CHAPTER-IV

EXISTING ACTIVITY DEVELOPMENT
IN BHARUCH REGION
4.0.0 Introduction

In this chapter, we have selected Bharuch district (region) of Gujarat state in Indian territory for the present study, so that to represent as a case or sample representing developing regions in developing economies.

Bharuch district, has also proximity for our data collection, survey and analysis involved in this research. Hence, Bharuch’s recent dynamic activity development patterns over space and well documented literatures related to this study is the principal motivation for the adoption of this region for the present research.

It is therefore felt necessary for us to examine and investigate the development patterns of these activities in the future regional road transport planning and alternative policy analysis.

In this chapter, therefore, we have highlighted the background and activity development pattern in Bharuch region as a case study of the present research.

This study is also supplemented with relevant maps as shown in sections 4.1.2, 4.1.3 and 4.1.4 of this chapter along with the information on existing scenario and approaches followed by planning organizations in Bharuch region.

First and foremost, in this chapter, we will start with the highlights of Bharuch’s existing economy in relation to transportation scenarios. And this serves as a background of the study to enable the analysis of expected regional transport planning and the impact of alternative policy packages.

4.1.0 Background of Bharuch District

Bharuch region is one of the ten districts of Gujarat state declared backward by the state and central government of India in 1972. Hence, in order to achieve the planned and integrated development at par with the industrially developed districts of the state, in this case the government have made available a number of policies and facilities for the development
of backward districts. The policies include concessional finance extended by All India Terms of lending institutions at all India level and outright subsidy of fixed capital investment with a view to reduce regional inequalities. However, as discussed in the earlier chapter 1 section 1.1.1, a general assessment of the progress made in the light of these policies exhibits that the regional imbalances are still in existence and have not been corrected to the extent required. Despite of all these, more concerted efforts and well formulated integrated programmes are needed to achieve the desired objectives of this study.

Therefore, our main objective in the present study is to workout expected transport planning models integrated with land use development patterns require in 2041 for the study region's planning, efficiency and development. This could also serve as a useful instrument in correcting existing regional disparities and promoting balanced regional development of this study.

4.1.1 Locational Setting

Bharuch district is situated in the Southern part of Gujarat state of Indian Union Territory as shown on the maps 4.1.2, 4.1.3 and 4.1.4 below. It is bounded by Vadodara and Kheda districts on the north, Ahmedabad district on the north-west and Surat district on the South. On its west lies the gulf of Cambay sea then Bhavnagar district and on the east district of Dule of Maharashtra state. The districts outside and bounded to Bharuch region have been delineated as external zones that could enable this study to capture and examine a intra-regional traffic volumes, for our regional transport planning and development in Chapter VII.

4.1.5 Demographic Patterns

The expected total population at the end of the planning year 2041 is 2,475,105 registering a percentage of growth rate of 9.38 percent - while the study year's total population in Bharuch district according 1991 census was 1,546,145 which registered a rise of 19.26 percent over 1981 total population 1,296,451. The proportion of rural population in the district is 83.61 percent which is much higher than the state average of 71.92 percent. This district
MAP 4.12 OF INDIA POSITION OF GUJARAT STATE

INDIA MAP

POSITION OF GUJARAT IN INDIA

- Position of Gujarat State
- Boundary International
- States

MAP OF INDIA

BAY OF BENGAL

ARABIAN SEA

INDIAN OCEAN

SRI LANKA

BURMA

NEPAL

SOUTH INDIA

WEST BENGAL

Bihar

MADHYA PRADESH

UTTAR PRADESH

RAJASTHAN

KARNATAKA

ANDHRA PRADESH

MAHARASHTRA

ORISSA

TAMIL NADU

JAMMU AND KASHMIR

HIMACHAL PRADESH

PUNJAB

HARYANA

ASSAM

BHUTAN

BURMA
has a total geographical area of 9,045 in square kilometres as in census 1991 which also accounts for 4.2 percent of the total area of the state. The average density of population per square kilometres for the district is 123 which is slightly lower than the state average of 136.

### 4.1.6 Administrative Units

In this study administrative units are used as existing criteria for delineation of our transport zones in Bharuch region for our easy data collection, policy planning, analysis and development in the subsequent section 5.2.0 of this study. In this context, the district consists of 1,123 villages as by 1991 census registering a decline of -5.55 percent over 1981 number of villages 1,189. This decline indicates that Bharuch villages are changing gradually into commercial and urban development activities over space. There are also seven urban towns with eleven talukas as sub-divided by the government of Gujarat state as respective administrative unit for easy planning and development. These talukas are Bharuch, Ankleshwar, Amod, Jambusar, Vagra, Hansot, Jhagadia, Valia, Dediapada, Rajpipla and Sagbara. This will be representing eleven internal zones of the study so that to enable the study to capture inter-regional traffic volumes and activity development pattern zonewise as discussed earlier in Chapter II section 2.1.0 and empirically adopted in chapter V. The district has also established 7 tribal development blocks and upcon-munity development blocks. There are 656 gram panchayats, 2 nagar panchayats and nagar palikas functioning in the district for various development programmes and administration.

### 4.1.7 Geographical and Topographical Conditions

This district was broadly divided into three regional units as shown on map 4.1.4 above. Dediapada, Sagbara, Rajpipla, Thagadia and Valia talukas form the eastern region and they have hilly topography full of rocky tracts. The talukas of Jambusar, Vagra and Hansot they are known as Bara Tract which lie in the Western region. This region has a long coastal belt of wasteland, waste Khar and brown soil. The north-eastern part of Jambusar taluka has, however, rich garden which lead to long suitable staple varieties of cotton. The central
region of the district covers Bharuch, Ankleshwar and Amod talukas which are considered highly fertile in black soil.

In this context, the climate of the district is generally warm. Dry hot summer commences in the month of March and extends to May. The south west monsoon brings rain during June-September period followed by brick winter from November to February. The average annual rainfall in the district varies from 300 mm to 1500 mms.

The rivers that provide the district with a perennial source of water and Narmada, Dhadhar and Kim. Some tributaries of Narmada river like Amravati, Kanjan, Dewai and Kaveri flow through the district as shown in the above map 4.1.3. Besides, the rivers, there are streams namely Bura, Nahiyon, Bhukikhadi, Amalkhadi and Vankhedi flowing through the district and in most of the streams water flows throughout the year. The coastal line of the district on the gulf of Cambay extends to about 80 kilometres.

4.1.8 Occupational Patterns

The district population is divided into workers and non-workers in the ratio of 35.3 to 64.7. Classification of workers according to their activities and their percentage to total strength of workers in the district have been highlighted in this section. It is interesting to observe that agriculture and allied activities engage nearly 79 percent of the total workers in the district, the ratio being significantly higher as composed to the state average of 65.6 percent. The percentage of agricultural and landless labourers reported at 47 percent is more than double the state average of 22.5 percent.

While the percentage of Trade and Commerce reported at 4.6 percent is less than the state average of 6.94 percent. Transportation and communication activities engage 1.8 percent of the total workers in the district, the ratio being significantly lower to the state average of 2.85 percent. Other services also engaged 8.0 percent of the total workers and significantly lower than the state average of 8.71 percent. The lower percentage 5.6 of total workers employed in the industrial sector as compared with the state average of 13.91 percent suggests the relative backwardness of the district in respect to industrial development.
4.1.9 Agricultural Pattern

The land utilisation pattern for Bharuch district exhibits that the total cropped area as compared to the total geographical area accounts for more than 57 percent which is significantly higher than the state average of 54 percent. According to 1991 census there are 1,36,314 land holders (Khatedars) in the district. 50.3 percent of Khatedars possess 13.5 percent of total land in the form of small land holdings of the size of less than 2 hectares. This clearly indicates the magnitude of development efforts needed to raise the standard of small marginal farmers of the district.

In this context, Bharuch district has inter constructive of food crop economy. Jowar is the main crop of the district. Other food crops grown in the district include rice, wheat, maize, ragi and pulses. Food crops are sown by the farmers in both seasons. In some villages cultivation of groundnut, tobacco, cotton and sugarcane is also adopted by the progress of farmers. Cotton is the main commercial crop of the district. Broadly, the district can be divided into two cotton zones - worth of Narmada river and south of the same river. The eastern region of the district, comprising five tribal talukas, has paddy and jowar as the main crops - cotton is also grown in some pockets of the region. Jambusar, Hansol and Vagra talukas is suitable for the cultivation of jawar, wheat and cotton.

The central region is highly suitable for cotton cultivation. Ukai irrigation project will provide irrigation facilities to 52,000 hectares of land in this region. This is likely to change the cropping pattern of the region with added advantage to the conventional crops grow here.

4.1.10 Fisheries Development

Bharuch district offers a good scope for florine fishing. About 54 kilometres of coastal lie on the gulf of Cambay is available for fishing. Besides, the Narmada river and its five tribulances - Karjan, Kim, Kaveri, Bhukhi and Amravati offer an excellent scope for the revive fishing. For fishing, a number of tanks and ponds have been developed in the district.
Bharuch is famous for Hilsa, big prawns and special variety fish like Mahseen (Tortos) which is available only in the river Karjan in the whole state of Gujarat. Other varieties available are Rohu, Mullets, Bombay ducks, stantls etc. The annual catch in the district is nearly 10989 metric tonnes whose total revenue is estimated at about Rs.283 thousands contributing some income to the regional economy.

Out of the total population of 13,2000 fishermen in the district, about 6000 are actively engaged in the fishing activity. There are 38 fishing villages in the district. Hence, the state government has launched a fishing project worth Rs.230 thousand to help the population of the district. The project is a part of the tribal sub-plan and aims at quick rearing of fish in tanks, ponds and reservoirs and also to provide training to fishermen in the pisciculture.

The district has 468 ponds, covering 259 hectares of water area, which are perennial, while 120 ponds have water storage of 8 to 10 months. The programme to develop fisheries in nearly 300 hectares of water area is in progress. About 28 fishing villages have as many as 775 country boats. The main centres from where fish are caught is Bharuch taluka, Maktanspur, Jhanon and Kari. There is a great demand for palla fish of Narmada river outside the district to Delhi, Bombay, Calcutta and Madras.

The state government has now decided to exploit the fish industry to the maximum by drawing an ambitious plan to non-fish in plenty for export. The seeding of catla, ran, nagri varieties are imported from Calcutta to raise them in the various ponds. The ponds are also utilised for storing the fish growing species of fish. To prevent the exploitation of fishermen, the fisheries department has formed cooperative societies in each taluka namely Bharuch, Hansot, Vagra, Jambusar, Jhagadia, Rajpipla, Ankleshwar and Sagbora. The societies have now a total membership of 985. The government also runs a fishery school and imports training in fish science, compensatory, net weaving and home science.

The nationalised banks have also come forward to extend road facilities for the development of fisheries in the district.
4.1.11 Livestock

The livestock population in the district as per 1991 census totals 8,54,717. In order to improve the breed of animals for milk purposes as well as for draft purposes, livestock production programme aimed to assist small and marginal farmers and agricultural labourers has been in progress. It covers breeding, feeding and health services besides ensuring marketing facilities. One such programme has been undertaken by the state financial development association agency which covers several other important aspects of district development.

4.1.12 Poultry Development

Total poultry population in the district was 7,59,372 as per 1991 livestock census. The eastern tribal part consisting of talukas of Dedia, Nandod, Valia and Jhagadia has the largest share of population. There is also good scope for poultry development in the talukas of Bharuch, Ankleshwar and Sagbara. The State Financial Development Association (SFDA) has launched a scheme for developing the poultry in the district.

4.1.13 Dairy Development

The continual occurrence of natural calamities in the district has forced the small and marginal farmers to take up dairying as an alternative means of livestock. It also helps them to supplement their incomes and provide subsidiary occupation to become self-reliant. In Bharuch, the dairy business is closely associated with the cooperatives movement in the district. The efforts of collaborators in forming the various co-operative are in progress. Despite being backward economically and industrially the district has taken a lead in the cooperative sector. One such achievement of the sector is the establishment of Broad Duth Dhora Dairy run and Managed by the Bharuch Jilla Sahakari Dudh Utpadak Sangh Limited, which is credited in bringing about a white revolution in the district.

Under the milk distribution system of the dairy, the sale of toned milk was 1508707 Kg and standard milk was 646244 Kg as per 1991 census. In Bharuch through 46 distribution centres and 15 hawkers, while 9 marketable surplus of 8953396 kg was despatched outside
the district to Surat's Sumul dairy. As per 1991 census the dairy purchased milk worth Rs.11,818,000 from the producers who were thus helped in their efforts to raise their supplementary income.

The existing capacity of the plant to process milk is the district is 18000 litres per day against the receipt of 49136 kg. The target of milk collection in the coming years is envisaged at 85000 litres per day. The sales from milk, curds, ghee etc. were reported as Rs.2.31 crores in 1991 against Rs.95 thousands in 1981. During the year 1991, the dairy augmented machinery and equipment totalled Rs.19.65 lakhs.

The government of Gujarat state has sanctioned five instant milk-chilling units costing Rs.26 lakhs, one each at Rajpipla, Dediapada and Sagbara talukas and the tribal sub-plan in the tribal talukas, while two will be located in Jambusar and Hansot talukas non-tribal areas. 4 milk truck tanker costing Rs.2.75 lakhs have been added to each dairy for speedy transportation of milk. The banks have also launched a road transport scheme for promoting this dairy industry in the district. The lead Bank of the district like Bank of Baroda, has sanctioned loans for expansion, modernisation of road construction in rural areas besides establishment of sales promotion agencies and centres in the district.

To execute some of these plans the dairy has sought help from the world bank, international monetary fund and other financial institutions agencies. Until date the affairs of the dairy are being managed by the Gujarat Dairy Development Corporation.

**4.1.14 Forest Development**

The district is endowed with rich forest which provide a varied forest produce. The forest are mainly confined to the hilly and tribal eastern region where they account for 24 percent of the total geographical area. Considering the entire district as the unit they tend to cover 13.1 percent of the total area. Timber, bamboo and charcoal are the main forest produce of the area. Minor forest produce includes timm fruits and Ashitra leaves used for bidi making. Similarly the Khair tree bulk is also being utilised for the manufacture of Katha.
For the commercial exploitation of the minor forest produce, the state government corporation, the local office of the corporation is located at Rajpipla. At present it’s functions are limited to collection and sale of Timmu leaves, Mahuda seeds and flowers, bamboo’s and gum from the trees. It also imparts training to advasis in bidi making. There are some of the functions which have been taken over by the Corporation from the forest department. The major produce of the forest however continues to be managed by the forest department. The take over by the corporation, as reported, has deprived the tribals of their livelihood. However, the tribal sub-plan through the advasis development project envisage all road promotion and development of the tribal areas.

4.1.15 Mineral Resources and Development

The district has some mineral resources and important among them are agates, bentumite, calcites, limestone, coloured-clay and china clay which are found in different parts of the district.

The production in metric tonnes of these minerals as per 1991 census are: Agate - 1607, Calcite - 940, Bentoumite - 864, Brick-earth - 2,20,480, Coraval - 19,220, Road Metal - 80,480, Ordinary Sand - 76,942, and Limestone - 1620. While agates are mainly available in Jhagadia taluka, Bentonite in Jhagadia and Valia talukas, Calcite is mostly available in Jhagadia and Nandod talukas and Fuller’s earth is also found in the Jhagadia area of the district.

Agates are used for turning out family items like cult button, chess pawns, idols, ashtrays, ear rings, necklace beads etc. Although the mineral is found in Bharuch district there is no small or cottage unit here to make use of it. The minerals finds its way towards the Gulf of Cambay town of Kheda district for making finished products. It was reported that artisans and skilled workers are not available in Bharuch to undertake such a work and therefore the resources has remained unexploited.

The district has a significant share in contributing to the crude oil and 10.6 lakhs cubic meters of associated gas is produced per day from these oil fields. While the crude oil is
taken to the Koyali Refinery for further process, the gas is supplied to the Gujarat State Fertiliser Company Limited and other units located in and around Vadodara and also to the state owned power station at utran of the district.

4.1.16 Infrastructural Development

(a) Railway/Transport

In census 1991, the total length of railways in the district is 264 kilometres which includes a broad-guage (50 kms) and narrow-guage (214 kms). There are 47 number of railway station. All the talukas except Dediapada, Sagbara, Hansot are connected by railway. The district is well connected with Delhi, Bombay and Ahmedabad through a broad-guage railway line, as the main trunk line between Bombay-Baroda-Ahmedabad and Delhi, passes through the district. The five important railway stations on the line are Bharuch, Ankleshwar Pawoli, Palej and Nabipur. Except Dediapada, Sagbara and Hansot all the taluka head-quarters in the district are connected by rail.

(b) Road Transport and Communication

Road transport planning in Bharuch district has been undertaken by Gujarat State Government and Indian Central Government based programmes as discussed earlier in Chapter 1 section 1.1.1 of this study.

According to the classification of roads made by the Indian road congress, road length in the district by category is given in table 4.1.17 below for the years 1980-81, 1985-86 and 1989-90.
Table 4.1.17: Road Length by Different Categories

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Year</th>
<th>National Highways</th>
<th>State Highways</th>
<th>Type of Roads</th>
<th>Other District Roads</th>
<th>Village Roads</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1980-81</td>
<td>44</td>
<td>457</td>
<td>616</td>
<td>799</td>
<td>929</td>
<td>2,845</td>
</tr>
<tr>
<td></td>
<td>1985-86</td>
<td>44</td>
<td>467</td>
<td>598</td>
<td>870</td>
<td>1284</td>
<td>3263</td>
</tr>
<tr>
<td></td>
<td>1989-90</td>
<td>44</td>
<td>767</td>
<td>994</td>
<td>601</td>
<td>860</td>
<td>3266</td>
</tr>
</tbody>
</table>

Source: Road and Building Department, Government of Gujarat

In 1980-81, the total length of roads was 2,845 kilometres which increased to 3,266 kilometres in 1989-90. It would be observed from the above table 4.1.17 that there is an improvement in the network of roads in the district.

Allocation of buses as a mode of public transport in the district is the responsibility of Gujarat State Road Transport Co-operation (GSRTC). It is observed that out of the total 1,116 inhabited villages, 931 villages were connected by state road transport facilities during 1991 census respectively.

This facilities are considered an administrative necessity as well as a public convenience. A well knit transportation system is a pre-requisite for the social and economic development of any district.

(c) Ports/Transport

There are four ports in the district such as Bharuch on the bank of the river Narmada and Dahej, Kavi and Tanker on the gulf of Cambay as shown on map 4.1.4 of this chapter. Bharuch has been classified as an intermediate port, Dahej and Kavi have been also classified as Minor Ports and Tankori has now been selected from the list of ports. Bharuch port was once famous all over the world catering to international traffic. But due to heavy silting it lost its significance. Bharuch port is expected to act as feeds port to Dahej port once the latter is developed into a major port.
Dahej port is situated at 21° 40'N latitude and 72° 32'E longitude, about 10 kilometres north of the mouth of river Narmada on East coast of the Gulf of Cambay. It is 350 kilometres north of Bombay and across the Gulf. It is 30 kilometres by sea from Bhavnagar.

The decision to develop Dahej as a major port has been taken long back but the development has not taken place due to paucity of financial resource constraint.

The port is connected by roads and railways for easy and quick transport. The port has so far been restricted to the vessel traffic only. Considering the geographical advantages, its hinterland potential and easy approaches, the Gujarat State Government has now developed it as a hinterland linkage port for steamer traffic. The port can serve as the best link for goods traffic between South Gujarat and Saurashtra region reducing transport cost of the circuitous land route by resort to steamer service across the gulf.

(d) Post and Telegraph

According to 1991 census, there were 822 post offices and 62 telegraph offices functioning the district. Population coverage of post office comes to 96,294. All important towns have been linked through effective telecommunication. The number of villages in the district possessing these facilities are 799 during the census period.

(e) Educational Institutions

Education play an important role in the field of social and economic growth of the district. The state government of Gujarat has been making all efforts to establish at least one primary school in every village of the state so that this basic necessity can be provided up to each rural citizen. After the introduction of panchayat raj in the state, the function of primary education has been entrusted to the district panchayats for the rural areas whereas it is under local bodies in urban areas. Primary, secondary and higher secondary education facilities available in the district for the years 1979-80, 1984-85 and 1989-90 are given in table 4.1.18 below:
Table 4.1.18 : Educational Facilities

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Education</th>
<th>1979-80</th>
<th>1984-85</th>
<th>1989-90</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Education</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1.</td>
<td>Primary Institutions</td>
<td>1,315</td>
<td>1,443</td>
<td>1,532</td>
</tr>
<tr>
<td></td>
<td>Pupils</td>
<td>2,02,046</td>
<td>2,29,273</td>
<td>2,55,399</td>
</tr>
<tr>
<td></td>
<td>Teachers</td>
<td>5,442</td>
<td>6,302</td>
<td>6,868</td>
</tr>
<tr>
<td>2.</td>
<td>Secondary &amp; Higher Secondary Education</td>
<td>132</td>
<td>156</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Institutions</td>
<td>132</td>
<td>156</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Pupils</td>
<td>34,640</td>
<td>43,977</td>
<td>59,415</td>
</tr>
<tr>
<td></td>
<td>Teachers</td>
<td>1,432</td>
<td>1,675</td>
<td>1,941</td>
</tr>
</tbody>
</table>

Source: Directorates of Primary and Higher Secondary Education.

The above data table 4.1.18 reveal that the district has made considerable progress in the field of primary, secondary and higher secondary education during the last decade. The literacy rate of the district works out of 35.73 percent as against 35.79 percent for the state.

Besides, polytechnic in Bharuch for engineering courses and an industrial training institute is also functioning at Ankleshwar which conducts a number of certificate courses for vocational education.

(f) Medical Institutions

In census 1991, the details for medical institutions in the rural and urban areas of the district are given in table 4.1.19 below for the years 1979-80 and 1989-90.

Table 4.1.19 : Medical Institutions

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Medical Institutions</th>
<th>Number Rural Areas</th>
<th>Number Urban Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hospitals</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Dispensaries</td>
<td>81</td>
<td>38</td>
</tr>
<tr>
<td>3</td>
<td>Family Planning Centres</td>
<td>147</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Primary Health Centres</td>
<td>146</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Bharuch District Census 1991
The district panchayat has also incurred a total expenditure of Rs.4.72 thousands and Rs.3.83 thousand during the year 1979-80 and 1989-90 on dispensaries and primary health centres respectively.

The table 4.1.19 above exhibits the progress of medical institutions in the rural as well as urban areas.

4.1.20 Financial Institutions

Growth of the district economy can be measured in terms of enlarged operations of various financial agencies operating in the area. The concept of rural development has added a new dimension to the activities of various financial institutions in the district.

There are 49 branches of commercial banks in the district at the end year 1989. The number has gone up to 56 by the end year 1991. The average population served by the commercial banks branch office has gone down from 52,000 in 1989 to 40,000 in 1991.

The Bharuch district central co-operative banks has completed 71 years of its existence in 1989. This has 31 branches covering all the towns and important villages of the district.

4.1.21 Industrial Development

In 1991 census, the total number of registered factories and average number of daily workers employed by major groups of industries for the year ending 1990 are shown in table 4.1.22 below:
Table 4.1.22: Distribution of Important Industrial Establishments by Major Industry Group

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Major Group</th>
<th>Description</th>
<th>Year ending 1990</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>No. of Establishments</td>
</tr>
<tr>
<td>1</td>
<td>20-21</td>
<td>Food products</td>
<td>73</td>
</tr>
<tr>
<td>2</td>
<td>23</td>
<td>Cotton textile</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>24</td>
<td>Wool, Silk and Synthetic fibre</td>
<td>139</td>
</tr>
<tr>
<td>4</td>
<td>30</td>
<td>Rubber plastic, petroleum and coal products</td>
<td>152</td>
</tr>
<tr>
<td>5</td>
<td>34</td>
<td>Metal product and parts except machinery and transport equipments</td>
<td>49</td>
</tr>
<tr>
<td>6</td>
<td>35</td>
<td>Machinery and Machine tools and parts except electrical machinery</td>
<td>18</td>
</tr>
<tr>
<td>7</td>
<td>37</td>
<td>Transport equipments and parts</td>
<td>5</td>
</tr>
</tbody>
</table>


Among the registered establishments, the first three most important establishments are manufacture of (1) Rubber, plastic, petroleum and coal products (2) wool, soil and synthetic fibre and (3) food products. Similarly, the first three most important establishments from the point of view of their employment are manufacture of (1) rubber, plastic, petroleum and coal products (2) wool, silk and synthetic fibre and (3) food products.

In table 4.1.22, it is observed that there are 3,353 registered small scale industrial units in the district at the end of year 1990. Of these industries, 272 are manufacture of food products, 452 textiles products, 443 chemical products, 705 metal products and 1,481 other remaining products.

Along with the house listing operations for 1991 census, economic census was conducted in the year 1990. According to the provisional results, the total enterprises in the district
in both rural and urban areas were 48,653. Of which 10,848 were agricultural enterprises whereas 37,805 were non-agricultural enterprises. The total number of persons actually working in both agricultural and non-agricultural enterprises were 1,52,229.

In actual practice, central government of India acts as a focal point for the promotion of cottage industrial in the district. In cooperation with the directorate of cottage industries, the centre extends active help in promoting the 75 bankable schemes formulated by the former for setting up cottage industries in the district. The 75 products included in the bankable schemes of the directorate of cottage industries can be started with low initial investment and have a great potential for employment to the rural and urban population of the district besides effecting the much desired dispersal of industries in the region.

Among other promotional activities in the field of industrial development in the district, the centre provides the cash subsidy claims of the units for payment by the governments concerned. The disbursement of cash subsidy to the units during the year 1978 is given below in table 4.1.23.

**Table 4.1.23 : Industrial Investment and Development**

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Cash subsidy</th>
<th>No. of small scale industrial units</th>
<th>Amount sanctioned in Rs.</th>
<th>No. of medium &amp; Large Scale units</th>
<th>Amount sanctioned in Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Central</td>
<td>63</td>
<td>26,48,568</td>
<td>17</td>
<td>1,40,28,751</td>
</tr>
<tr>
<td>2</td>
<td>State</td>
<td>26</td>
<td>5,24,471</td>
<td>4</td>
<td>13,10,668</td>
</tr>
</tbody>
</table>

Source: Gujarat Industrial Development Co-operation

Therefore, the major categories of Industrial Co-operative Societies functioning in the district cover 18 salt manufacturing co-operatives, 7 construction works societies, 5 tel gamies, 4 bamboo workers societies and 3 societies each for clay work manufacture of Niva-forgud and corporating and smithy works. There are also 3 ladies co-operatives and two handloom
weavers societies. Some of these societies are working at village level while a few are operating at taluka and district head quarters. One industrial estate, 9 spinning mills, a powerloom society and gud khandsari unit and also printing press, have been established under the co-operative sector.

A large number of credit societies for agricultural and non-agricultural purposes including urban banks are operating as important centres in the district. These credit societies mobilise savings of local residents and provide credit facilities to them and also to organised sectors of trade and commerce.

By and large, there are 11 branches of the land development banks operating at all taluka headquarters of the district. In 1991 census, the membership of this institution was reported at over 1,75,000. Owing to poor recovery, the banks has restricted its operations to Amod, Valia, Dediapada, Sagbara and Hansot talukas in the district, while extending assistance only to small and marginal farmers under the Small Farmers Development Agency (SFDA) projects in the remaining areas of the district.

The Gujarat Industrial Development Corporation has been developed in four industrial estates at Ankleshwar, Bharuch, Palej and Rajpipla talukas of the district. Of the four estates, Ankleshwar is expected to spread over a area of about 2245 areas of land fully developed. The corporation provides all the infrastructure necessary for starting new industries in their estates.

The two leading state financial institutions, Gujarat State Financial Corporation (GSFC) and Gujarat Industrial Investment Corporation (GIIC), are providing services in the development of industries in the district. They advance loans to all categories of industries chiefly under the three schemes known as general scheme technicians. Scheme and new entrepreneurs scheme for acquiring land, factory steel, plant and machinery.

More than 44 money lenders are reported operating in the district. The major centres of their concentration are talukas of Bharuch, Jambusar, Rajpipla, Ankleshwar and sagbara.
for industrial development, in the region.

All in all, it is observed that the financial institutions discussed above, also assist in transport planning for industrial development in Bharuch region.

Therefore, in the earlier chapter II section 2.3.0 and above discussion, it is observed that experience from a large number of agricultural regions and Bharuch regional economics indicates that the changes in economic activity patterns especially that of agricultural subsystems like cropping pattern, mobility of agricultural inputs and marketable surplus and other related non-agricultural activities of the region and its settlements largely depend on the level of transport linkages and the extent of its accessibility of the people. The level of linkage accessibility and trade sector on the one hand determine the level and pattern of economic activities of the region and on the other hand the growth of transport sector itself is determined by the regional economic activities over space.

In this case, it is also argued that the likely transport advantage on regional economic activities is significantly influenced by the physical and social-economic characteristics of a region and extend of openness of regional economy. The socio-economic factors determining the mobility pattern of goods and people, the regional adoptability to the aspects of efficient movements of goods and passengers conversely, so as to fully utilise the investment made on road transport influenced by nature of regional economic activities and socio-economic behaviour of the people.

In this case, therefore, it is felt necessary to capture these aspects of Bharuch regional transport modelling at our expected plan formulation level, so that an integrated road transport development plan can be formulated and implemented in the study region. For this purpose therefore we have zoned Bharuch region in eleven internal and six external transport planning zones to enable this study to be undertaken.