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CHAPTER - 2
GEOGRAPHICAL SET UP OF THE STUDY REGION

2.1 INTRODUCTION

Population distribution on the surface of the earth is uneven. Distribution of population is a geographical phenomenon and distribution is related to location and area. Growth of population and economic progress is closely related. This is because economic progress of region is related to natural resources and the population that exploits these resources. Important among these resources are physiography, geology, climate, geographical location, water resources soil, forests, minerals etc.

2.2 LOCATION

The study region is one of the district of Maharashtra states. The district has slight circular shape and it is located in the Nira and Krishna basin. This district is located between 17° 5’ to 18° 11’ north latitudes and 73° 33’ to 74° 54’ east longitudes and occupies an area of 10484.89 sq. km. The study region lies in southern Maharashtra and administratively consists 11 tahsils which is Phaltan, Man, Khatav, Koregaon, Satara, Karad, Patan, Jaoli, Mahableshwar, Wai and Khandala (Fig.2.1) For administrative purpose the district is divided in to four sub-division Koregaon, Satara, Phaltan and Wai. According to census 2001 district includes 1721 inhabited villages. The study region has 2796906 population and out of total population 233014 Scheduled Caste, comprising of 116914 males and 116100 females. They constitute 9.51% of total district population in 2001.

The length of region east to west is about 144 km. and north to south is about 120 km. Administratively it is boarded by Pune district on the whole of the northern side, by the Sholapur district on the east, by the Sangali district on the south-east, by the Ratnagiri district on the west, only over a length of 44 km. The Raigarh district is
boarded on the north-west side. Although the boundaries of the district are mainly administrative along several lines these coincide with physical features. The study region extends between the Sahydrian spurs on the west and the Mahadeo range on the east.

2.3 PHYSICAL SETTING

The physical setting for population constitutes the physical environment which determines population characteristics. The physical base particularly the relief, drainage, slope, geology, climate and soils play a vital role in distribution, density and growth of population.

2.3.1 RELIEF

As regards population distribution of population is concerned, relief plays dominant roles. Relief is an important element which is directly influences on the distribution and density of population. The relief and drainage pattern of the district is shown in Fig. No 2.2.

The Satara district is a part of Maharashtra Deccan ballistic plateau with an average height of 600 above mean sea level. Sahyadri and Mahadeo are two main systems of hill ranges in the district. These two hill ranges covered by several local hills.

The Sahyadri, which extends as a continuous wall in north-south direction, forms the entire western border of Satara has limited width of 15 to 20 km. Besides these it has a total length of 196 km. There are several hill station i.e. Mahabaleshwar (1436 m), Makarandgad (1229 m), Yevateshwar (1340 m), and Pratapgad (1074 m). There are some saddles in the range, provide the location for ghat routes. Along these ghats Kumbharli pass, Ambinali pass, Tivara pass, Mala pass, Par pass etc. In this passes Kumbharli pass (Koynanagar to Chiplun) and Ambinali pass (Mahabaleshwar to Poladpur) allow major routes from the plateau to Konkan.

There are five spurs pass east and south-east from the Sahyadri named Kamalgad, Vairatgad, Hatgegad-Arle, Bmnoli-Gherategad and
SATARA DISTRICT

RELIEF AND DRAINAGE

FIG. NO. 2.2

Height in meters

Above 900

600 – 900

20 10 0 20 Km

32
Bhaivargad-Kandur from north to south direction. The last two ranges are large with the exceptions of hills in Mahableshwar and Koyana valley. All other hills are low, barren, and rugged. Mahableshwar (1436 m.) is the highest peak point in the district. Besides these there are many small saddles in Mahadeo range i.e. Khambatki, Adarki and Tathwada etc. The Khambatki is an important in this range which is traversed by national highway No.4.

In the study region the Mahadeo range is another important range, which is runs eastward and south-east direction. It has three sub-ranges. The first sub-range 'Chandan Vandan' covers nearly half of area of study region and lies in the west. Remaining two ranges covers 50 % of the study region named Vardangarh and Mahimangarh and lies towards east.

There are several hill forts in the study region. In Wai Manderdev, Pachgani, Vairatgad, Vandan are important. One of them Pachgani is a health resort. There are two hills in Jaoli Makrandgad and Vasota. The Mahableshwar having two major hills named Mahableshwar and Pratapgad. One of them Mahableshwar is health resort, and another Partapgad is fort built by Shivaji. Afzul Khan tomb of the Bijapur, who was slain by Shivaji Maharaj in 1659. It has still shown on the hill. The seven major hills in Satara named Ajimtara, Yavteshwar, Sajjangad, Petova, Ghatai, Pateshwar and Shulpani. The Koregaon consists five major hills are Harneshwar, Chavaneshwar, Jaranda, Nandgiri and Chandan. In the Patan five major hills are Chandli, Dategad, Gunvangad, Bhairavgad and Jangali-Jaigad. The tahsil Karad covers four major hills named Agashiv, Pal, Sadashivgad and Vasantgad. The major hills of Man are Varugad, Khokada, Shikhar-Shingnapur, Ththawada, Jire-Pathar, Kulakjai and Mahimangad. Khatav tahsil having four major hills named Solknath, Bhapshah, Vardhangad and Bhushangad is important.

2.3.1 A) RELIEF DIVISION

The study region, on the basis of altitude above mean sea level, can be divided into three relief divisions. (Fig. No. 2.3)
a) HILLY RANGES

This physiographic division includes area with the altitude of 900 to 1200 m. and above. The hilly ranges cover 44.11 percent of the entire area of the district. The average gradient in this relief division varies from 30 to 50 meters per kilometer. The major portion of the hilly ranges comes in the western part of the study region from the tahsil Mahableshwar to Patan. (Fig. 2.3 A). This zone consists of scarps of Sahyadri and steep ballistic walls. A large area of this division is under thick forest cover. This area presents the picture of intense erosion and ruggedness of landscape. Due to the hilly topography proportion of area under cultivation is small. Economically this is varying poor area as compared to the foot hills and plain area.

Table No. 2.1

SATARA DISTRICT: AERAL EXTENT OF RELIEF DIVISION
(In Percent)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Tahsils</th>
<th>Ranges and Hills</th>
<th>Foot Hills</th>
<th>Plains</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mahableshwar</td>
<td>100.00</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2</td>
<td>Jaoli</td>
<td>62.44</td>
<td>30.46</td>
<td>09.10</td>
</tr>
<tr>
<td>3</td>
<td>Wai</td>
<td>51.37</td>
<td>33.18</td>
<td>15.45</td>
</tr>
<tr>
<td>4</td>
<td>Patan</td>
<td>50.72</td>
<td>37.17</td>
<td>22.11</td>
</tr>
<tr>
<td>5</td>
<td>Satara</td>
<td>45.21</td>
<td>31.24</td>
<td>23.55</td>
</tr>
<tr>
<td>6</td>
<td>Khandala</td>
<td>34.76</td>
<td>30.50</td>
<td>33.74</td>
</tr>
<tr>
<td>7</td>
<td>Khatav</td>
<td>32.02</td>
<td>36.12</td>
<td>31.86</td>
</tr>
<tr>
<td>8</td>
<td>Man</td>
<td>30.96</td>
<td>35.37</td>
<td>35.67</td>
</tr>
<tr>
<td>9</td>
<td>Phaltan</td>
<td>30.20</td>
<td>25.45</td>
<td>44.45</td>
</tr>
<tr>
<td>10</td>
<td>Koregaon</td>
<td>27.17</td>
<td>32.86</td>
<td>39.97</td>
</tr>
<tr>
<td>11</td>
<td>Karad</td>
<td>21.36</td>
<td>28.03</td>
<td>50.16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>44.11</strong></td>
<td><strong>29.12</strong></td>
<td><strong>26.73</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Based on Survey of India Toposheets.

b) FOOT HILLS

The area having height between 600 to 900 meters comes under this division includes the central and eastern part of the study region. This division covers 29.12 percent area of the district. The average gradient in this relief division varies from 10 to 30 meters per
kilometer. There are several hill ranges run to the east and south-east direction from the main ranges of Sahyadri and Mahadeo. The surface is dotted with the scattered hills.

Except Mahableshwar tahsil, this relief division covers relatively uniform area in all parts of the district shown by Fig. No. 2.3 B. Most of the area in this category is covered by the scrub, grasses and deciduous forests. In this division agricultural is poor due to the infertile soils.

c) PLAIN AREA

The plain area covers major portion of the river valleys draining the land towards north east and south east. This physical division includes an altitude below 600 meters which shares 26.77 percent of the total area of the district, shows in the Fig. No. 2.3 C. The average gradient of this relief division varies from 1 to 10 meters per kilometer. The soils are medium deep black soil. Besides these it is agriculturally developed area having dense population

Table No. 2.1 shows that tahsil wise area extent of this relief division, which is calculated from the survey of India toposheets. Fig. 2.3 A, B, C and table shows that the plain area is much less than the other relief division, as it is covers only 26.77 percent of the total area in the district. The areal variation of the plain shows considerable differences in the tahsils. Karad tahsils having about 50.61 percent of area is plain as it is mostly derived by the rivers Krishna, Koyana, Wang and Tarali. Elsewhere, 9 to 44 percent area are having remaining tahsils and completely absent in Mahableshwar tahsils. The 29.12 percent of total geographical area of the district covers by foot hill division, which is uniformly spread all over the district, vary small part of this division is under cultivation. Remaining 44.11 percent hilly ranges area is rugged, barren and has steep slope which provides vary little opportunity for cultivations. Thus the analysis reveals that there is little scope for agriculture in western part of the district.
RELIEF DIVISION MAP FIG.NO. 2.3  A B C
2.4 DRAINAGE

The drainage pattern influenced on economic and social life of people, as it is necessary to study drainage pattern to bring out changes in the population characteristics. The variation in relief division of the study region has influenced the drainage pattern. There are several rivers like Krishna, Koyna, Venna, Vasana, Kudali, Tarali, Urmodi, Yerala, Nira, Manganga and many other smaller tributaries drain the district shown in Fig. 2.2.

2.4.1 THE KRISHNA BASIN

Krishna is the main river of the study region and one of the three major rivers in south India. Krishna originated at just north of the hill station of Mahabaleshwar at 1500 meters height, and flows south wards. Kudali, Urmodi, Venna, Vasana, Yerala, Koyna, and Tarali are tributary feeders. The Krishna River had having 260 kms. total length in the state and 36 kms. within study area.

Near Pachwad the tributary namely Kudali joins Krishna and Venna joins near Mahuli Sangam. Although in the rainy season they are vary thin. Recently on the river Venna has been constructed a dam near Vennanagar to cheek the floods and store the water to form reservoir which supports agriculture in the western part of the Satara district. River Urmodi receives Krishna near Vanegaon. A small dam has been constructed across river Urmodi near village Kas. The water of Kas is supplied to Satara city for drinking purpose. Near Umbaraj, river Tarali joins to Krishna.

River Koyna is the largest tributary of Krishna, which joins near Karad city. Shiv-Sagar dam constructed on the Koyna River, keeps huge water storage in the narrow valley, which has helped to irrigate the land in southern Satara as well as Sangali district. Thus Koyna River has become the life line of western Maharashtra because it also generates the hydro-electricity. Besides this river Vasana and river Yerala is small feeder of the Krishna River from eastern part of the Satara district.
The fertile soil, assured water supply, favorable climate and innovative spirit of farmers have encouraged the sugar cultivation in the Krishna basin, which is the base of the regions economy.

2.4.2 THE BHIMA BASIN

In the drainage system of the Satara district is shared by Bhima river system. Nira and Manganga rivers are the two chief tributary of Bhima River, draining northern and eastern part of study region.

River Nira raises in the Sahyadri ranges near Bhor in Pune district. Nira runs eastward to form the boundary between Pune and Satara districts. The Nira River has acquired great economic importance due to Vir and Bhatghar dam, from which Nira right and left bank canals supply water to Phaltan and Khandala tahsils of the study region.

Manganga River originated in Seetabai hill near Kulkajai village in Man tahsil. The study region has length of 56 kms of Manganga. In the study region of Man tahsil Manganga runs in south-east direction touching the villages Kulkjai, Malavadi, Andli, Bidal, Dahiwadi, Gondawale bk. and Mhaswad. The river bank is highly eroded and bed is sandy. The river Manganga joins to Bhima at Sarkoli village near Phandrpur. The river basin comes in rain shadow area. Due to scanty of rainfall, scarcity of water, comparatively high temperature in summer season and infertile soils, this area is not favorable to agriculture.

2.5 CLIMATE

The climate of the study region is monsoon type, which plays a major role and influences on settlement pattern and agriculture. In fact, the climate of region is considered as one of the important geographical factor, which influences the distribution of population and economic activity of the man.

Average of weather conditions at a place over along period is called the climate of the place, various elements of climate such as temperature, rainfall, humidity, and wind influences human life.
Among them temperature and rainfall exert more influences on the distribution of population. (Sawant and Athavale 1994)

According to Ghosh (1985) a good climate is precondition for human settlement. The materialistic civilization is a product of physical health and mental energy imparted by good climatic environment

2.5.1 TEMPERATURE

In the study area temperature data is collected from few stations i.e. Mahabaleshwar, Karad and Mhaswad. Table No. 2.2 shows some salient features of temperature in the study region.

2.5.1. A) RAINY SEASON

In the study region June to September is rainy season. In the second week of June the south-west monsoon arrives in the study region. Month July and August are the rainiest month, and during this period rainfall is widely distributed. The temperature is lower than cool season. The mean daily temperature in July recorded at Mahabaleshwar is 17.6°C, at Karad 26.5°C and 29.7°C at Mhaswad respectively. From the end of month September climatic condition are changing, temperature starts to rise, wind direction is mainly from north-east and east, and days are quite warm. During this period rainfall distribution is quite variable and ranges between 5000 mm in the west and 300 mm in the east.

2.5.1. B) COOL SEASON

October to January is cool season in the study region. The temperature starts to rise from October but to come down from the month of November. The month December and January recorded coldest months of the year. The daily range of temperature is highest during the cool season. Mean minimum temperature recorded 14.9°C at Mhaswad, 16.3°C at Karad and 12.7°C at Mahabaleshwar in the month of January respectively. (Table No. 2.2) Early in the morning, fog is the common climatic phenomena of this cool season. The
sunshine is bright with the clear sky and from north east direction wind occurs in this season.

2.5.1. C) HOT SEASON

In the study region February to May is hot season. Temperature starts to rise from March and reaches to the highest in May as it is the highest month in the region. During the hot season higher temperature recorded in the east than the west. The mean maximum temperature recorded at Mhaswad 37.2°C, 33.5°C at Karad and at Mahableshwar 31.5°C in the month of May. The daily range of temperature is high all over the district. During the hot season, wind directions vary but westerly winds are more common in the afternoon. The thunderstorms, which are usually occurs with heavy rainfall or hails and high speed winds.

2.5.2 RAINFALL

As regards distribution and density of population is concerned rainfall play important role. Rainfall is an important element, which are directly influences on the drainage pattern and in turn of agricultural activity and settlement.

Amount of rainfall influences human life to a considerable extent. From the point of view of human life, it is not only the amount of rainfall that matters but its distribution over the year is quite significant. If rainfall is well distributed over the year, it helps agricultural as well as it helps raise ground water level. There by influences distribution of population, its density and occupational structure. The density of population decreases with a decrease in rainfall and increases with an increase in rainfall. (Sawant and Athawale 1994)

2.5.2. A) AVERAGE ANNUAL RAINFALL

Distribution of monsoon in the district is unequal from part to part and ranges between 500 mm. to 6000 mm. The western mountains tahsils including Mahabaleshwar, Patan, Wai, and Jaoli
The central plain zone, including tahsils Satara Karad and western part of Koregaon have been lies in moderate rainfall zone, which receives 1000 mm. to 2500 mm. precipitation. In this zone rainfall decreases towards west to east.

The north eastern part of the study region including Phaltan, Khandala, Man, Khatav and eastern part of Koregaon tahsil receives 500 to 1000 mm. rainfalls, and lies in the eastern low rainfall zone. Eastern part of the study region is drought prone area, which lies in the rain shadow area, where as most eastern part of Man, Khatav, and

**Table No.2.2**

SATARA DISTRICT: AVERAGE ANNUAL RAINFALL AND TEMPERATURE

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Tahsils</th>
<th>Average Annual Rainfall in mm.</th>
<th>Average Annual Temperature in °C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Maximum °C</td>
</tr>
<tr>
<td>1</td>
<td>Mahableshwar</td>
<td>6126.4</td>
<td>31.5</td>
</tr>
<tr>
<td>2</td>
<td>Jaoli</td>
<td>1712.2</td>
<td>34.7</td>
</tr>
<tr>
<td>3</td>
<td>Wai</td>
<td>734.6</td>
<td>35.4</td>
</tr>
<tr>
<td>4</td>
<td>Patan</td>
<td>1882.5</td>
<td>35.1</td>
</tr>
<tr>
<td>5</td>
<td>Satara</td>
<td>1132.1</td>
<td>35.3</td>
</tr>
<tr>
<td>6</td>
<td>Khandala</td>
<td>503.8</td>
<td>36.2</td>
</tr>
<tr>
<td>7</td>
<td>Khatav</td>
<td>512.2</td>
<td>36.5</td>
</tr>
<tr>
<td>8</td>
<td>Man</td>
<td>496.2</td>
<td>37.2</td>
</tr>
<tr>
<td>9</td>
<td>Phaltan</td>
<td>557.1</td>
<td>36.9</td>
</tr>
<tr>
<td>10</td>
<td>Koregaon</td>
<td>714.7</td>
<td>35.5</td>
</tr>
<tr>
<td>11</td>
<td>Karad</td>
<td>713.1</td>
<td>33.5</td>
</tr>
<tr>
<td></td>
<td>District Average</td>
<td>1371.3</td>
<td>35.25</td>
</tr>
</tbody>
</table>

**Source:** *Socio-Economic Review and District Statistical Abstract of Satara District (2007-2008)*
AVARAGE ANNUAL RAINFALL FIG. NO. 2.4
SEASONAL DISTRIBUTION OF RAINFALL FIG. NO. 2.5 A B C
Phaltan tahsil receives rainfall below 500 mm. There is drought prone area and always shortage of drinking water.

2.5.2. B) SEASONAL DISTRIBUTION OF RAINFALL

In the study region, seasonality is an important characteristic of the rainfall. Although the precipitation is all the seasons, Fig. 2.5 A shows as that it is mainly during the south west monsoon, followed by the north east monsoon periods. However, 70 to 90 percent of the mean annual rainfall of the region is received during south west monsoon periods from June to September. North eastern monsoon takes place from the second half of September. In these periods rainfall had decreases east towards west.

In the cool season from October to January rainfall is vary less throughout the region. It is maximum 2 percent throughout the region and decreases east towards west shows by Fig. 2.5 B. during the hot season maximum rainfall over 8 percent is received and distribution is unequal. It decreases north western towards west. The rainfall occurs with thunderstorms and heavy rain or hails in the hot season. (Fig. 2.5.C).

The analysis of seasonal distribution of rainfall indicates that the rain is insufficient in the north eastern parts and adequate in central and western part of the study region.

2.6 SOILS

The variation in soil may result in local variation in land use, and in turn of population distribution. Soil condition and agricultural development are closely associated and strongly reflected in population densities.

The nature of soil is collectively influenced by relief, nature of parent rocks, climate and vegetation wherever these factors are favorable soils have been formed and agricultural has flourished. The higher fertility of soils is good for agricultural and therefore regions having densely populated regions. Population densities are generally low due to thin layer of soil over slopes. The variation in soil color,
texture, fertility may result in local variation land use, and in turn of population distribution. (Sawant and Athawale 1994)

2.6.1 COARSE SHALLOW SOILS

The coarse shallow soils occur mainly in the hill ranges, especially offshoots of the Shaydari and southern flanks of Mahavdeo ranges. This group of soil is shallow and mostly covered by the forest in Mahabaleshwar, Jaoli, Patan and western part of Satara tahsil. The coarse shallow soils also covered central and eastern part of the study region. In the Man, Khatav, and eastern part of the Phaltan tahsil the soil is extremely poor and shallow.

2.6.2 LATERITE SOILS

This group of soils covers Mahabaleshwar, Patan, Jaoli and western part of Satara tahsil. The colours of laterite soils are red to brownish, due to presence of excessive iron oxide, shallow in depth. These soils are acidic and low in phosphoric content. The laterite soils are locally known as Tambadi Mati. These soils have different depths and are classified as deep and medium laterite soils.

2.6.2. A) DEEP LATERITE

The deep laterite soils largely occur in Koyana river valleys. The deep laterite soils have rich texture and are suitable for cultivation. The upper reaches of all the right bank tributaries of Krishna have the deep laterite soils. These soils zone is mainly under rice production.

2.6.2. B) MEDIUM DEEP LATERITE

This zone of soils largely occurs in the river valley and plateau top, and covers large area. The medium deep laterite soils have less depth and course in structure. This is suitable for agricultural.
Satara District
Types of Soils

Index | Types of Soils
--- | ---
Black shallow soil | Black medium deep soil
Black deep soil | Lateritic shallow soil
Lateritic medium deep soil | Lateritic deep soil

Scale
2.6.3 BLACK SOILS

The regional distribution of black soils occurs in central, northern and eastern part of the study region. The black soils have different colours from brown to dark black and occur in various depths. On the basis of the depth, black soils classified as deep black and medium black soils.

This group of black soils covered 76 percent of the total soil of the region. These soils are derived from basalt of Deccan trap, and black color derived from hums and clay complex. (Bunting 1967)

According to I. C. A. R. (1989) the black color is variously assigned to the presence of titian ferrous magnetite, organic compound of iron and aluminum accumulated humus and hydrated double iron and aluminum silicate.

2.6.3. A) DEEP BLACK SOILS

The deep black soils are clayey and black in colour. They are poor in nitrogen but rich in phosphate and potash, and also contain high percentage of calcium carbonate and PH value is higher than other soils of the study region. The deep black soils are mostly found in closely to river courses of Krishna and Nira valley. They are mainly in central part of Wai, Satara, Karad and northern part of Phaltan tahsil. The deep soils have having high water holding capacity.

2.6.3. B) MEDIUM BLACK SOILS

The zone medium black soils are found everywhere in the study region except Mahabelshwar tahsil. In the Patan and Jaoli tahsil these types of soils occurs in less amount. This type soils are thinner and less fertile comparing to deep black soils the medium black soils occupy in central part of the study region. These soils require irrigation facilities.

2.7 SETTLEMENT PATTERN

The study of settlements is important geographic thought. Since the country is dominated by agrarian economy and most of the
Table No. 2.3

SATARA DISTRICT: DISTRIBUTION OF SETTLEMENTS (2001)

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Tahsils</th>
<th>Area (in Sq. Km.)</th>
<th>No of Villages</th>
<th>Rural Settlements</th>
<th>Urban Settlements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mahabaleswar</td>
<td>223.01</td>
<td>55</td>
<td>55</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Jaoli</td>
<td>864.53</td>
<td>207</td>
<td>211</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Wai</td>
<td>619.10</td>
<td>113</td>
<td>120</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Patan</td>
<td>1320.92</td>
<td>269</td>
<td>342</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Satara</td>
<td>876.24</td>
<td>200</td>
<td>208</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Khandala</td>
<td>523.72</td>
<td>65</td>
<td>65</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Khatav</td>
<td>1129.66</td>
<td>132</td>
<td>136</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>Man</td>
<td>1449.11</td>
<td>98</td>
<td>104</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Phaltan</td>
<td>1199.43</td>
<td>120</td>
<td>122</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Koregaon</td>
<td>921.80</td>
<td>110</td>
<td>139</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Karad</td>
<td>969.20</td>
<td>178</td>
<td>219</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>District Total</td>
<td>10480.00</td>
<td>1547</td>
<td>1721</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: Socio-Economic Review and District Statistical Abstract of Satara District 2001

population is concentrated in rural settlements. As it is the study of settlements are important to discuss the population analysis in particular region.

Settlements occupy some space at a particular point of time. This occupancy reflects effect of certain factors including socio-cultural and socio-functional aspects concerned with economy. Therefore the study of settlement form is the most important theme of human geography. Physiography and agricultural practices of an area influenced on distribution pattern of settlement, and in turn of population distribution and density. (Singh 1994)

The regency of discovery and settlement of the areas of human occupancy goes a long way in giving an insight to the understanding of the factors explaining the existing pattern of population distribution and density. The contrasts between the new world and the old world with regard to their present population situations have their basic explanations in this factor of the history of their settlements.
A network of settlements in a primarily agrarian society is bound to be different from that in an industrial society due to the basic differences in the needs of the two situations. (Chandana 2006)

In the study region there are 7 urban settlements. All these urban settlements are administrative centers. Karad, Wai and Phaltan are major market centers, whereas Satara is a major industrial center. Mahableshwar is a health resort center, Patan and Koregaon are other important urban centers.

There are 1721 rural settlements according to census 2001. The table No. 2.3 shows tahsil wise distribution of urban and rural settlements including Jaoli, Khatav and Man which is an administrative center of tahsil. In the eastern part of study region covers the rural settlements of small size forming dispersed settlement pattern. But in the river Krishna and Nira basin size of rural settlement are large. There are also found numbers of small rural settlements in western hilly ranges. The compact settlement pattern is observed in the western part of study region. The large villages are mainly agricultural settlements and having 10000 populations. Thus, the discussion reveals that the study region having a more settlements.

2.8 LAND USE PATTERN

The land use pattern has got importance in the economy of the region. Human activity is depending on land use, socio-economic picture and the status of community indicates by land use pattern. Table No. 2.4 and Fig. No. 2.7 shows the general land use pattern of the study region.

The study region having 1058243 hectares the total geographical area. The net swan area is 63.01 percent of the total geographical area of the region, whereas 13 percent land is under forest, 11.62 percent land under cultivable waste and 11.47 percent land is not for available for cultivation. The table No. 2.4 shows tahsil wise general land use pattern that the tahsil included in high land zone, the cultivated land is vary less amount. Due to physiographic and other
favorable condition in the central part of the study region having more cultivated land (63.91 percent). The highest cultivated land is recorded in Karad tahsil (82.53 percent), and the lowest in Mahabaleshwar tahsil (29.93 percent). This is below as compared to district average. The undulating physiographic condition has more under area cultivation which is 82.92 percent in Khatav and 50.95 percent in Man tahsil respectively. The tahsil Khandala 40.10 %, Mahabaleshwar 29.93 %, and Patan 49.75 % is recorded lowest percent of cultivated land.

The second category is cultivable waste land, such as follow land with scrubs and grazing land. The area under this type of land is 11.62 percent of total geographical area. The high land zone has more percent under this category. The highest percent of cultivable waste land was found in Man tahsil. It is recorded 23.71 percent and it is higher than district average. The lowest percent of cultivable waste is

Table No.2.4

SATARA DISTRICT: GENERAL LAND USE

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Tahsils</th>
<th>Total Geographical Area (ha)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cultivated Land</td>
<td>Land Under Forest</td>
</tr>
<tr>
<td>1</td>
<td>Mahabaleshwar</td>
<td>22190</td>
<td>29.53</td>
</tr>
<tr>
<td>2</td>
<td>Jaoli</td>
<td>86895</td>
<td>56.30</td>
</tr>
<tr>
<td>3</td>
<td>Wai</td>
<td>61909</td>
<td>64.73</td>
</tr>
<tr>
<td>4</td>
<td>Patan</td>
<td>140364</td>
<td>49.75</td>
</tr>
<tr>
<td>5</td>
<td>Satara</td>
<td>87953</td>
<td>64.05</td>
</tr>
<tr>
<td>6</td>
<td>Khandala</td>
<td>53608</td>
<td>40.10</td>
</tr>
<tr>
<td>7</td>
<td>Khatav</td>
<td>136457</td>
<td>82.92</td>
</tr>
<tr>
<td>8</td>
<td>Man</td>
<td>150787</td>
<td>50.95</td>
</tr>
<tr>
<td>9</td>
<td>Phaltan</td>
<td>119029</td>
<td>66.56</td>
</tr>
<tr>
<td>10</td>
<td>Koregaon</td>
<td>94840</td>
<td>74.21</td>
</tr>
<tr>
<td>11</td>
<td>Karad</td>
<td>104211</td>
<td>82.53</td>
</tr>
<tr>
<td></td>
<td>District Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: *Socio-Economic Review and District Statistical Abstract of Satara District (2007-2008)*
recorded in 1.60 percent in Karad tahsil. The discussion reveals that the lowest groups of percent is in Mahableshwar (6.66 %), Khatav (5.80 %), Koregaon (5.40 %) and highest in Satara (11.63 %) and in Khandala (10.51 %).

The third category of land is land not available for cultivation, such as land under settlements, roads, railways, rivers, canals, barren land and uncultivable land. This type of land has having 11.47 percent of the total geographical area. It is observed that Satara (14.66 %), Khandala (17.47 %), Man (16.75 %), Phaltan (11.50 %) have recorded high percent than the study region average. The Khandala (17.47 %) tahsil having the percent of the land not available for cultivation in the whole study region, and Mahableshwar (3.76 %) tahsil have recorded very low percent in the study region.

The fourth and last category is under forest. It is observed that the percent of land under forest is 13 percent in average. The Mahableshwar (59.65 %) tahsil recorded high percent land under this category, because of high rainfall and hilly region, the growth of vegetation is high. The evergreen monsoon forests are found in this tahsil. It is observed that Jaoli (22.76 %), Wai (20.62 %) and Patan (19.74 %) have recorded high percent than the whole study region. The tahsil like Satara (9.66 %), Khandala (12.12 %), Khatav (03.01%), Man (8.59 %), Phaltan (9.15 %), Koregaon (11.07 %) and Karad (10.17 %) have recorded below in the average of study region.

2.9 TRANSPORT NETWORK

Transportation activities are closely linked with population concentration and urbanization. Hence, developments of transportation facilities play a significant role in increase the capacity of the region to support the population.

Ease of transportation also plays an important role in influencing distribution of population. Population densities are high in low-lying flat areas and coastal plains due to ease of transportation and density of population is low hilly area. Transportation facilities increase
mobility, expand trade and commerce, and minimize the difficulties of movement. With the development of the modern transport system, urban growth is concentrating in large cities and towns. (Chakrawarthy 2006)

The study region has relatively good network of transport by roads and railways. The total length of the study region is 10451.14 kms. having an average density of 99.61 kms. of road length per 100 sq. kms. The policy of Maharashtra government under minimum need program that the village having 500 populations should be linked by roads. From this point of view most of the villages having population above 500 are linked by the roads in the study region.

Fig. No. 2.7 shows the several roads and rail patterns i.e. national highway, state highway, major district roads, village roads and other roads are constricted in the study region. The national highway No. 4 (Pune- Bangalore) passes through the study region having a length of 124 kms. Besides this Mahabaleshwar – pandharpur, Pune – Mahabaleshwar - Mahad, Satara –Mahabaleshwar – Mahad, Phaltan – Miraj and interstate Vijapur – Chiplun highway passes through the study region, and they accounts for the total length of 996 kms. The

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Types of Roads</th>
<th>Length in Kms</th>
<th>Avg. Density/100 Sq.Km</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>National Highway</td>
<td>131.00</td>
<td>01.25</td>
</tr>
<tr>
<td>2</td>
<td>State Highway</td>
<td>996.67</td>
<td>09.50</td>
</tr>
<tr>
<td>3</td>
<td>Major District Roads</td>
<td>2249.98</td>
<td>21.44</td>
</tr>
<tr>
<td>4</td>
<td>Other District Roads</td>
<td>1838.03</td>
<td>17.52</td>
</tr>
<tr>
<td>5</td>
<td>Village Roads</td>
<td>4683.18</td>
<td>44.64</td>
</tr>
<tr>
<td>6</td>
<td>Other Roads(Other than plans)</td>
<td>552.28</td>
<td>5.26</td>
</tr>
<tr>
<td></td>
<td>District Total</td>
<td>10451.14</td>
<td>99.61</td>
</tr>
</tbody>
</table>

Source: Socio-Economic Review and District Statistical Abstract of Satara District (2007-08)
major district roads connect the tahsils and other important places of the study region. Pune – Bangalore broad gauge railway line passes through the study region from north to south about 124 kms. On this railway line from north to south Lonand, Wather, Satara, Koregaon, Rahimatpur, Masoor, Karad are the important railway stations. In general, western highland zone have seasonal roads are the major means of transportation because of rugged topography, but in the central and eastern part many village roads are constructed by Zilla Parishad, which are linked to settlement.

REFERENCES:


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