CHAPTER II.

GEOGRAPHICAL BACKGROUND OF THE STUDY AREA

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fifth chapter. While the spatial functional organization of various orders of service zones in the hierarchical system of Rurban service centres are analysed on the basis of the ranges of various levels of goods and services in the sixth chapter. In this chapter, the existing real world pattern and the theoretical pattern of service zones are also analysed.

Further, the interpretation of the existing spatial phenomena and their better utilization through the evolution of new approaches with a view to plan service centres for the balanced development of integrated Rurban community have been given. The anomaly of the empirically determined service zones of various hierarchical levels in relation to the existing administrative boundary set up and the need for the re-arrangement of those boundaries at various levels are also discussed.

The last chapter i.e. VII, gives a summary and the conclusion of the investigation. The necessary appendices and selected bibliography are given at the end.
and Kalravan hills separate it from the Dharmapuri District; the Cauvery River which flows along the western and southern margins, forms, a natural boundary between this district and the adjoining Coimbatore and Tiruchirapalli districts; and the Kolli hills and Pachamalai hills form the southern boundary.

The entire study area is comprised of 1143 Census tracts out of which only 1001 are inhabited. The inhabited census tracts are classified into 958 revenue villages and 43 towns based on their population density and occupational structures (vide Census of India definition, 1971). All the 958 villages are grouped into 35 community development blocks (Figure -2.1). Further, it is administratively classified into 9 taluks comprising 4 revenue divisions namely (1) Mettur (includes Mettur and Omalur Taluks), (2) Salem (includes Attur, Salem and Yercaud (sub-taluk)), (3) Sankagiri (includes Tiruchengode and Sankagiri Taluks) and (4) Namakkal (includes Rasipuram and Namakkal Taluks). For planning purposes these 4 divisions are grouped into 2 development districts, namely North Salem and South Salem Development Districts. Moreover, the entire district forms the western half of the Salem-Cuddalore planning region which is one of the planning regions of

Tamil Nadu. Salem city (11° 39' N and 78° 10' E), which lies in a picturesque Thirumanimuthar Valley, is the district headquarters.

2.3. Physiographical Background

From the inset map of Figure 2.2, it is clear that the study area is located in the heart of Tamil Nadu Upland Region (Singh, 1973). Except for a few patches in the southern margin of the study area in 'the middle Cauvery Valley' (Spate and Loammonth, 1967), and a portion in the eastern margin of Upper Vellar Valley, the entire study area lies at an altitude of more than 150 metres (about 500 feet) from mean sea-level. The highest altitude of a peak near Yercadu reaches an altitude of 1602 metres (5240 feet). Its wide range of altitude from 150 - 1600 metres and the existing major undulations may be mainly due to the changing geological structure and the constant carving of numerous streams and rivers.

2.3.1. Relief

From the physiography map (Figure -2.2) it is clear that the present study area has a highly undulating landscape feature. The study area is drained by the tributaries of the river Cauvery on the west and Vellar on the east. The western portion is a highly dissected upland and the eastern comprises

of abruptly rising hilly tracts. The entire western upland lies on the north-eastern margin of the Coimbatore upland (Singh, 1973). Though it is undulating, it is gently sloping from north towards south following the course of the Cauvery valley. Its general elevation varies from 150 metres upto 600 metres. It gradually rises from the left bank of the river Cauvery in the west and south towards north upto Mysore plateau and upto the hilly tracts in the east.

The northern half of this vast upland is very highly dissected and is also more rugged when compared with its southern counterpart due to the constant down cutting action of the numerous tributaries and streams belonging to the river Cauvery. Among the tributaries of Cauvery, the notable are Sirapunganadi, Thirumanimuthar, etc. They change this vast terrain into a highly irregular surface. Particularly in the upper valley portions of the above cited tributaries the northern upland area has been highly dissected.

On the contrary, in the south the terrain does not show much of irregularities, though it is slightly undulating. Here, the down cutting influence of the above tributaries is negligible due to the lower elevation of the terrain and slopes down towards the river Cauvery with a gentle gradient. It should be noted here that along the left bank of river Cauvery a narrow belt of the coastal plain of Tamilnadu
with an altitude of less than 150 metres, falls within the study area in the extreme southern margin.

In the case of eastern hilly tracts, a group of hills which belong to the southern portion of Tamilnadu group of hills are worth noting. These hilly tracts rise abruptly from their adjacent upland plain. Further, these hilly tracts distinctly form a valley named Vellar at an altitude of 150 - 300 metres from mean sea-level (Figure -2.2). It should also be noted that these hilly tracts are gently rising from their intermediate Vellar valley. With a result, a narrow stretch of low land plain is found in the Vellar valley. In addition, the river valley distinctly contains two tributary valleys, almost parallel to each other, in its upper course.

By and large, the entire study area can broadly be divided into 4 major physiographic divisions on the basis of the existing characteristic terrain features at a micro-level. They are namely (i) the northern upland plain, (ii) the southern lowland plain, (iii) the eastern Vellar plain, and (iv) the hilly tracts.

(i) The northern upland plain:

This plain covers the northern half of the western upland of the study area. It can be distinctly separated from the southern lowland on the basis of the irregularities noted in the terrain. The characteristic feature of the terrain
here is its highly dissected nature. The general elevation of this upland plain varies from 200 - 600 metres and it slopes towards south gently accounting for about 30% of the total geographical extent of the study area.

In general, due to the differential erosion of the tributories and of river Cauvery namely Sirapungaradi and Thirumanimuthar, Stanley reservoir etc., this upland is studded with a number of hillocks. Some of the prominent hillocks in this region are Palamalai (1476 metres), Varavasi hills (825 metres) on the north-west. On the north of this upland a number of small hillocks just on the extreme southern margin of the Mysore plateau, stand as remnants of the constant river erosion. Similarly it is studded with number of hillocks on its southern margin. Notable among them are the surrated Kanjamalai (980 metres), Bodamalai (1207 metres) Jarugumalai (900 metres) Sankagiri monodnocks (705 metres) etc. which are outcrops of resistant granitic masses.

(ii) Southern lowland plain:

The southern lowland plain accounts about 35% of the total study area. It stretches from the left bank of river Cauvery on western and southern margins of the study area upto the margin of northern upland on the north and the foot-hill zones of Kolli hills on the east. Its average elevation is just below 200 metres. This vast low land plain, as in the case of the northern upland, is also studded with few hillocks.
Tiruchengode hills (545 metres), Namakkal hills (510 metres) etc., consist of resistant granitic masses abruptly rise from their surrounding lowland of less than 200 metres altitude. They rise about 300 metres from their surrounding areas. In addition to these hillocks, it has two river courses carved by Thirumanimuthar and Karuvattar in its central part and at the foothills of Kolli hill respectively. Further, as already pointed out, there is a narrow stretch of lowland coastal plain closer to the Cauvery river in this part of the study area.

(iii) The Vellar Plain:

This is separated distinctly from the western uplands by the marginal hillocks which are situated in the central part of the study area. With an areal extent of about 1000 sq. km., it lies, in between the Kalrayan and Pachamalai hills. It has been formed by two tributaries of Vellar river which flow parallel to each other. Its upper portion is almost irregular and undulating due to down cutting of numerous smaller streams. However, it slopes gently towards east along the course of river Vellar with an average elevation of about 200 metres.

(iv) The Hilly Tracts:

The study area consists of a group of massive hills namely the Shervaroys, a southern portion of Kalrayan hills on the north of Vellar valley; and the Kolli hills with a smaller portion of northern Pachamalai hills on the south of the Vellar valley. All these hillocks belong to southern
'Sub-group of Tamilnadu Hills' (Spate and Learmonth, 1967). The surface area of these hill tracts covers about 20% of the study area. A peculiar characteristic of these hilly tracts is that the terrain at the top is almost flat. The steep flanks of these tracts are usually forested. However, the outer margins of the jungle on the plateaus carry a surprisingly large agricultural population due to its favourable terrain and climatic conditions (Spate and Learmonth, 1967).

The altitude of Shervaroys, which has an areal extent of about 250 sq. km., varies from 500 - 1600 metres. In the north there are numerous deep cut valleys and in the south a number of lofty peaks. Vaniyar Valley which is one of the tributaries of Pennaiyar river is notable among various deep cut valleys. Here, the terrain falls down to 300 metres just on the foothills zone. The highly elevated Shervaroys peak near Yercaudu is the highest point of the study area. It has an altitude of 1602 metres from mean sea level. It has considerably wider plateau top which is inhabited by a large agricultural population with a density of 80 persons/sq. km. which is almost equal to the main upland of Tamilnadu (Spate and Learmonth, 1967). It is also pertinent to note that Shervaroys has very steep sided slope on the east where the altitude near the foothill zone becomes less than 500 metres. The eastern continuation of the Shervaroys, just after a narrow gap called 'Manjawadi pass', a chain of lofty hills that run towards east is known as Kalrayan hills. Infact, its southern
portion only lies within the limit of the present study area and hence one cannot bring out the overall relief characteristic of this hilly tracts. However, it can be noticed that there are two prominent almost flat topped hillocks namely Periya Kalrayan Hills (1269 metres) and China Kalrayan Hills (1100 metres). In between the two hillocks the Vellar river flows. The south eastern corner of the study area consists of a distinct stretch of Kolli hills and a portion of Pachamalalai. With an altitude of about 1200 metres Kolli hills rises abruptly from the adjoining Karuvattar, a tributory of Cauvery river. It has very steep slopes and deep cut valleys on its western and southern sides. The development of steep gradient in its western slope may be due to the structural changes forming a down fault which occurs in the southern part of the study area (Krishnan and Aiyengar, 1944). Just at the foothill zone on the west, extensive plain land with less than 200 metres height is found around this hilly tracts. On the other hand it has gentle and irregular slope on its north and north eastern sides which forms the western boundary of the Eastern Vellar valley and finally it merges with a small patch of Pachamalalai hills in the east.

Among all the above cited major physiographic divisions, settlements are highly concentrated only in northern upland plain and that too particularly along the irregular valley beds like Cauvery, and its tributaries. In addition to the northern upland plain settlements are highly concentrated,
whereas on the southern lowland, though it is plain, settlements are sparsely distributed which needs further investigation. Surprisingly even in the case of hilly tracts considerable extent of settlements are found. In the eastern Vellar plain several nucleated settlements are widely distributed all along the tributaries of the river Vellar.

2.3.2. Geology

This area has received constant attention from the geologists, for, it is one of the important geological areas in the country. The presence of a highly folded structure of land around Namakkal was first identified by Krishnan and Aiyengar in 1944. The gently tilted nature of the ancient table landmass, around Tiruchengode was explored and thus revealing its influence over the course of river Cauvery (Thimmichetty, 1975). Infact, all the above cited geological structures govern the major land form features of the vast southern lowland plain which constitute irregular river channels with undulating plain.

Further, it is clear that the entire study area consists of ferruginous rock types that are the members of Dharwarian metamorphites occurring in the peninsular Gneisses (Mohammed Ahmad, 1956). In addition, a great variety of minerals and ores viz. magnetite, magnatite, bauxite, corundum, asbestos, limestone etc. are identified in the above said beds (Kadirvelu, 1964).
It is pertinent to note that the magnetite iron ore occurs as magnetic quartzites in the form of persistent bands up to 30 metres thickness. The total estimated ore is 304 million tons and the iron content varies from 35 to 40%. The entire reserve is distributed exclusively in Kanjamalai, Godumalai, Salem, Rasipuram and Namakkal areas. Magnesite deposits are found around Salem (Kadirvelu, 1964). The chalk hills of Salem alone accounts for about 50% of the total reserves of magnesite deposits in Tamilnadu.

Bauxite deposits have been explored in Shervarois hills for more than a century (Holland, 1901). Recently it is found that the deposits of Shervarois hill are of high grade quality and the reserves estimated to be 7 million tons occurring over an area of about 250 sq. km.

Among the others, the cement grade limestone which is available in and around Sankagiridrug is important from the point of view of industrial development. In addition, Pale green corundum, a variety of gemstone (occur near Siddanpoondi) asbestos veins (near Taramangalam), gypsum, mica, and steatite are other important minerals found in the study area.

In general, the varied nature of underlying geological structure determines the existing terrain characteristics. Their influence over the drainage pattern is noteworthy. Further, excavation of a variety of mineral wealth taking place in and around Salem, Omalur, Sankagiri, Tiruchengode and Namakkal
areas have influenced the economic activities of the area resulting in changes in settlement pattern.

2.3.3. Drainage

The study area is drained by numerous streams and tributaries of the Cauvery and the Vellar rivers. The former drains about 2/3 of the study area on the west whereas the latter drains the remaining portion of the district in the east. The eastern hilly tracts act as a water divide between these two rivers, consequently forming two distinct river basins. The western upland including the slopes of hilly tracts almost lies in the Cauvery river basin while the eastern portion forms the upper portion of the Vellar basin.

The Cauvery river in its course of 135 km. (vide Figure 2.3) within the study area has undergone remarkable changes. Its remarkable right turn at its middle course is mainly due to the slight tilting of the table land mass which has exerted a directional influence with its mild fluxing upon the Cauvery at its middle course (Krishnan and Aiyengar, 1944). One cannot correlate this abnormal turning with the normal course of a river at this middle stage.

The Cauvery river is one of the Porennial rivers of the South India. But it receives two notable non-perennial west flowing tributaries namely Sirupunganadi and Thirumanimuthar which drain the western upland plain. Another smaller
tributary called Karuvattar including numerous smaller streams show a distinct dendritic pattern of drainage.

Similarly in the east between the hilly tracts of Kalrayan, Kolli and Pachamalai hills the tributaries of river Vellar originate. Its main tributary namely Vashistanadi which originates the heights of Kolli and Pachamalai hills drawing water from both while its major tributary namely Swothanadi originates from Kalrayan hills. However, for an elaborate discussion as regard to various major and minor tributary water sheds needs further analysis.

In general, the entire western upland can broadly be divided into 8 water sheds namely Stanley reservoir, Upper Sirapunganadi, Lower Sirapunganadi, Upper Thirumanimuthar, Lower Thirumanimuthar, Panamarathuppati lake, Thruchengode stream and Karuvattar watersheds. Among these 8 watersheds 5 of them lie within the limits of northern upland, whereas the rest lie in the southern lowland. The upper valleys of the major tributaries namely Sirapunganadi and Thirumanimuthar normally are in floods during rainy seasons but the lower courses rarely have water flow. And hence the northern upland watersheds are possessing comparatively a high water potential. In the Vellar basin there are two watersheds namely Swothanadi shed and Vashistanadi shed being distinctly divided by Pythar hills.
2.3.4. Climate

Owing to its peculiar situation in the interior of Tamilnadu, this area enjoys a remarkably cool as well as hot climatic condition throughout the year. The monthly minimum and maximum is 18°C and 30°C during the months of December and January respectively. During the hottest period i.e. April and May, the temperature rises up to 37°C. The temperature is lowered by the breezes and light showers of the southwest monsoon from June onwards.

The study area is an agricultural tract. Here, more than 75% of the cultivated land is rainfed. As a result, rainfall plays most important role in the economic activities and human habitation of this region. Hence an analysis of the rainfall distribution and its variability is appropriate at this stage to understand the hardships faced by the farmers tilling mainly the rainfed tracts.

Figure 2.4 depicts the spatial distribution of 35 years (1916-1950) average normal rainfall for nine stations. At the outset it is clear that the rainfall decreases as the distance increases from the east coast of Tamilnadu. The Vellar plain on the east (Attur 975.8 mm) receives high average rainfall compared to western upland (an average of 750 mm). However Yercaud, the hill station records the maximum average rainfall (Figure 1636 mm) in the entire study area.
It is significant to note that the entire southern lowland plain receives 750 mm of average rainfall which is less than the district average (846 mm). Whereas the northern upland plain normally receives an average of more than 850 mm. However in the study area, rainfall variability is high. Since the rainfall is low and variability is high, particularly in the southern lowland plain, farming is rendered into a wild gambling. The coefficient of rainfall variability computed for 9 stations have been shown in the figure 2,5. From the figure it is clear that the places receiving high rainfall show low variation and vice versa. The high coefficient of variability at Attur (45%) and the low variability at Tiruchengode (30%) reveal the inconsistent and unreliable nature of rainfall significantly in the entire study area. The only exceptional area in this regard here is northern upland plain where variability of rainfall closely follows the average rainfall distribution by raising the reliability. In general, the settlement pattern is closely associated with agricultural activities which again is influenced by the normal rainfall distribution and its reliability. This can be very well noted from the fact that almost all the larger centres like Salem, Mettur, Kumarapalayam, Idappadi, Orsalur, Attur, etc., possess dry point locations.

2.3.5. Soils

In the study area, due to the widely varying characteristics of the parent rock material's, relief and climate,
the surface soils are rich and varied. These soils can be classified into six groups based on their colour, texture and composition. They are red, black, red and black, red sand, red loam and black loam soils. A detailed study based on the village wise soil types will throw light on their distribution pattern and geographical extent of them in the study area.

Figure 2.6 clearly exhibits the various soil zones in the study area.

(i) Red soil zone, covers more than 25% of the total areal extent under study. It covers the entire Vellar plain in the east, central and the foot hill zones of Kolli hills, Bodamalai and Jarugumalai. Here, it is loose in structure and shallow but generally fair in composition owing to the presence of magnesia and potash in it.

(ii) Black soil zone occupies about 10% of the total area extent. It is found extensively around Salem, particularly in the area lying between the Shervaroys and Kanjamalai hills. It has larger proportion of calcium and magnesium composition and is moisture retentive. Though it is slightly poor in nitrogen and phosphorus content, it is somewhat rich from the agricultural point of view.

(iii) Red and Black soil zone accounts for about 10% of the study area. A large trip of land extending north to south in the central part of the study area has this soil. This soil combination found in the middle course of Thirumani-muthar must have been formed due to the constant erosional
and depositional activities in this area. The soil is poor in chemical composition of nitrogen and phosphorus.

(iv) Red Sandy soil zone, found in the entire northern upland margins, accounts for about 15% of the total areal extent. This soil is very shallow and is also poor in nitrogen and phosphorus contents.

(v) Red loam occupies the western part of the extreme northern margin of the upland. It covers only about 10% of that total areal extent. The redloam in this area is superior one owing to its organic and plant nutrients content.

(vi) Black loam soil is very rich and is found in a few patches in the southern margin of the study area. This soil might have been formed by the deposits of river Cauvery on its banks. However, this fertile aluvial deposit occupies only about 5% of the total areal extent.

2.3.6. Forests

The forest cover varies considerably from place to place in the study area. As a whole, an area of about 1669 sq.km. (19.36%) of the study area is under reserve forests. Here, almost all the South Indian species are found. Bamboos are plenty along the banks of the river Cauvery while coconut, palmyra and tamarind are predominantly soon all over the district. Various shrubs are sparsely distributed on the uncultivable barren lands while the mixed deciduous forest
vegetation is found in the eastern hilly tracts. However, all these forest covers can broadly be classified into two types namely:

(1) the forest on the foothill zones and barren lands, and

(ii) the forest on the hilly slopes and high lands.

The first type is found up to an altitude of 500 metres as a narrow strips along the foothills of eastern hilly tracts adjacent to the cultivated areas. It covers an area of about 25% of the total forest cover. However, it is very thin due to the intensive grazing and indiscriminates and illegal feeling of trees. With a result the quality of the forest has been very much reduced.

The second type of forest exists on the hilly slopes and high lands at an altitude between 500-1500 metres. These forests constitute the remaining 75% of forest cover. Here these forest covers are denser on the gentle slopes and poorer in the steeper slopes and on narrow summits. Here, rich variety of species such as sandalwood, teak, dalbergia latifolia, acha, vengai, chloroxylon swoitonia, timber wood etc. are extensively found at an altitude of 600 - 900 metres. Sandle wood which was abundant in the Shervaroys and Kollihills is now almost cleared out during the past two decades. The teak wood and vengai trees are found still at a higher elevation of about 1000-1500 metres height.
In general, the forest products of this area are considerable and varied. Many of them find ready local market and some of them products even enter into the outside markets. However, it should be pointed out that the workers engaged in forestry and livestock raising, account for only 0.5% of the total workers. Hence, there is a need for proper planning as regard the utilization of the natural resource.

2.4. Demographic and Economic Background

Demographic characteristics such as growth, distribution and density of population, occupational structure, rural-urban characteristics, and major economic activities such as household and other industries, transport and communication, etc. which are highly associated with the existing settlement pattern are elaborately discussed in this section.

2.4.1. Demographic characteristics

The study area has a total population of 2,992,616 (as per 1971 census) out of which 1,524,329 are males and the remaining 1,468,287 are females. It accounts for 7.2% of the population of Tamil Nadu.

1) Growth of population:

The population has doubled within the past five decades. In fact, it is rapidly growing from 1921 upto 1971 by increasing from 1.4 million to 2.99 million within this
### Table - 2.1

Growth of Population in Salem District as compared to State and National Growth Rates from 1901 - 1971.

<table>
<thead>
<tr>
<th>Year</th>
<th>Salem District</th>
<th>Tamil Nadu</th>
<th>India</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901</td>
<td>-</td>
<td>8.57</td>
<td>5.75</td>
</tr>
<tr>
<td>1911</td>
<td>4.33</td>
<td>3.47</td>
<td>-0.31</td>
</tr>
<tr>
<td>1921</td>
<td>7.98</td>
<td>8.52</td>
<td>11.00</td>
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<tr>
<td>1931</td>
<td>12.57</td>
<td>11.91</td>
<td>14.22</td>
</tr>
<tr>
<td>1941</td>
<td>19.13</td>
<td>14.66</td>
<td>13.31</td>
</tr>
<tr>
<td>1951</td>
<td>20.34</td>
<td>11.85</td>
<td>21.51</td>
</tr>
<tr>
<td>1961</td>
<td>8.44</td>
<td>22.30</td>
<td>24.80</td>
</tr>
<tr>
<td>1971</td>
<td>17.43</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Compiled from Primary Census Hand Book of India - 1971.
period. However, it is interesting to note that its growth rate has been significantly high before independence (1951); it has been come down after independence and growth is lower than the state as well as the national average (Table 2.1).

ii) Distribution and density of population;

At the very outset, one can visualize from the map (Figure 2.7) the unevenness of the population distribution. Out of the total population about 3 million, the northern upland plain alone, with an areal extent of about 25%, account for about 50%. But the distribution is not uniform even within this region. It is noteworthy that there is a very high concentration of population with a density of 789 per sq. km. in the Salem Taluk. It is mainly because of the intensive agricultural and other economic activities. However in the rest of this region population is uniformly concentrated with a density of 324 to 404 persons per sq.km. which is well above the state average (317 persons per sq.km.). This high population density over this part of the study area is due to the presence of variety of mineral resources, the household and other industrial activities and intensive agricultural practices.

On the contrary, in the case of southern lowland the population is sparsely distributed. The population density here is below the state average (236 to 271 persons per sq.km.), except in Tiruchengode Taluk where the urban population is
SALEM DISTRICT
DISTRIBUTION OF POPULATION
1971

Fig. 2.7

SCALE
0 10 20
Kilometres

One dot represents 500 persons
considerably more and the density exceeding 349. Although
the southern extreme margin has got high population concen-
tration, the remaining taluks namely Rasipuram, Namakkal and a
part of Tiruchengode show comparatively low density due to
the presence of a vast dry tract and a portion of the eastern
hilly tracts.

Similarly, in the Vellar plain, though the popula-
tion is highly concentrated along the course of the tributaries
of Vellar river. Owing to the presence of eastern hilly tracts
this taluk shows only a density of 236 persons per sq. km.
Further it is interesting to note that the hill tops of the
Sheravaros show a density of 80 persons per sq. km. due to
the availability of agricultural lands in between wide forest
cover at an altitude of about 1500 metres.

iii) Occupational Structure:

About 1,182,279 persons (39.8%) are engaged in
various occupations (as per 1971 census) in the study area.
This proportion is considerably higher than the average of
Tamil Nadu (35.78%). It is mainly due to the presence of
household and other industrial activities in addition to
agricultural operations which support a large number of
workers. The workers engaged in the above activities account
for 18.62% of the total workers (Table -2.2). However, it
should also be noted that as in the case of other districts,
here a very large proportion of workers (62.76%) depend upon
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Occupation</th>
<th>Salem District workers in %</th>
<th>Tamil Nadu Workers in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cultivator</td>
<td>34.25</td>
<td>31.25</td>
</tr>
<tr>
<td>2</td>
<td>Agricultural Labourer</td>
<td>28.03</td>
<td>30.45</td>
</tr>
<tr>
<td>3</td>
<td>Livestock, Forestry, etc.</td>
<td>1.23</td>
<td>2.73</td>
</tr>
<tr>
<td>4</td>
<td>Mining</td>
<td>0.76</td>
<td>0.34</td>
</tr>
<tr>
<td>5</td>
<td>Household and other industries</td>
<td>18.65</td>
<td>13.37</td>
</tr>
<tr>
<td>6</td>
<td>Construction</td>
<td>1.65</td>
<td>1.58</td>
</tr>
<tr>
<td>7</td>
<td>Transport and communication</td>
<td>5.77</td>
<td>7.82</td>
</tr>
<tr>
<td>8</td>
<td>Trade and commerce</td>
<td>2.84</td>
<td>3.15</td>
</tr>
<tr>
<td>9</td>
<td>Other services</td>
<td>6.34</td>
<td>9.25</td>
</tr>
</tbody>
</table>

**Total**  

|          | 100.00 | 100.00 |

**Source:** Compiled from Primary Census Hand Book - 1971, of India.
agriculture as their source of livelihood. In addition to this, a considerable amount of workers are engaged in mining and quarrying. This becomes obvious from the fact that the workers engaged in the mining activities in the study area alone accounts for about 18% of the total workers engaged in this activity in entire Tamilnadu. This is mainly due to the occurrence of various mineral deposits in Salem District. Among the other workers, 13.11% are engaged in tertiary activities such as trade, commerce, health, education and other service activities.

iv) Rural and Urban Characteristics:

The distribution, density, and occupational structure of population clearly show two extreme characteristics namely rural and urban in the study area. The total rural and urban population of this area are 2,197,234 (73.42%) and 795,382 (26.58%) respectively. The proportion of rural population in the study area exceeds that of Tamil Nadu State (69.74%) and consequently, the proportion of its urban population falls below the state average (30.26%). However, its urban proportion (26.58%) significantly exceeds the overall national average (19.78%). It is interesting to note that 26.56% of its urbanites is concentrated in an area of 4% of the total geographical extent of the study area.
2.4.2. *Urban Centres*

1) *Towns*

As already noted in the section (1.2) the study area has 43 towns (as per 1971 census). Among them Salem is the only Class I city. It is interesting to note that it does not have even a single Class II town.

Out of the 43 towns, 42 lies within the limits of the western upland except Attur which lies in the eastern Vellar plain. Among the 42, 33 towns of various classes (vide Table -2.3) are found in the northern upland and only 9 towns are found in the southern lowland. Owing to the overall development of agricultural, as well as, secondary household and other industrial activities, the northern upland has more number of towns. On the contrary, due to the limited scope of the above aspects the southern lowland has a limited number of towns in all the classes. But notable among them are Namakkal, Tiruchengode and Rasipuram, which play major role as marketing places as well as transport nodes. Finally it should also be pointed out that the entire eastern hilly tract of the study area is devoid of any town.

ii) Road network and bus traffic flow:

The network pattern is a clear expression of the influence of physiography. The network is well developed in the western upland which is a gently rolling plain; whereas the entire hilly tracts possess poorly developed transport
<table>
<thead>
<tr>
<th>Size</th>
<th>Number of Towns</th>
<th>Salem Agglomeration</th>
<th>Northern Upland Plain</th>
<th>Southern Lowland Plain</th>
<th>Eastern Hilly Vellar Tracts Plain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Class II</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Class III</td>
<td>8</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Class IV</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Class V</td>
<td>17</td>
<td>9</td>
<td>15</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Class VI</td>
<td>11</td>
<td>6</td>
<td>9</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>18</td>
<td>33</td>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Compiled from Primary Census Hand Book of India - 1971.
network. This is brought out more clearly by the Figure 2.8.

Figure 2.9 clearly depicts the volume of bus traffic flow and consequently explain the flow pattern of the people in the study area. In northern upland, it is interesting to note that the flow is uniform in most of the road network, which connects most of the major transport nodes of this regions. And this shows the uniform exression over the flow of densely populated region. On the contrary, in the southern lowland, flow is mainly confined to the major transport nodes like, Namakkal, Tiruchengode, Rasipuram and Velur. For example, about 50 buses are flowing particularly on the Banaras-Capecomerin National Highway, through Velur, Namakkal and Rasipuram towards Salem. Here, Namakkal, emerges as an important transport node possessing the largest number of Lorry and Bus Body building establishments in this study area. Similarly in the case of Vellar plain Attur plays major role. The notable flow between Attur and Rasipuram can very well be attributed to the agricultural influence and service activities of these centres which serve considerably this fertile foothill zone. A notable bus traffic flow between Yercaudu hill centre and Salem shows high interaction among them. On the whole the interaction between Valamandi and the foothill centre is very limited. In general, it is relevant to state that almost all the inhabited villages of the study area are having bus facility and therefore the bus traffic flow is also high and uniformly seen in the northern upland while it is
slightly low and vary in the southern lowland and eastern Vellar plain.

In general, people of this area mainly depend on the road transport, even though a railway line passes through northern upland and yet another cuts across the eastern Vellar plain.

iii) Accessibility:

In spite of the fact that the area which is accessible to major transport nodes of various economic activities benefited more than the areas lying farther, it is clear that the accessibility rationale activise the economic development of an area by promoting the socio-cultural contacts. As regards the accessibility of the present study area it is clear from the map (Figure 2.10) that it is widely varied. It can easily be understood that the physiography of the area plays a major role in the accessibility patterns. Therefore, it is possible to make three distinction on the basis of the degree of accessibility, viz. areas of high (less than 4 km), medium (4 - 6) and poor (more than 8 km) accessibility from the point of view of the roads with bus service facility. In fact, the entire plains of both northern upland and eastern Vellar plain are highly accessible (less than 4 km) to the roads with bus facility. Accessibility is almost very high in the northern upland since it has well developed road network. Their exists a few patches of interior land with medium accessibility in the southern lowland plains due to the existence of hilly area.
It should be pointed out that in the northern flanks of Kalrayan hills and eastern slopes of Kolli hills and the interior Pachamalai where the people are sparsely distributed the accessibility is notably poor (more than 8 kms.). Here the people even more than 8 kms. on the slopes to avail the bus facility,

2.4.3. **Major Economic Activities**

As regard to various economic activities of the study area, agriculture, mining and household industries are important.

2.4.3.1. **Agriculture**

A detailed study of different landuses, sources of irrigation and cropping pattern however, will give a clear picture about the agricultural activity.

1) Landuse - As already noted in the previous section the present study area constitutes about one fifth of its geographical extent (19.36%) under forests. The barren and uncultivable land accounts for more than 10% of the total geographical extent. As a result of the above aspects and also due to the limited water resource and unfavourable climate and terrain conditions only 47.42% of the total areal extent is available for agricultural activities.

11) Sources of Irrigation - All the three types of irrigation namely canals, tanks and wells are found in the study area. Well is the single largest source of irrigation in this
district. It covers about 72.7% of the total irrigated land. They are numerous in number and uniformly distributed all over the study area. Secondly, tanks which are predominantly seen in Namakkal, Tiruchengode and Attur (Figure 2.3) Taluks serve as potential source of irrigation in this respective areas. About 16.2% of the total irrigated area comes under this category. Finally, it should be pointed out that only an area of about 10% of the total irrigated area is benefited by canal irrigation. Infact, the river Cauvery becomes the primary source for this type of irrigation. Along the river Cauvery a belt 10 km. from Kumarapalayan in the north upto Mehanur in the extreme southern margin, three channel irrigate about 5,000 hectares each. All the above three channels divert the waters of the Cauvery river from the Mettur east bank canal.

iii) Cropping Pattern:

Cropping pattern is closely associated with the distribution of soils and the available water resources of the study area. However, a detailed analysis of the village-wise observations relating to various crops reveals the existing cropping pattern (Figure 2.11). From the figure it is clear that in this part of the study area, with the limited irrigation sources, some of the wet crops namely paddy, sugarcane, betel and arecanut and plantain are cultivated; dry crops like groundnut, cholam, cumbu, ragi and other millets are also cultivated. In addition to these, groundnut, tapioca and tobacco are also cultivated as wet and dry crops in this part of the state.
Among wet crops paddy ranks first accounting about 20% of the gross cultivated area of the district. Cultivation of paddy is predominantly seen along the fertile soil deposits, particularly along the east bank of the middle Cauvery river. Paddy cultivation is also intensively seen in the Vellar plain.

Sugarcane comes second in the ranking of wet crops. Here, the intensive cultivation of sugarcane is mainly due to the availability of assured water supply from the Cauvery canal and the presence of plain terrain which includes the fertile black loamy soil cover. In the southern lowland plain, particularly around Mohanur. Intensive cultivation of sugarcane is also mainly due to the existing sugar factory at Mohanur.

As regard the dry crops, groundnut ranks first followed by cholam, cumbu and ragi. Groundnut cultivation is commercial oriented and is extensively cultivated in the plains. Groundnut also occupies about 22% of the gross cultivated area of the district as a predominant dry crops, while the remaining three a major staple foodcrops namely, cholam, cumbu and ragi are normally cultivated all over the dry tracts of the study area (Figure 2-11). In addition, millets are found predominantly in certain higher altitudes particularly over hill tops of the Shervamoys, Kalrayans, Kolli, Pachaimalai hill tracts.

The notable among the other crops from the commercial point of view are tobacco, topioca, coffee etc. Even among them Topioca cultivation is predominant through out the area.
It covers about 20,000 hectares in both dry as well as irrigated lands of the study area. In fact, Tapioca based industries namely Sago factors which support considerable rural population are highly concentrated in the central as well as eastern foothill zones of Salem District (Krishnan, 1976). Whereas coffee, another commercial crop, is cultivated in the uphills of Shervarroys owing to the favourable climatic and relief conditions.

2.4.3.2. Mining

Out of the total workers engaged in mining activities in Tamilnadu, 18% of them are in Salem District. This is explained away by the great variety of mineral deposits found here which account for the major part of the mineral wealth of Tamilnadu. The bauxite of the Shervaroy hills with an estimated reserves of about 7 million tons, and the magnesite deposits of chalk hills around Salem provide job for more than 75% of the total population engaged in mining in the study area. In addition, ground work is under progress to erect a large scale steel plant which will meet the growing unemployment problem of this area considerably.

2.4.3.3. Household and other industrial activities

As already noted, these activities alone engage 226,293 workers (as per 1971 census) is about 40% of the total workers of the study area. In the northern upland alone there are two notable industrial clusters namely Salem and Mettur which
support not only considerable amount of population of this area but also adds importance to the entire state as regard to the annual production of textile, aluminium, plastic and other goods. For example, it is worth mentioning that Mettur is one of the important aluminium smelters in the country with an annual production of 2 lakhs ton aluminium.

In these concentrations there are 5 large scale textile industries. In addition, textile industries are clustered around Kumarapalayam, Idappadi and Pallipalayam in this region. Except Tiruchengode, Textile mill (Fullikar) located in southern lowland the rest of the study area is almost devoid of textile, industrial activities.

As regards the household industrial activities, it is relevant to note that there are about 17,000 household industrial units which accounts about 68% of the total units in Tamilnadu, and ranks first in this regard. Out of various kinds of households industries, textile goods manufacturing units, since several hundred years are highly concentrated in northern upland plain of the study area in places like Salem, Taramangalam, Jalakandapuram, Illampillai, Attaiyampatti, etc. This is, by far, the largest single industry constituting about 16.77% of the total textile goods manufactured and it provides considerable job opportunity equally for the skilled labour both in the rural as well as urban areas of this district.