel or solar would have to be developed. ASEB however, to identify such sources of energy, which could be tapped to generate a limited but realisable amount of electricity near remote settlement.

61. Assam Electricity Board, Bijuli Bhawan, Paltan Bazar, Guwahati.
3.10.7. RAJIB GANDHI GRAMIN VIDYUTKARAN YOJANA:

On 3rd April 2005 Government of India launched the Yojana to provide electricity to 1.25 lakh villages and offer electricity connection to 2.3 crore house hold by the year 2009 and electricity to all by 2012.

The yojana would meet the long felt needs of the rural people and would contribute immensely towards accelerating the pace of rural development.

In Assam also Govt. of Assam has decided to

i) Electricity extension in 2304 villages within 2005.

ii) Electricity extension in 2500 villages within 2007.

iii) More than 100000 educated unemployed youth will be appointed as commercial agent for distribution of electricity and revenue collection.

No doubt above plan will develop the rural electricity consumers. But whatever may be planning taken by the Government without enhancing the production of electricity the position of the same could not develop. So Government of Assam, Assam State Electricity Board should give utmost importance to enhance the production of electricity.

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62. Assam Electricity Board, Guwahati.
3.11. PRIVATE INVESTMENT IN INFRASTRUCTURE:

In the past, the responsibility for providing infrastructure services was vested with the Government – the reasons being:

Heavy capital investment, long gestation period, externalities, high risk and low rates of return on investment. The demand for infrastructure facilities and services has always outpaced supply, besides the quality of the existing supply is poor. The consequent shortfalls in capacity and inefficiencies in infrastructure facilities are congested roads, chronic transport bottlenecks, frequent power failures and load shading.

In order to sustain an annual GDP growth rate of 7 percent, it is imperative to accelerate the rate of investment in infrastructure. The total infrastructure investment requirements would be Rs. 75,000 Crores during (2001-06). This order of massive investment requirement is clearly beyond the capacity of Government. The financial resources available to the Government are very limited. Accordingly, the creation of quality of infrastructure will need the infusion of private capital, both domestic and foreign.

Since 1991, Government strategy attaches high priority to the development of efficient infrastructure and towards creating and enabling

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63. The India Infrastructure Report, June 1996.
environment for private participation in infrastructure sector. Besides public private partnership can also encourage better risk sharing, accountability, cost recovery and management of infrastructure. Some of the important steps in this direction are –

a) The Government has announced a tax holiday to companies developing, managing and operating infrastructure facilities, such as roads, bridges, new airports, ports and railways projects, and also those dealing with water supply, sanitation and sewage projects.


c) The Government has permitted income tax exemption on dividend, interest on long term capital gains earned by funds or companies set up to develop, maintain and operate an infrastructure facility.

d) The Government has raised corpus of the National Highway Authority of India Ltd. by Rs. 200 Crores to enable it to leverage funds from the domestic and international capital market.

e) The Government has enhanced tax rebate limits for investment in shares and debentures offered by infrastructure companies. This is to channalise domestic savings into such investments.
Infrastructure investments are, by their very nature, long gestation activities. If private participation has to be encouraged to enter the infrastructure, there is the need to develop domestic capital markets, which will make funds available for long period through long-term debt instruments. The Asian Development Bank has provided a loan for the public sector infrastructure facility in order to support private sector infrastructure projects through the development of the long-term debt market. The money will be borrowed by ICICI, IFCI for on lending to infrastructure companies through long-term debts instruments viz- bonds and debenture, for a minimum of 15 years maturity. The Government of India announced various measures to attract foreign investment in infrastructure. For instance, the government has allowed automatic approval for foreign equity participation up to 74 percent in key infrastructure industries such as electric generation and transmission, non-conventional energy generation and distribution and construction of activities in the area of roads, bridges, ports and harbours.

The Government also announced guidelines for private investment in highway development through the Build Operate Transfer (BOT) route. These would provide more financial concession and also facilitate the preparation of detailed feasibility reports, clearance for the right way of
land, relocation utility services, and equity participation in the highway sector.

What will be the future role of public sector enterprises in the field of infrastructure, after the entry of private sector? The public sector enterprises will continue to shoulder the major burden in providing critical infrastructure services but public sector reforms would be necessary to broaden their management, to upgrade their technology, to improve their performance and quality of services.

Advanced states of the country succeeded in privatisation and raising fund through equity issue or floating bond and debentures in capital market as commercial project under BOT and BOLT system.

3.11.1. PRIVATE SECTOR PARTICIPATION ON BOT SCHEME ON ROAD SECTOR:

Consequent to the amendment of National Highway Act in 1995 to allow private sectors’ participation, steps have been and are being taken to identify and take up national highway projects through private sector financing. The first toll road constructed with private sector participation was the Thane Bhiwandi by pass in Maharastra. The by pass constructed under a built-operate transfer scheme by Mumbai based Ideal Road Builders
The Thane Bhiwandi by pass is one of the first nine projects taken up by the Government of India with private participation. The other eight projects are-

- The Chalthan Road over bridge in Gujrat; cost Rs. 10 crore.
- The Udaipur bridge in Gujrat; cost Rs. 24 crore.

64. India National Infrastructure Report 1998, p-64
65. India National Infrastructure Report 1998, p-64
66. Ibid
- The Narmada bridge in Gujrat; cost Rs. 113 crore.
- The Coimbatore by pass in Tamilnadu; cost Rs. 90 crore.
- The Durg by pass, Madhya Pradesh; cost Rs. 68 crore.
- The Nardhana Road over bridge in Maharastra; cost Rs. 35 crore.
- The Patalganga Bridge in Maharastra; cost Rs. 33 crore.
- Six bridges on NH 5 in Andhra Pradesh; cost Rs. 50 crore.

A study conducted jointly by the Central Road Research Institute and the Asian Development Bank\(^\text{67}\) pointed out that there is an urgent need to open the surface sector for private investment to meet the future needs of additional in the country and remove the deficiencies in the existing national highway system. The study further pointed out that the existing national highway network is heavily strained and is unable to cope with growing demand of traffic. The study observed that a length of about 10,000 Kms. expressways is required to be built by the year 2015 to meet the demand adequately. This would cost about Rs. 80,000 crores to Rs. 1,00,000 crores. Another Rs. 52,000 crore would be required to remove deficiencies in the existing network.

It recommends that under the circumstances, the participation of private sector in development of road network is inevitable on Built-operate...
and Transfer (BOT) basis, as the Government does not have the kind of funds to build such a network.

The central Road Research Institute in its report pointed out that the present day needs advocate rapid modernisation of roads by building more national highways, expressway, by passes and 'four laning' of congested corridors. The road transport is an dominant mode of transport in India, carrying close to 85 percent passenger and 60 percent freight traffic and consumers more than 90 percent of the total energy used by the transport sector. Despite the fact that the surface transport is an important sector, most of the roads are poorly managed.

But due to the problem of militancy, absence of proper policy of Government of Assam, more importance given on political gain by the ruling Government, lack of proper cooperation of public regarding private participation. This approach does not seem feasible in Assam.

3.12. INFRASTRUCTURE DEVELOPMENT FINANCE CORPORATION:

The Government of India announced the setting up a specialized institution for the infrastructure sector in 1997. Named the Infrastructure Development Finance Corporation under the companies act with an authorized capital of Rs. 5000 Crores the foreign equity component has been pegged at 35 percent whereas the centre will hold 20 percent. The Reserve
Bank of India 15 percent and the balance will hold by domestic banks and financial institution.68

IDFC started operation from August 16, 1997. The government and domestic financial institutions have already made a part of contribution of Rs. 310 crore to the equity capital and government has advanced a sum of Rs. 300 crore as subordinate loan for a period of 15 years.69

IDFC plan to focus on power, telecommunication roads and bridges, ports and urban infrastructure projects, though in future its focus will also be on developing financial products. The institution approved financial aid to two power companies Bina Power Supply Company and Jindal Tracteble Power Company Ltd.

With IDFC playing a proactive role in infrastructure development projects, it is hoped that private capital will flow into the sector of course initiative to lure private investment into infrastructure project have come a cropper so far.

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68. India National Infrastructure Report 1998, p-169  
69. Ibid.