CHAPTER - II

PHYSICAL AND SOCIO-ECONOMIC SETTING OF THE STUDY REGION

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CHAPTER - II

PHYSICAL AND SOCIO-ECONOMIC SETTING OF THE STUDY REGION

2.1 Introduction:

In the previous chapter introduction of the subject, objectives of the study, review of literature and chapter scheme etc. points discussed in detail.

This chapter is mainly concerned with, physical and socio-economic factors which affect on the landuse in the study region.

2.2 Location, Boundaries and Area:

Latur district is situated in the South-East part of the Maharashtra and it lies between 17° 52' North latitude to 18° 50' North latitudes and 76° 12' East longitudes to 77° 18' East longitudes.

It is bounded on the North by Beed and Parbhani districts, on the North-East by Nanded districts, on the South-East and South by the Karnataka state and on the North-West, West and South by Osmanabad district. For administrative purpose the district in divided into two revenue divisions i.e. Latur and Udgir division and in 10 tahsils Viz. Latur, Ausa, Renapur, Udgir, Ahmadpur, Chakur, Nilanga, Devani, Jalkot and Shirur Anantpal. Devani, Jalkot and Shirur Anantpal these three tahsils are newly created tahsils. Due to the non-availability of data newly created tahsils are not considered for the present study (Map No. 2.1).
The total geographical area of Latur district is 7157 sq.kms. Out of the total geographical area of Maharashtra it covers 2.39 per cent.

2.3 Brief History of the Study Region:

The study region, earlier a part of Osmanabad district is an important geographical area since the times of Rashtrakuta. Prior to Rashtrakutas it was under Satavahanas and successively under Vakatkas and Badami Chalukyas though we don’t have direct evidence of early period or the latter. Latur as referred to as Lattalur in their inscription was probably one of the administrative centres having the status almost or a capital. King Amoghvarsha I is said to be the master of the Lattalur in one of the copper plates. Chalukyan king Vikramditya 6th and his son Someshvara IInd was called ‘Sarvadnya Chakravarti’ and an inscription is found in Latur mentions the same. This inscription tells us that there was a temple of ‘Papvinashan’ god. This inscription belongs to 1049 shake i.e. A.D. 1128. Rashtrakutas ruled till 10th century A.D. and then later Chalukyas since Taila II’s time. At this time Yadavas were becoming more powerful first at sSinnar when they were of feudatory status and then at Deogiri as an independent ruler. Since first half of the 12th C.A.D. they became supreme in the Deccan and extended their rule all over Maharashtra, Southern Gujrat, Narmada of Madhya Pradesh and Karnataka in the South. Their stone inscriptions are found from these areas. Prior to this, during Rashtrakuta period the caves of Kharusa of taluka Ausa and Ambejogai were known out and are the beautiful examples of art. There are few temples of Yadav period from the Latur region.

Yadavas ruled till 1310 A.D. or so. When Khilaji brought to an end Yadava supremacy but could not control this area for long and
Tughlaq who ousted Khilajis started ruling over Deccan. But they also did not rule for long and in 1347 Hasan Gangu Bahamani revolted and Tughlaq lost this area to him. Bahamanis were quite powerful in Deccan and there were no competitors to them. They ruled till the end of 15th Century A.D. in 1490 the Bahamani rule was divided into 5 different and independent Shahis and Latur area (including present Osmanabad District) went under Vijapur rule and controlled from Naldurga. There were constant fights between these Shahis but Latur remained under Adilshahi continuously.

In 17th century Mughals were becoming powerful in Deccan. Akbar is the first to enter into Deccan but did not rule over this area as the Shahis were much powerful. But during the rule of Shah Jahan and later on during Aurangazeb’s rule the Shahis were weak and Aurangazeb pronght to an end all the shahi rulers including Nizamshahi and Adilshhi who were much powerful. Thus entire Deccan was under the Mughals. The death of Chha. Shivaji in 1680 caused a great loss to the Maharashtra as there was no great opponent to the Mughals and soon Sambhaji, the son of Shivaji was also captured by Aurangazeb and Maratha rule was in wane. In 1707 Aurangazeb died and Mughal troops returned to Delhi. Shahu who was in capitivity was released and great renaissance for Maratha rule took place. but in the Marathwada region the Muslims were powerful. Nizam of Hyderabad was spreading his power and Latur-Osmanabad area was under their supremacy. As the British took over Maratha rule, they did not finish the Nizam of Hyderabad and their rule as a State’s ruler continued over this region till 1948 when Hyderabad state was annexed to Independent India through police action.
2.4 Territorial Changes:

The Latur district was carved out as a separate district in the year 1982 as a result of bifurcation of Osmanabad district of Maharashtra State. Five tahsils Viz. Latur, Ahmadpur, Udgir, Nilanga and Ausa were separated and formed a new district. At the same time, 53 villages of Ambejogai tahsil of Bid district transferred to Latur tahsil of newly formed Latur district. At present, the district is comprises 10 tahsils, namely, Latur, Ahmadpur, Udgir, Nilanga, Ausa, Renapur, Chakur, Deoni, Jalkot and Shirur Anantpal etc.

2.5 Physiography:

Physiography is one of the dominant parameter of physical environment and its impact on patterns and density of agriculture is immense. The study of the influence of environment upon the nature and the distribution of crop and livestock is of prime importance in agricultural geography. Nature with its physical characteristics provides a host of possibilities for agriculture in different areas. Physiographically Latur district is divided into two broad divisions. They are as follows.

1) The Balaghat Plateau:

Near about 50% part of the district lies on the Balaghat Plateau. This plateau region is major highland of the district. It is above 600 meters from sea level up to 900 meters. Maximum part of the Balaghat Plateau is flat. But there are some hillocks which are known as local names. There is a one ridge near village Vadwal Janwal this ridge locally knows as Vadwal Bet. One conical shaped hillocks near Chakur which is known as Hakani Bet.
In Shirur Anantpal tahsil *Hatti Bet*. In Ausa tahsil near Hashegaon expanded hill with their which is known as Tembi like these there are several hillocks on Balaghat Plateau in the study region. This Plateau is dissected at many places by water streams and rivers.

**ii) River Basin Region:**

Near about 50% area of the study region, lies in major river basins. This physiographic division knows as River Basin region. This physiographic divisions located north-east, central part and in the southern part of the study region. In north-east part lies in Manar, Tiru and Lendi rivers. Central part is lies in Manjara River in its tributaries. The southern part of this physiographic division lies in the Basin of Terna River. Except some hills and hillocks this region is low land region.

Its height from sea level is about 300 meters to 600 meters. In this physiographic division deep black soil is found. (Map No. 2.2).

**2.6 Drainage:**

Drainage is one of the most important components of physical environment, which affects on agriculture directly or indirectly. Surface water is the most important means for providing substantial irrigation, which stabilize and improves agro economic life in an area.

The study region is drained by the Manjra River and its tributaries. The Manjra together with its tributaries the Terna, Tawarja and Gharni drain the Balaghat Plauteu region, while there other tributaries, the Manar, the Tiru and the Lendi drain the north-eastern region. The following are the important rivers of the Latur district (Map No. 2.3).
LATUR DISTRICT
DRAINAGE SYSTEM

MANAR R.
MANGARA R.
TAWARJA R.
TOMA R.
TERRA R.
TIRU R.
LENDI R.

Map No. 2.3
1. Manjra:

Manjra is the largest river in the district. The Manjra River rises near of Gaurwadi near the northern edge of the Balaghat Plateau in Beed district and flows south easterly direction towards the Karnataka State. The Manjra River flows through the tahsils of Latur, Nilanga, Shirur Anantpal and Devani.

2. Tawarja:

Tawarja River rises near Murud in Latur tahsil. Tawarja is the chief right bank tributaries of the Manjra. The Tawarja about 50 kms. Long flows in a general east ward direction and join the Manjra near Seoni Village. It flows through on boundary of Ausa and Latur tahsils.

3. Terna:

Terna River rises in Washi tahsil of Osmanabad district. It flows through Ausa and Nilanga tahsils of Latur district. Terna is the chief right bank tributaries of the Manjara. The Terna River has a length of over 150 kms. From its source to its confluence with the Manjra and Terna River flows west to east direction.

4. Gharni:

Gharni River rises near Wadval in Chakur tahsil. Length of Gharni River is about 40kms. The Gharni is the only river of some size that forms a left bank tributary of Manjra. It flows through Chakur and Shirur Anantpal tahsils and joins the Manjra in Nilanga tahsil.
5. Manar:

The Manar is the northern most important river of the district, rising on the Balaghat plateau near Dharmapuri in Beed district flows in a northeasterly course of along 40 kilometers within this district. It continues in this direction into Nanded district as far Kandhar, after which it flows in an easterly or southeasterly direction to join Manjra.

6. Tiru:

Tiru River rises on the eastern edge of the plateau near Chakur and has a course of about 56 kilometers within the district generally eastward to join the Lendi at Kharaka in Nanded district.

7. Lendi:

The Lendi River rises similarly on the edge of the plateau near Udgir further east and has only a small course within the district. It is joined by the Tiru at Kharka in Nanded district and flows past Deglur in Nanded district before it joins the Manjara River.

8. Deoni:

Among the smaller left bank tributaries of the Manjra may be mentioned is the Devani with a course of about 20 kilometers within the district on the south bank of this river is situated the Devani village, famous for its breed of cattle bearing its name (Map No 2.3).

2.7 Climate:

Climate is the principal aspects of the physical environment affecting agriculture. Climatic conditions are important in
determining distribution and performance of crops. It influences on the choice of farming systems for the good harvesting.

Climate is reflected in the habits and requirements of consumer and thus affects on the prospects of various types of industries of consumer goods. The potential of crop productivity capability of a given area is dependent mainly on the existing climate and soil conditions.

The success or failure of cropping season is determined by the intensity of the climatic factors. The three most important factors of climate from the stand point of plant response are temperature, water supply and light.

Climate of the district is generally dry except during the south-west monsoon season.

For the study of climatic conditions of Latur districts the following points should be studied in details.

2.7.1 Temperature:

Climate of the study region is dry except south-west monsoon. The cold season commences towards the end of November when temperature begin to fall rapidly. December is the coldest month of the year and the mean minimum temperature is about 15°C, occasionally the minimum temperature may fall to about 4°C or 5°C. The period from the middle of February to the onset of the south-west monsoon is one of continuous rise in temperature. May is generally the hottest month of the year with the mean daily maximum temperature at about 40°C. Sometimes the maximum temperature may rise to about 45°C. Thunderstorms which occur in
summer bring welcome relief from the intense heat but only temporarily.

With the onset of the south-west monsoons there is an appreciable fall in temperature. With the withdrawal of the monsoon there is a slight increase in day temperatures while night temperatures progressively decrease.

During the south-west monsoons season the air is humid and the skies are generally heavily clouded to overcast. During the rest of the year the air is generally dry and the skies are clear or lightly clouded. Winds are light but increase in monsoon season. Thunderstorms occur in the summer and monsoon seasons while dust storms occur in summer.

There is no existence of meteorological observatory in the district. The data of temperature had taken from the socio-economic abstract of Latur district. On the basis of temperature data of entire region is divided into four seasons of a year.

Table No 2.1: Latur District: Temperature in 0 C

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Season</th>
<th>Mean maximum</th>
<th>Mean minimum</th>
<th>Average</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Cold</td>
<td>33.30</td>
<td>18.90</td>
<td>25.60</td>
</tr>
<tr>
<td>2</td>
<td>Hot</td>
<td>43.90</td>
<td>25.80</td>
<td>35.35</td>
</tr>
<tr>
<td>3</td>
<td>Rainy</td>
<td>31.10</td>
<td>19.10</td>
<td>25.10</td>
</tr>
</tbody>
</table>

Source: Socio-Economic Review and District Statistical Abstract-2010-11.

i) Hot weather period: (March to May)
ii) Wet weather period: (June to September)
iii) Post monsoon period: (October to November)
iv) Winter weather period: (November to February)
2.7.2 Rainfall:

Of all the weather elements rainfall is dominant single weather parameter influencing the intensity and location of farming system and farmer’s choice of enterprises? It is also becomes a climatic hazards to farming when it is characterized with scantiness, concentration, intensity, variability and unreliability. The quantum of rainfall and the number of rainy days may be quite sufficient to meet the annual requirement of successful crop production, provided they are so naturally spread that rain is received at the time it is required. Variations in rainfall characteristics affect agriculture as a whole, and therefore, there is need to investigate them in detail. They became a more suitable when crops are affected by moisture conditions at sowing, germination, shooting, stalking and heading and at maturing, harvesting and threshing. Moisture is indeed a basic factor in all crop producing areas. It is all the more important in the minimal regions, where average or normal rainfall is generally necessary for successful crop production. In such areas the system of crop production must be correlated more or less to the moisture factor.

Distribution of Rainfall:

A. Spatial Distribution of Rainfall:

About 84 percent of the annual rainfall is occurred in rainy season i.e. from south-west monsoon period. Table No. 2.2 shows the mean annual a rainfall in the study region. On the basis of areal distribution of mean annual rainfall, the study region is divided in two following three zones.
I) High rainfall zone

II) Medium rainfall zone

III) Low rainfall zone

Table No. 2.2: Talukawise Mean Annual Rainfall

(2001-02 to 2009-10)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1</td>
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<td>714</td>
<td>714</td>
<td>1094</td>
<td>810</td>
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<td>714</td>
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<td>744</td>
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<td>922</td>
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<td>613</td>
<td>658</td>
<td>521</td>
<td>710.22</td>
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<td>962</td>
<td>581</td>
<td>575</td>
<td>644</td>
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<td>688.22</td>
<td>15.75</td>
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<td>902</td>
<td>1027</td>
<td>582</td>
<td>700</td>
<td>733</td>
<td>499</td>
<td>794.33</td>
<td>20.77</td>
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<td>Shirur-A</td>
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<td>---</td>
<td>398</td>
<td>673</td>
<td>754</td>
<td>614</td>
<td>609.75</td>
<td>16.73</td>
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<tr>
<td>9</td>
<td>Deoni</td>
<td>---</td>
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<td>---</td>
<td>---</td>
<td>---</td>
<td>475</td>
<td>781</td>
<td>719</td>
<td>435</td>
<td>602.5</td>
<td>24.18</td>
</tr>
<tr>
<td>10</td>
<td>Jalkot</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>399</td>
<td>736</td>
<td>753</td>
<td>779</td>
<td>591.75</td>
<td>19.23</td>
</tr>
</tbody>
</table>


I) High rainfall zone: (Above 750 mm.)

This zone occurs in the tahsils Udgir, Chakur and Latur tahsils where mean annual rainfall is above 750 mm.

II) Medium rainfall zone: (650 to 750 mm.)

The Nilanga, Renapur, Ahmadpur and Ausa tahsils occurs in the medium rainfall zone where mean annual rainfall is 650 to 750 mm.
III) Low rainfall zone: (Below 650 mm.)

The relatively low rainfall occurs in Jalkot, Deoni and Shirur-Anantpal tahsils where mean annual rainfall is below 650 mm.

2.8 Soil Types:

Soil constitutes the physical basis of agricultural enterprises and plays a very important role in the agricultural economy of the region. Differences in soil texture, drainage, and fertility are of major importance in explaining contrasts in agriculture.

Soil is most vital natural renewable resource and its proper use greatly determines the capability of life support system and socio-economic development of nation. The decrease in soil fertility and imbalanced nutrient supply is one of the important factors responsible for stagnation or decrease in the crop yields over the years. Thus, it should be firmly understood that further increase in food production for growing population must be attained by judicious soil resource base management. Soil supplies the essential elements for plant growth.

The physic-chemical characteristics such as soil pH, calcium carbonate and organic carbon are important as these affect the availability of nutrients in soil and thereby on crop growth and production. The soil must supply the nutrients that are essential for plant growth and the supply of nutrients from soil can be maintained by proper monitoring and management of these properties to meet the present need of food for ever growing population in the country.
LATUR DISTRICT
SOIL FERTILITY INDEX OF AVAILABLE PHOSPHORUS

LATUR DISTRICT
SOIL FERTILITY INDEX OF AVAILABLE NITROGEN
(ON THE BASIS OF ORGANIC CARBON %)

INDEX

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<td>Very Low</td>
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<tr>
<td>Low</td>
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<td>Medium</td>
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Map No. 2.64

INDEX

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<tbody>
<tr>
<td>Very Low</td>
</tr>
<tr>
<td>Low</td>
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<tr>
<td>Medium</td>
</tr>
</tbody>
</table>

Map No. 2.48
Calcium is the secondary nutrient element required by all higher plants absorbed as Ca++ ion. It is constituent of cell wall, increases stiffness of plants and it plays an important role in cell elongation and divisions, root development and growth of plants. While, Magnesium is a constituent of chlorophyll, serve as a structural component in ribosome and plays vital role in protein synthesis. Sulphur plays a key role in oilseed crop. It is important in formation of amino acids i.e. cysteine, cystine and methionine.

It is also essential in biosynthesis of protein, fatty acid synthesis, enzyme activation, formation of glucosides. The deficiencies of sulphur in soils and plants are being reported in several parts of the country and also in Maharashtra. Out of 240 district surveyed in India near about 50 per cent of soil samples have been found to be deficient in sulphur where as, extent of sulphur deficiency was 54 percent in Maharashtra soils (Mali and Syed 2002). There is information on the status of N, P, K and micronutrients.

The above said important nutrients like phosphors and nitrogen determinants the basic fertility of the soil Map no. 2.4A and 2.4B shows that fertility of the soil according to phosphors and nitrogen contents of the Latur district.

It shows that in Latur district soil fertility index of available phosphors is very low in the tahsils viz. Latur, Ausa and Nilanga whereas soil fertility index of available phosphors is low in the tahsils viz. Renapur, Ahmadpur, Udgor, Chakur Jalkot, Deoni and Shirur Anantpal. Soil fertility index of available nitrogen (on the basis of organic carbon %) is medium in the tahsils viz. Nilanga, Latur, Renapur, Chakur and Ahmadpur whereas soil fertility index of
available nitrogen (on the basis of organic carbon %) is low in the tahsils viz. Ausa, Jalkot, Udgir, Deoni and Shirur Anantpal.

Unlike climate, soil should not be regarded as a part of the natural endowment of an area. In fact, it is a agricultural that modifies soils excepting certain virgin soils which can retain their original characteristics. On the whole, soils constitute the physical base, for any agricultural enterprise.

Farming is a business and good soil is a part of the farmers stocks in trades. Good soils are good to the extent that man makes judicious use of them. Our standard of living which predominantly depends on agriculture is often determined by a combination of the physical, chemical and biological characteristics of the soils and corps and livestock raised on them.

Crop growth is determined to a considerable extent by the amounts of nutrients in the soil. The main factor that has influenced the development of soils in Latur district is the undulating and hilly topography. The soils of varying are to be found through the district. The soils in the district can be classified into three main categories on the basis of depth and structure namely.

**Shallow soils (0” - 12”)**

**Medium soils (12” – 24”)**

**Deep soils (above – 24”)**

Shallow soils are mainly located in the North-Eastern part of the district. They own to dark gray brown in color, loamy to clay loam in texture with granular to sub-angular blocky in structure.
These soils tend to be alkaline in reaction. They are different in nitrogen and organic matter and will give better yield on the application of the same with provisions of adequate water.

Patches of medium soils occur mainly near Nilanga and central portions of the district. They are dark brown to dark gray brown in color, clay loam to clayey in sub-angular blocky to blocky in structure. These soils are alkaline in reaction and have a fair amount of phosphate but need the application of nitrogen and organic matter for better yields.

Medium deep soil vary from dark gray brown to very dark brown in color and are found scattered in the northern parts of the district. They are clay loam to clayey in texture and granular to sub-angular blocky in structure. These soils are alkaline in reaction and are deficient in nitrogen.

Deep soils are generally seen in the south and in the Terna and Manjra river valleys. They are clayey in texture and vary from dark gray brown to very dark gray in color. The structure of these soils are sub angular blocky to blocky. The lower zones of the profile show compact to massive structure. They are alkaline in reaction and the total soluble salts are fairly high (Map No. 2.5).

2.9 Natural Vegetation:

The land surface of the earth is mainly covered by the natural vegetation. Even the so called deserts have their vegetation though it may be scanty and inconspicuous. Natural vegetation is important from view point of rainfall distribution and the fertility of the soil. It not only checks the soil erosion to the greater extent but also keep
the environmental balance. Forest products supports to the forest based industries; therefore the study of forest is essential.

Forest cover of Latur is a very low. Only 0.48 percent (3500 hectare) area under forest out of total geographical area during 2003 in Latur districts. In the forest the trees are scattered. Babhul, Khair, Bel, Apta, Dhavde, Bor, Aroni, Hivar, etc. trees and Kektal or Cordage are found in the forest. Similarly Jambhul, Mango, Moh, Neem, Palash etc. are also found in Chakur taluka of Latur districts is well known for hilly village known as Vadval. It is known as island with innumerable varieties of plants of medical value.

2.10 Minerals:

The geology of the entire district consists of dark colored volcanic lava flows spread out in the form of horizontal sheets or beds. Because of their dominantly basaltic composition and the tendency to form flat topped plateau, the lavas are termed plateau basalts. Since these basaltic lava flows cover an extensive region in the Deccan and frequently presents step like appearance to the hills and ridges they are commonly terms as “Deccan traps”, the word trap meaning ‘step like’.

Trap rocks being hard, dense and durable are most suitable for building purpose but gently lack any economically useful and important minerals.

The analysis of relevant socio-economic factors that influence on the landuse pattern is made. Includes a study of demographic factors, irrigation, animal husbandry, improved seeds, chemical fertilizers, pesticides insecticides and weedicides, agricultural credit
and finance, industries, marketing, transportation and communication etc.

Above all these important factors in determining the nature and extension of agriculture. All these attributes however, influence the entire system of agricultural in general and hence, it is difficult to analyze their influence on each crop separately. As such factors have studied her in the context of agrarian structure in landuse pattern in particular.

2.11 Population:

Demographic factors as like growth of population, density of population, land holding size, and literacy etc. are played important role in social, cultural, economic, industrial and agricultural development of the region. It is the people propel social progress, create social wealth, development of science and technology, through their handwork and continuously transform the human environment. Man being powerful geographical factor on the earth surface. He determines the economic pattern of resource utilization. Man himself is a very dynamic and important resource. He plays a crucial role in the entire process of landuse, production and he is also the beneficiary of the whole resource utilization and economic development. The analysis of different elements of population is as follows.

A. Growth of Population:

The growth of population is an index of its economic development, social awaking and many other characters. It is one of the significant factors associated with mans occupations. In other
words, it flows in the size from time to time and people migrate temporally both within the administrative boundaries and across them. The growth of population in any area is determined by these basic factors namely fertility, mortality and mobility. The difference between fertility and mortality is called natural growth of population. The present pattern of population growth is simply the latest phase of census of growth trend.

The growth of population may be approached just by taking into consideration the next year growth of population over the basic year. The following formula used to calculate the growth rate of population.

\[ r = \frac{Pn - Po}{Po} \times 100 \]

Whereas, \( r \) = Denotes growth rate of population

\( P_n \) = Denotes current year population

\( P_o \) = Denotes base year population

The growth rate of population has great significance for the geographers. The growth of population is important because the fast growth put the pressure on agriculture and industry.

Increasing population raises questions related to the optimum Landuse. It also affect on the types of farming, cropping pattern and food supply.
Table No. 2.3 : Latur District : Decadal Growth of Population

(1951-2011)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population</th>
<th>Growth rate of variation in %</th>
<th>Rural population</th>
<th>Growth rate of variation in %</th>
<th>Urban Population</th>
<th>Growth rate of variation in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951</td>
<td>660823</td>
<td>--</td>
<td>576605</td>
<td>--</td>
<td>84218</td>
<td>--</td>
</tr>
<tr>
<td>1961</td>
<td>818160</td>
<td>+23.81</td>
<td>731532</td>
<td>+26.87</td>
<td>86628</td>
<td>+2.86</td>
</tr>
<tr>
<td>1971</td>
<td>1048618</td>
<td>+28.17</td>
<td>910079</td>
<td>+24.41</td>
<td>138539</td>
<td>+59.92</td>
</tr>
<tr>
<td>1981</td>
<td>1292882</td>
<td>+23.29</td>
<td>1079833</td>
<td>+18.65</td>
<td>213049</td>
<td>+53.78</td>
</tr>
<tr>
<td>1991</td>
<td>1676641</td>
<td>+29.68</td>
<td>1334773</td>
<td>+23.61</td>
<td>341868</td>
<td>+60.48</td>
</tr>
<tr>
<td>2001</td>
<td>2080285</td>
<td>+24.07</td>
<td>1590024</td>
<td>+19.12</td>
<td>490261</td>
<td>+43.40</td>
</tr>
<tr>
<td>2011</td>
<td>2455543</td>
<td>+18.03</td>
<td>1830085</td>
<td>+15.09</td>
<td>625458</td>
<td>+27.57</td>
</tr>
</tbody>
</table>

*Source: District census Hand Book of Latur District 2001. (The figures of 2011 census are taken from the CD distributed by statistical dept. Latur District.)*

Table No. 2.3 reveals that the trend of general, rural and urban population growth rate is vary from one another during the span of fifty years. The trend of total population growth rate was increased by 23.81 percent during the decade of 1951-1961. After 1951-61 decade the general population growth rate shows constant increase. In 2011

The highest increase in total population growth rate was (29.68 percent) found in the decade of 1981-1991, while the lowest increase (18.03 percent) was noticed in 2001-2011. After the decade
of 1971-1981 the growth rate of population was decreased from 29.68 percent to 24.07 percent.

Though the total rural population is increasing since, 1951. The growth rate of rural population is decreased from 26.87 to 15.09 percent. In urban population growth rate was lowest in decade 1951-61 (2.86 percent) and highest in the decade (1981-91) i.e. 60.48 percent. It is also observed that after the decade (1981-91) growth rate of urban population decreased from 60.48 percent to 43.40 percent in decade 1991-2001 whereas another decrease from 27.57 percent in decade 2001-2011.

2.12 Irrigation:

The process of supplying water to the crops by artificial means is called irrigation. This is also understood by a different terminology called “Irrigated Agriculture or Irriculture”. Irrigation is as important to the crops as blood supply to the human body. The water supply to the crops is a primary need for the healthy growth of the crop as the blood in the human body. Irrigation is an agricultural strategy designed to reduce moisture deficiency i.e. the imbalance between the moisture supplied by rainfall and the evapotranspiratory demand. Moreover, the adverse result of unreliability of rainfall is well countered through irrigation. To be successful and well developed agricultural required supply of water at regular interval and in required quantities. Irrigation is essentially the artificial application of water to overcome deficiencies in rainfall for growing crop. If the rainfall is highly erratic in a region, then, other climatic conditions have to be favourable for the cultivation of variety of crops with the help of irrigation. Development of irrigation depends
on the existence of three factors, i.e. 1. The need of irrigation, 2. The facilities and resources and an organization to utilize resources are such as a state or a central authority, 3. As a rule, lower the rainfall grater is its variability and more is the need for irrigation.

The socio-economic need for irrigation has also been recognized for supporting the growing population, rehabilitating the poor section of society and narrowing the gap of regional imbalances. The impact of irrigation is all prevailing as it leads to changes in cropping pattern, increases yield rates and labors utilization and in the ultimate analysis beings prosperity to the area. Hence, it is regarded as catalyst for socio-economic change that set motion the productive forces in the agricultural sector.

Irrigation is the most important and basic ingredient, plays a vital role in the changing agricultural landscape. It provides assurance of agricultural crops, useful for multiple cropping and for adopting agricultural innovation in areas where rainfall is both inadequate and unreliable. It is found that the cultivators having irrigational facilities without irrigation. And, therefore, it is a pivot of modern agricultural growth.

Importance of irrigation as essential in put hardly needs emphasis. Moreover, it is a pre-requisite for the adaptation of new technology in agriculture and for the rapid growth of agriculture sector. The conversion of dry land in to wet land, provides a security against the vagaries of rainfall; preventing crop failure and enabling higher yield per hectored. It also helps to the farmers to take two or more crops from the same field, within a year and it increases the productivity of the land by transforming the agriculture. The impact
of irrigation is prevailing as it leads to changes in cropping pattern, increases yield.

According to the 2005-06 figures, it is observed that 10854 hectares land is irrigating, and 29833 hectares of land will come under irrigation after the completion of projects, in their study region.

**Modes of irrigation:**

Today, land is irrigated by a variety of ways, such as canals, wells, tanks and lifts. The following modes of irrigation are used for irrigations the agricultural land in the study region.

a. **Major Irrigation Projects**:

An irrigation project which covers more than 10,000 hectares as the cultivated common areas is called major irrigation project. The major irrigation projects are essential for the all round development of the region. Major irrigation projects can change socio-economic structure of the region.

There are two major irrigation projects in Osmanabad district. They are Manjra project in Kalamb tahsil and lower Terna project in Omarga tahsil in Osmanabad district. It is located in Osmanabad district, but supplying water for the irrigation of agriculture in Latur district. Out of the total cultivable command areas 38203 hectare land in Latur district. According to the 2005-06 figures 10824 hectare land is irrigating. After the completion of projects near about 29833 hectares, land will come under irrigation.
b. **Medium irrigation projects:**

Medium irrigation projects are those with cultivable command areas between 2000 to 10000 hectares. Out of the total cultivable command areas 28400 hectares land in Latur district. There are 11 medium projects in Latur district. The work of seven projects in completed and four projects are in progress. Sakola, Tipral, and Masalga (Nilanga), Devarjana (Udgir) and Renapur - Kamkheda (Renapur) medium projects are under construction. According to 2005-06 figures it is observed that 1343 hectares land is irrigating. After the competition of projects near about 7755 hectares land will come under irrigation. Gharni, Jogala (Chakur), Tiru Wadhona (Udgir), Tawarja shiur (Latur), Aurad (Sha), (Nilanga), Girakachala (Nilanga) Vhati (Nilanga), and Mogha Brulapa (Udgir) these project are completed and they are providing irrigation to 6519 hectare of land in 2005-06. Raigavhan medium project in Kalamb tahsil in Osmanabad district. This project is providing irrigation to 688 hectares of land in Latur district during 2005-06.

Most of the medium irrigation projects become dry in summer season. They provide water for irrigation in rabbi and sometime in summer season. Due to the medium projects yield of crops increased to some extent during recent years.

c. **Well irrigation:**

As the cost of construction of well is low they are suited to poor and marginal farmers. There were 30535 irrigation wells in Latur district during 2005-06. These irrigation wells are providing water to 501 hundred hectare of land during 2005-06.
2.13 Transport and Communication:

Transportation plays an important role in the development of modern agriculture. The movements of people and goods from one place to another place it means transport. Transport facilities are the links between the producer and the consumer. In the process of agricultural development, the transport facilities are essential for the supply of certain inputs to the products, to the market and consuming areas. A good network of transport can promote the development of different agricultural products, developments of industries, trade and commerce depends upon the availability of transportation and communication. The modern cultivation depends on the regular and timely supply of seeds, fertilizers, insecticides, pesticides, and weedicides etc. the dimension of agricultural expansion have increased due to utilization of new inputs and their transport. Transport sector contributes to the success or failure of nearly every investment in the economy.

Almost all the rivers of the regions are unfit for navigation due to their seasonable character, the considerable regional diversity of terrain ranging from level plains and narrow valleys to rugged plateaus, sleep scraps, ridges etc. determine on the distribution of transport media. The variations in the volume of traffic from place to place reflect aerial differentiations in population, settlement size and economic activities.

Roads are very important both for goods and passenger traffic. Road transport gain special significance in the transport of perishables like dairy products, vegetables, fruits, flowers, fish and meat. Roads facilitate door to door service and connect most rural
settlements and all urban settlements. Roads act as feeders to railways. Roads are classified on the basis of area they serve and authorities that maintain them.

The Table No. 2.4 shows the types of roads by their length in the study area.

**Table No. 2.4 Latur District : Types of Roads by their Length**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Types of Roads</th>
<th>Length in km.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>National Highways</td>
<td>--------------</td>
</tr>
<tr>
<td>2</td>
<td>Major State Highways</td>
<td>133.00</td>
</tr>
<tr>
<td>3</td>
<td>Other State Highways</td>
<td>714.00</td>
</tr>
<tr>
<td>4</td>
<td>Major District Roads</td>
<td>1520.00</td>
</tr>
<tr>
<td>5</td>
<td>Other District Roads</td>
<td>1315.40</td>
</tr>
<tr>
<td>6</td>
<td>Village or Approach Roads</td>
<td>2775.60</td>
</tr>
<tr>
<td><strong>Total District</strong></td>
<td></td>
<td><strong>6458.00</strong></td>
</tr>
</tbody>
</table>

*Source: Socio-Economic Abstract, Latur District- 2010.*

The National Highway is not available for the study region. Several state highways cross Latur district, they include:

- Nagpur-Bori-Ahmedpur state highway (SH)
- Daund - Barshi-Osmanabad-Bantal-Ausa state highway (SH 77)
- Miraj-Pandharpur-Barshi-Latur state highway (SH 2)
- Manjarumbha-Kalij- Lokhandi Savargaon state highway. (SH)
Table No. 2.5 shows the Talukawise road density per 100 sq. km. in the study area.

It is observed from the Table No. 2.5 that road density per 100 sq. km. is above the district average (77.47) in five tahsils namely Latur, Shirur-Anantpal, Deoni, Ahmadpur and Renapur and below the district average in all the remaining tahsils.

**Table No. 2.5 :**

**Latur District: Talukawise Road Density per 100 sq. km.**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Tahsil</th>
<th>Road density per 100 sq. km.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Latur</td>
<td>89.38</td>
</tr>
<tr>
<td>2</td>
<td>Renapur</td>
<td>77.74</td>
</tr>
<tr>
<td>3</td>
<td>Ahemadpur</td>
<td>79.12</td>
</tr>
<tr>
<td>4</td>
<td>Jalkot</td>
<td>73.45</td>
</tr>
<tr>
<td>5</td>
<td>Chakur</td>
<td>71.58</td>
</tr>
<tr>
<td>6</td>
<td>Shirur-Anantpal</td>
<td>86.24</td>
</tr>
<tr>
<td>7</td>
<td>Ausa</td>
<td>74.13</td>
</tr>
<tr>
<td>8</td>
<td>Nilanga</td>
<td>72.87</td>
</tr>
<tr>
<td>9</td>
<td>Deoni</td>
<td>84.18</td>
</tr>
<tr>
<td>10</td>
<td>Udgir</td>
<td>71.80</td>
</tr>
<tr>
<td></td>
<td>District</td>
<td>77.47</td>
</tr>
</tbody>
</table>

*Source: Socio-Economic Abstract, Latur District-2010.*

Talukawise break up shows that Latur tahsil with 89.38 road density per 100 sq. km. top the list, while Chakur with 71.58 stands at the bottom.
Railway plays a vital role in the transport of freight and passengers. Latur, Chakur, Udgir and Renapur tahsils of the study area enjoy the facility of rail transport by broad gauge. The important railway stations in Latur district are Latur, Latur road and Udgir. The district has 148 km. of broad gauge facility.

There are three important railway lines passing through the district. These are:

1. Latur- Mumbai.
2. Osmanabad -Hyderabad.
3. Hyderabad-Manmad.

Latur is connected to Mumbai by a direct express/ superfast train named Latur express via. kurduwadi. Latur is also connected to Hyderabad by train (Map No. 2.6).

Latur airport is north of Latur city, near Manjra Sugar Factory, but at present air service are not in operation.

There are 289 post offices in 271 villages of the district. Beside that 23520 telephone connections in urban areas and 19289 telephone connections in rural areas of the district. There are 4797 public call offices in the study area.