



## STUDY OF GEOGRAPHICAL PROFILE

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### ABSTRACT

*The physical situation is one of the important for population constitutes and their change which controls to a large amount of population, the physical base particularly the terrain and topography, drainage system, climate and soil plays a significant role in shaping the population characteristics (Chandana, 2001). Terrain throws powerful illumination on land use and on the growth and distribution of population characteristics in the region, where relief encompasses complex and varied lithology and landforms (Singh, 1976). Thus, the apart from the terrain, topography, height, slope and the nature of surface are effects on the population characteristics and their changes.*

### KEYWORDS:

*physiographical features, climate and soil, growth and distribution.*

### INTRODUCTION

#### ❖ PHYSIOGRAPHY

Physiography plays an important role in the growth and distribution of the population. Growth and distribution of the population are exactly reliant on the circumstances of topography, slope, and altitude of the area. These physiographical features influences on the population distribution and development of socio-economic facilities. It also influenced the climatic condition in an area. The effect of the height of topographical features is high on population change while the slope of the area is moderately affected on the population changes. The flat areas with moderate slopes are

favourable for population change, while uneven and undulating topography with a steep slope is not favourable for the population changes.

Western Maharashtra is fall under Deccan plateau region and Satara district covered as a part of the plateau and some part of Sahyadrian Mountain. The altitude of the study region is ranging between 600 meters in Nira river basin in East and around 1200 meters at the main Sahyadrian Mountain in the West from above sea level. Generally, the slope of this region is from North-west part to South-East direction.

Residual mountain ranges and the middle valleys, all well-developed on a flatland surface, form the chief component of the landscape in the Satara district. On the west, it has the Sahyadrian scarp with its main mounts, usually plane topped and prevailing loads. The Mahadeo range, which is the succeeding main developed range, originates as an off-shoot of the Sahyadries, in the North-western part of the district. Eastward direction, it runs as a chief range and sends off several minor ranges South-eastward and Southward directions. The Sahyadri range and its minor hill chains on the plateau surface, and the Mahadeo range

and its minor ranges, enclose between them the major river basins of Satara district.

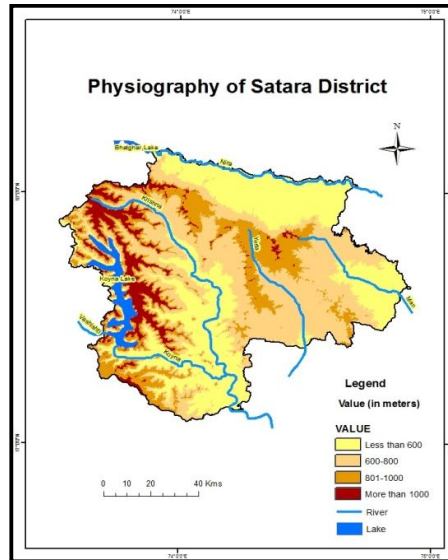


Fig. 1

However, the variation in relief ranges from the pinnacles high plateaus of the main Sahyadrian range having height over 1786 meter above mean sea level to the subdued basin of the Nira river in Phaltan tahsil with an average height of about 600 meters above mean sea level. The region can be divided into three subdivisions (Gazetteer, 2001).

**Table 1**  
**Satara District: Tahsil-wise Proportion of Physiographical regions in percentage**

Sr. No.	Tehsil	Hilly Ranges	Foot Hill Area	Plateau Area
1	Mahabaleshwar	100	0	0
2	Wai	51.37	33.18	15.45
3	Khandala	34.76	31.5	33.74
4	Phaltan	30.2	25.35	44.45
5	Man	30.96	35.37	33.67
6	Khatav	32.02	36.12	31.86
7	Koregaon	27.17	32.86	39.97
8	Satara	45.21	31.24	23.55
9	Jaoli	62.44	28.46	9.1
10	Patan	50.72	37.17	12.11
11	Karad	21.36	28.03	50.61
<b>Satara District</b>		<b>44.20</b>	<b>29.03</b>	<b>26.77</b>

Source: Based on Survey of India Toposheets.

#### ❖ Drainage Pattern

The drainage system or river basin is known as an area that is drained by a river and its tributaries. The two chief major rivers of Satara district are the Krishna and the Bhima river. The length of the Krishna River is 172.63 kilometer within the district. The Krishna River originated on the Eastern brow of the Mahabaleshwar plateau and the source is about 4500 ft. above from mean sea level. Kudali, Urmodi, Vienna and Tarali are feeder rivers of Krishna. Koyna is the main tributary of the Krishna in the district.

Neera and Manganga rivers are the two tributaries of the Bhima in the North and North Eastern parts of the district (Gazetteer, 2001).

### **Krishna River Basin**

The Krishna is one of the three great sacred rivers of Southern India, Like the Godavari and Kaveri. The Satara district is divided into two divisions by the Mahadev range. The western part of the district comprises of Eastern slopes of the main Sahyadris along with all of its subsidiary spurs and valleys, except the Mahadev range. Waters from the whole area is drained in Krishna and its tributary feeders like Kudali, Urmodi, Vienna, Vasna, Yerla, Tarali. Thus river Krishna is the main and major drainage system of Satara district. Krishna, the major river has its source in the eastern slopes of Mahabaleshwar plateau at the height of 1332 meter above the mean sea level. Its total length is 260 kilometer within the Satara district. From its source at Mahabaleshwar, river Krishna runs East-ward for about 24 kilometer to reach town Wai. It receives Kudali from right, at about three kilometer south of Panchwad. After meeting Kudali, the river continues to run South-ward through the Satara sub-division and receives the Venna River near Mahuli. After meeting Venna, the Krishna curves to Southeast. At Koregaon the Krishna receives the Vasna, from the left, near Mangalpur and then in South of Satara sub-division it receives the Urmodi near Venegaon. In Karad tahsil the river runs nearly Southwards. In this course it receives the Tarali near Umbraj and the Koyana near Karad. From Karad it flows for about 50 km and then enters in the Sangli district. Within Satara district, river Krishna is useless for navigation because the Channel is too rocky and the streams too rapid. The banks are 8 to 10 meters high and generally earthy and broken. The river bed is sandy and rocky in some parts.

### **Main feeders of Krishna in Satara District**

#### **i) River Kudali**

River Kudali rises near Kedambe at the height of 1279 meter from the mean sea level in Jaoli tahsil and flows in South-west direction, in between Vairatgad spur and the Hategad-Arle spur for about 20 kilometers. This is a minor feeder of Krishna and receives the water from Kudali valley, it joins river Krishna near river Panchwad. The total length of Kudali river is 30.91 kilometer. This river flows in Mahabaleshwar, Wai and Jaoli tehsils.

#### **ii) River Vienna**

River Vienna rises on the Mahabaleshwar plateau at the height of 1332 meter from the mean sea level and falls into the bend valley formed by the Hatgegad-Arle range and Satara range. It flows through this valley in South-eastern direction for about 64 kilometers and joins the Krishna near Mahuli. In hot season the stream is very thin but in the rainy season, it is flooded and becomes one of the chief feeders of river Krishna. Recently a dam has been constructed on river Vienna near Vennanagar to check the floods and store the water to form the reservoir in the western part of the district. The total length of Vienna river is 46.68 kilometer. This river flows in Mahabaleshwar, Satara and Jaoli tehsils.

#### **iii) River Urmodi**

The Urmodi rises near village Kas at the height of 1140 meter from the mean sea level in Jaoli tehsil and passes South-eastward direction along the valley flanked by the Satara range and Kalvali-Sonapur range, after a journey of 30 kilometers; it joins Krishna river near Venegaon. The Urmodi is also a small feeder of river Krishna and its banks are high and steep. The flow of water ceases in the hot season. A small dam has been built across river Urmodi close to village Kas. The water is supplied by Satara city. A new project is also in progress near Parli to store water for irrigations. The total length of Urmodi river is 43.34 kilometer. This river flows in Satara and Jaoli tehsils.

#### iv) River Tarali

The Tarali is also a small feeder of the Krishna. This river rises near Tarali village at the height of 1117 meter from the mean sea level and flows South-east along the valley flanked by the Kalvali-Sonapur range of the Jalu-Vasantgad range. This river flows along with a South-easterly course of 35 kilometers and joins Krishna near Umbraj. This river has a small dam for irrigation purpose. The total length of Tarali river is 42 kilometer. This river flows in Satara and Karad tehsils.

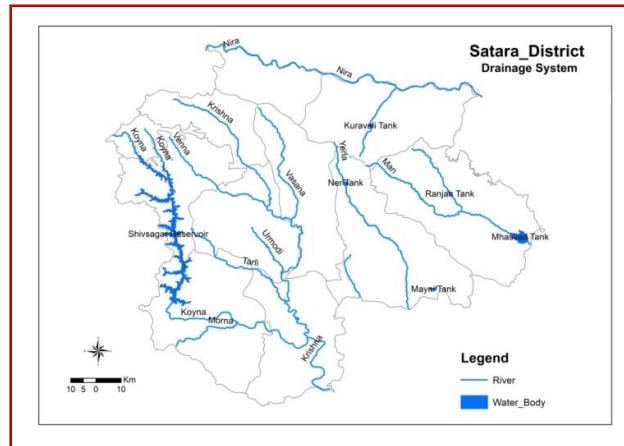


Fig. 2

#### v) River Koyna

The River Koyna rises on the Western side of the Mahabaleshwar plateau at the height of 1332 meter from the mean sea level and is the larger feeder of river Krishna. The total length of the river is 60.13 kilometer within the district. During the course river Koyna runs nearly Southward through a deep valley parallel to the main line of the Sahyadris and the Bamnoli Gheradalegad branch of Sahyadris. This valley receives the highest rainfall in Satara district near Bamnoli. The Koyna receives the river Solshi from the left and the river Kandati from the right side, after a course of 60 kilometers. The river turns Eastward near Helvak. In the further course, the river receives the river Kera from the North and the river Morna, river Vang from the south near the town Patan and after a course of 60 kilometers. River Koyna joins the Krishna near Karad is known as Priti-Sangam, in the first 60 kilometer, the banks of the Koyna are broken and muddy. As the catchment area of the river is rich due to the very heavy rainfall it is well flooded during rainy season. The biggest hydrological power projects of western Maharashtra the Koyana. Hydroelectricity project has been constructed on this river near Koynanagar. The dam constructed on this river keeps very huge water storage in the narrow valley and is known as 'Shiv-Sagar' which irrigate the land in southern Satara as well in Sangli district. Thus, river Koyna has become the most important lifeline of western Maharashtra. Koyana river flows in Patan and Karad tahsil.

#### vi) River Vasna

River Vasna rises in the Mahadeo range near Solshi at the height of 766 meter from the mean sea level and flows Southward along a valley flanked by the Chandan-Vandan range and the Vardhangad range. It is a small feeder of river Krishna and runs Southwards for about 51.98 kilometers and joins Krishna. This river flows in Wai, Khandala, and Koregaon tehsils.

#### vii) River Yerla

The Yerla rises in Sukanath hills at the height of 828 meter from the mean sea level and flows along a valley flanked by the Vardhangad and the Mahimangad ranges. It is the largest left bank feeder of river Krishna and runs through Khatav tahsil in Satara district and afterward through Khanapur and Tasgaon tehsil in Sangli district.

### viii) Bhima River Basin

Though river Krishna forms the main drainage system of Satara district, the drainage is also shared by Bhima river system. River Bhima rises at the height of 1005 meters from mean sea level. Nira and Man (Manganga) rivers are the two chief tributaries of Bhima in Satara district (Gazetteer, 2001).

#### i) River Nira

River Nira rises in the Sahyadri range near Bhor at the height of 630 meter from mean sea level in Pune district and it runs Eastward to from the boundary between Pune and Satara district. The river has acquired great economic importance due to the Bhatghar and Veer dams from which Nira right banks and left bank canals supply water to Phaltan and Khandala tehsils. The total length of the Nira river is 104.01 kilometer. This river drains the Khandala and Phaltan tehsils.

#### ii) River Man

The Man rises on the Seetabai hills at the height of 908 meter from the mean sea level in Man tahsil, out of the total length of 160 kilometers, 64 kilometer is within the Satara district. In Satara district, the river runs South-west touching the village Malwadi, Andhali, Bidal, Dahiwadi, Gondawale, Palashi and Mahaswad, The river bed is sandy and the banks are highly eroded. This river drains Man tahsils. This river joins river Bhima at Sarkoli near Pandharpur.

The river basins are more favourable for socio-economic development due to water availability and fertile soils.

#### ❖ Climate

Climate is quite important elements considering the growth and distribution of population and socio-economic development of a region. The growth of the population of an area is in need of predominantly upon the prevailing climatic conditions. The chief climatic elements of temperature, rainfall, humidity, sunshine, length of growing season, fog, frost, hailstorms, sunshine, winds and air pressure. All these elements of weather and climate separately and collectively influenced the population changes and socio-economic development. Climate plays a very significant role in population changes and its impact on socio-economic development in the study region. The climate which is a combination of different components (temperature, light, warm, wind, ice, precipitation, etc.) effected on the population characteristics. The climate of this area is in general pleasant in Western part. The year might be isolated extensively into four seasons. The cool season is from December to about the center of February. The hot season, which takes after keeps going till the finish of May. June to September is the Southwest monsoon season and the two months October and November shape the post-monsoon or the withdrawing monsoon season. The variations in rainfall are high, ranges from the highest rainfall in the Mahabaleshwar tahsil i.e. 6000 mm rainfall, the lowest rainfall in Man tahsil i.e. 500 mm. The average rainfall of Satara district is about 1426 mm. The minimum temperature of the district is about 11.6°C, whereas the maximum temperature is 37.5°C. The vegetation cover is also differs from the distinctive monsoon forest in the western parts to scrub and poor grasses in the eastern part of the district.

#### ❖ Soil

Soil situation and agricultural development are closely associated and strongly reproduced in population densities. The higher fertility of soils is good for agricultural and therefore regions having thickly populated regions. Generally, population density is low in the 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). Formation of soil in any region is based on the parent material, climate, living organism, physiography, geology. Topography influences on soil formation, primarily through its effect upon the drainage, runoff and erosion and secondary through variations in exposure to the sun, wind and air drainage (Jagtap, 1985). The soils in the study area are essentially derived from the fundamental basalt and under different climatic conditions show variations in the texture and structure. It differs from

deep black soil in the river valleys to shallow soil and laterite soil. The soils of the district can be roughly grouped into three types viz. black (Kali) soils, coarse grey (Barad) soils and reddish (Tambadi) soils.

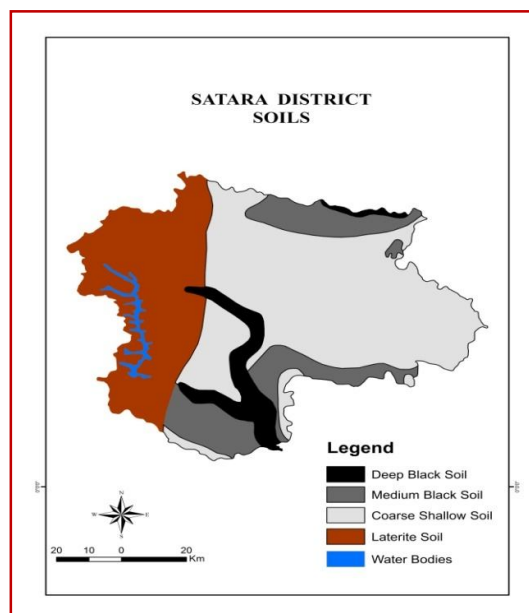


Fig. 3

#### ❖ Natural Vegetation

Natural vegetation cover is, directly and indirectly, depends on the physiography, climatic condition and type of soil. In Satara district, total 1503.87 sq. km. area is covered by natural vegetation, which becomes 14.89% to the total geographic area. Out of the 1349.44 sq. km. the area comes under reserved forest, 47.75 sq. km. the area comes under projected forest 106.66 sq. km. as leased forests. In Satara district generally three types of forest found, they are as (i) Evergreen forests; (ii) Dry mixed deciduous forests; and (iii) Wet mixed deciduous forests. The species existing in an evergreen forest are Jambhul, Anjan, Ain, Umbar, Kinjal, Hirda, Fanas, Nana, Dhawada, Sag, etc. The species in dry mixed deciduous are Shami, Hivar, Hinganbet, Bor, Karvand, Kair, Ghaypat, etc. The existing species in wet mixed deciduous forests are Kinjal, Hivar, Shikekai, Babhul, Neem, etc. It is found that in the Western side of the Satara district have dense forest area, while Eastward of the district the natural vegetation are sparsely because of heavy rainfall in Western part of the district and it is continuously decreased Eastward direction. As a result, the population concentration is low in the western side.

#### CONCLUSION

However, the variation in relief ranges from the pinnacles high plateaus of the main Sahyadrian range having height over 1786 meter above mean sea level to the subdued basin of the Nira river in Phaltan tahsil with an average height of about 600 meters above mean sea level.

The Urmodi rises near village Kas at the height of 1140 meter from the mean sea level in Jaoli tehsil and passes South-eastward direction along the valley flanked by the Satara range and Kalvali-Sonapur range, after a journey of 30 kilometers; it joins Krishna river near Venegaon.

The River Koyna rises on the Western side of the Mahabaleshwar plateau at the height of 1332 meter from the mean sea level and is the larger feeder of river Krishna. In the further course, the river receives the river Kera from the North and the river Morna, river Vang from the south near the town Patan and after a course of 60 kilometers.

River Nira rises in the Sahyadri range near Bhor at the height of 630 meter from mean sea level in Pune district and it runs Eastward to from the boundary between Pune and Satara district.

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