CHAPTER V
SOCIO-ECONOMIC SETTING
OF HILLY AREA

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CHAPTER V
SOCIO-ECONOMIC SETTING OF HILLY AREA

5.1 INTRODUCTION

On the earth surface, human being is the most important factor. Their characteristics and distribution is also significant. Human beings are also modifying their environment, but total environmental situation is depend upon the quality of population as well as quantity of population. The physical aspects are modified by the man and he has created the new environment, which we call cultural or social landscapes in the study area. We have to know the population scenario, with their characteristics, then the pattern of changes of social and economic landscapes become clear.

Land is the most significant of all the natural resources, most of the inhabitants of the country depend on it for their livelihood (Gophane, 1981). The socio-economic patterns of the region are mostly co-related with their people and land. Land and its allied resources permit human development, otherwise it remains backward. In this chapter, attempt has been made to study the socio-economic conditions of the study area. For this purpose, population characteristics, landuse pattern, occupational structure and cropping pattern have also considered.

5.2 DATA AND METHODOLOGY

The revenue circle-wise data for 1981 and 2001 is considered for the study of changing socio-economic status of the hilly area of Kolhapur district (HAKD). There is unavailability of circle-wise data of area under food grain, food crops and cash crops for 1981, so it is difficult to circle-wise analysis of
such aspects. Due to that tahsil level, analysis is considered to examine the socio-economic conditions of the study area.

The socio-economic conditions of the area are studied with considering various aspects and their changes. For these purpose, growth of population, increase in density of population, growth of SC and ST population and change in density of SC population, growth of literacy, change in literacy, growth of female population and change in female population, proportion of total workers to the total population, proportion of primary category workers and non-primary category workers to total workers are examined. The changes in net sown area, gross sown area, intensity of cropping, changes in crop wise area, gross irrigated area are analysed. The difference between the socio-economic conditions of 1981 and 2001 is studied to observe the changes in socio-economic conditions in hilly area of Kolhapur district. The changes both positive and negative in respect of selected socio-economic conditions can be attributed to know the development of the study area (see Appendix I).

An attempt has been made to know the socio-economic changes. Two aspects of socio-economic conditions are considered, they are growth and the change in proportions in study period of 20 years. The growth is viewed as the percentage increase or decrease in the respect of the aspect, in 20 years. The changes in proportion in socio-economic conditions are viewed as the difference between the proportions of the selected aspects for the reference years. Here, the percentage has been considered as the proportion. The study of causes of the changes the hilly area intensity weights. Finally, the areal pattern in the respect of the changes have been identified, discussed and the findings are depicted through the maps.
Table 5.1: Changes in Socio-Economic Aspects

Kolhapur District

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Socio-Economic Aspect</th>
<th>Study Area</th>
<th>Kolhapur District</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Population</td>
<td>986768</td>
<td>1299252</td>
</tr>
<tr>
<td>2</td>
<td>Population Density</td>
<td>183</td>
<td>241</td>
</tr>
<tr>
<td>3</td>
<td>Total SC Population</td>
<td>99747</td>
<td>139118</td>
</tr>
<tr>
<td>4</td>
<td>Total ST Population</td>
<td>11135</td>
<td>5193</td>
</tr>
<tr>
<td>5</td>
<td>Literacy</td>
<td>344196</td>
<td>792229</td>
</tr>
<tr>
<td>6</td>
<td>Female Population</td>
<td>498942</td>
<td>637339</td>
</tr>
<tr>
<td>7</td>
<td>Sex Ratio</td>
<td>978</td>
<td>997</td>
</tr>
<tr>
<td>8</td>
<td>Workers in Primary Sector</td>
<td>345047</td>
<td>510672</td>
</tr>
<tr>
<td></td>
<td>i. Cultivators</td>
<td>291555</td>
<td>392857</td>
</tr>
<tr>
<td></td>
<td>ii. Agricultural Labourers</td>
<td>53492</td>
<td>117815</td>
</tr>
<tr>
<td>9</td>
<td>Workers in Non-Primary Sector</td>
<td>61172</td>
<td>186923</td>
</tr>
<tr>
<td>10</td>
<td>Gross Sown Area (in ha)</td>
<td>253957</td>
<td>341416</td>
</tr>
<tr>
<td>11</td>
<td>Net sown Area (in ha)</td>
<td>328125</td>
<td>352110</td>
</tr>
</tbody>
</table>

**Sources:**
2. Agricultural Department, Kolhapur District, 2010
3. Compiled by Researcher
5.3 SOCIAL SETTINGS

Socio-institutional development is concerned with people and how best to provide them with the material means to help them and realise their full human potential that constitutes good life. Socio-institutional development of any area is best reflected in the quality and improvement of life of its people (Bandooni, 2004)

In the study area, the changes in the respect of percentage have been considered in table 5.1.

5.3.1 POPULATION CHARACTERISTICS

The growth of the population in the considered years show only 24.05 per cent and it is assumed that this growth rate is high. In 1981, the population of the study area was 986768 and it raised upto 1299252 in 2001. The growth of the population in the study area is not uniform, the circle Bajarbhogaon indicated the lowest figure of population growth (-10.48 %) and highest growth rate was recorded in Chandgad circle (48.20 %).

5.3.1.1 The Growth of Population

The growth of population in any area is an index of its economic development, social awaking and many other characteristics (Chandna and Sidhu, 1980). The growth of population in region, whether it is positive or negative, reflects the history of man’s response to the environment possibilities present in the region (Sharma, 1978).

The growth of population is considered as per the percentage increase or decrease of population 1981 over the population 2001. The figure 5.1 (A) present the clear picture of the population growth of the study area.
More than 30 per cent population growth is observed in river basins. 15 to 30 per cent population growth is observed in 18 circles, which are located central part of northern study area and eastern and central part of southern study area. The circles, Radhanagari, Kadgaon, Halkarni and Nesari show 0 to 15 per cent growth rate and only 3 circles, which are Bhedasgaon (-0.40 %), Here (-3.32 %), and Bajarbhogaon (-10.48 %) show negative growth rate of the population. The constraints like physiography play significant role in population growth, in them the area or environment, which creates minimum barriers in human livelihood, that area, shows population growth.

5.3.1.2 The Change in Proportion of Circle-wise Population

The circle-wise population to the total population of the study area for 1981 and 2001 is considered and difference is calculated and it is shown in figure 5.1 (B) of the period of 20 years. Maximum positive change in population i.e. more than 0.50 per cent is observed in 4 circles. They are Chandgad (1.04 %), Kodoli and Kale has (0.81 %) and Karadwadi (0.58 %). In these circles, the change of population is higher because of the development in agricultural sector, which is the availability of irrigation means. Particularly at Chandgad, it is remote centre, which provided various facilities to the source area. Migration dominantly changes the proportion of the population. The northern, south-western and south-eastern circles have shows the higher negative population change (above -0.50 %). The circles like Malkapur indicates highest change i.e. -2.58 per cent, followed by Bambavade (-1.62 %), Sarud (-1.53 %). The slope of land, forest cover, reservation of forest, poor agricultural development (except Sarud Circle) are causes of higher negative change in population. Sarud circle is located near the Wamanagar campus, though the out migration decreased the population. The central-eastern and
south-eastern part of the study area -0.50 to 0 per cent change in proportion of population and it is also low change. The hilly topography and adverse condition mostly affected the population. The change in proportion between 0 and 0.50 per cent is observed in low land area along the drainage basins. This category of proportion includes 11 circles of the study area.

Thus, it can be concluded that the population is increasing with higher rate in the urban centres, river basins. Moderate growth rate also in eastern part but low growth rate is observed at western part. It is found that, in the areas of higher population growth the increase in proportion of circle-wise population is more and the areas of lower population growth the proportion is more and the area of lower population growth the proportion has decreased.

5.3.1.3 Density of Population

The difference between circle-wise density of the population of the year 1981 and 2001 flashes light on each circle. The figure 5.1 (C) presents clear scenario of increase or decrease in density of population. In the period of 20 years, the density of the study area raised from 183 (1981) to 241 (2001) per sq km. 58 persons per sq km increased it. However, the circle-wise distribution, particularly difference in density varies greatly. The figure shows that, there is the significant increase (above 150 persons) in the five circles, which are Kodoli (240 persons), Gadhinglaj (203 persons), Kale (192 persons), Kotoli (163 persons) and Karadwadi (163 persons). It is due to the fertile land and urban centre like Gadhinglaj. The population density difference between 100 to 150 persons has been observed in the eastern part of the study area, where agriculture played an important role and it includes four circles namely Sarvade (130 persons), Panhala (128 persons), Koor (116 persons) and Dundage (110 persons).
The density of population is increased between 50 to 100 persons in mostly observed central portion in northern part but in the southern part, it shows western and eastern zones of the study area. This category of density has 14 circles. Low population density difference is found in western and southern part as well as central part of Ajara and Gadhinglaj talukas.

As per the analysis, it is found that physiographic features like altitude, slope, soil thickness, forest land and availability of water (surface and ground) have directly influenced on the population distribution, which change the population density.

5.3.2 SOCIAL ANALYSIS OF SCHEDULED CASTE AND SCHEDULED TRIBE POPULATION

In India, scheduled caste and scheduled tribe societies are still socio-economically backward. They have very less land or no land owner, less awareness in education, though most of them are working on daily wages. But in them, SC category has got some chance in its status due to government policies. The SC and ST population present the socio-economic conditions of the region. Therefore, attempt has been made to study the growth, change and density of such population.

5.3.2.1 Scheduled Caste Population

a) Growth of Scheduled Caste Population

The circle-wise growth of the SC population over 2001 to 1981 is computed. The figure 5.2 (A) and computed data present the clear view of the distribution of SC population growth in only one zone and that is located in the 2 circles of north-western part of the study area. The study depicted more than 60 per cent SC population growth. The below 20 per cent growth of SC
population is observed in 11 circles of the study area. The distributions of these circles are central part of northern area western part of central area and eastern and south-western part of the southern area. The medium growth between 20 to 60 per cent SC population shows in 21 circles. Northern, central, south-western and eastern circles has shows such type of SC population growth.

It is concluded that, the area that is agriculturally developed and in process of developing, shows medium growth. Except northern part, in other areas, where is the dominance of hilly topography having less growth of SC population.

b) Changes in Proportion of Scheduled Caste Population to total Scheduled Caste Population

In the consideration of 20 years (1981 and 2001) the change in proportion of SC population to the total SC population of the study area is uneven and it shows positive and negative population growth. The figure 5.2 (B) shows the change in proportion pattern of SC population and it becomes clear the distribution. The maximum change in proportion have been observed in 6 circles, in them is Malkapur circle (2.21 %). It is a urban centre and other activities like education and government offices are the causes shows growth. But other circles are rural, they are distributed in north-west, north-east, central and extreme south of Gadhinglaj taluka. The growth range from 0 to 0.50 per cent change in proportion has occupied 11 circles of the study area, which are located in north, central-west, south-central and western part. The agriculturally less developed areas show higher negative change i.e. more than -0.50 per cent particularly at central-west and central part of Gadhinglaj taluka and Panhala taluka.
As per the above observation it is found that the urban centre (Malkapur) show higher growth rate in change. Kodoli, Nesari, Gargoti, Kale and Amba circles shows agricultural development and due to this growth change is higher. Moderate agricultural development areas have shows medium growth change.

c) Population Density of Scheduled Caste

The distribution of the SC population in the study area is deeply correlated with physiography and agricultural activities. It is clearly observed through the figure 5.2 (C) that the circle-wise distribution of SC population density more than 60 persons per sq km, has shown in 5 circles, which are located in the eastern part of Panhala taluka (3 circles) and northern part of Gadhinglaj taluka (2 circles). These circles are agriculturally developed as well as circle like Kodoli is agriculturally and industrially rich. 40 to 60 SC persons per sq km density is also found in eastern margin at north-east, central-east and eastern circles of the Gadhinglaj taluka. 20 to 40 SC persons per sq km have been observed in central part from north to south. Low density of SC population (i.e. below 20 SC persons per sq km) is shown in western hilly ranges where agricultural activities are very poor as well as forest land and reservation of forest land, etc.

The distribution of the SC population in the study area is uneven. Basically the SC population has hold very less land, therefore these population is mostly engaged in agricultural labourers or non-primary sector. Due to this, eastern part is rich in this all, which provides easy jobs. Though, the higher SC population density observed in eastern part of the study area. Hilly western part show low density of SC population.
CIRCLE-WISE GROWTH OF SC POPULATION (1981-2001)

INDEX
GROWTH IN PERCENTAGE
- Below 20
- 20 to 40
- 40 to 60
- Above 60

CIRCLE-WISE CHANGE IN PROPORTION OF SC POPULATION TO TOTAL SC POPULATION (1981-2001)

INDEX
VALUES IN PERCENTAGE
- Below - 0.50
- -0.50 to 0.0
- 0.0 to 0.50
- Above 0.50

CIRCLE-WISE SC POPULATION DENSITY (1981-2001)

INDEX
VALUES IN PERCENTAGE
- Below - 0.50
- -0.50 to 0.0
- 0.0 to 0.60
- Above 0.50

Fig. 5.2
5.3.2.2 Scheduled Tribe Population

a) Growth of Scheduled Tribe Population

The ST population is found very low in the study area. In the considered 20 years, the growth of ST population is very uneven. The positive and negative growth rate of this population is depicted in the study area, which is clear from figure 5.3 (A). It also presents growth and distribution. The hilly area of Kolhapur district reveals that negative growth rate (-114.42 %). The total ST population was 11135 (1981) and it is decreased upto 5193 (2001)

The growth rate range between 40 to 80 per cent. ST population is found in seven circles of Panhala taluka, north-eastern circles of Bhudargad taluka, northern circles of Ajara taluka, and extreme south-eastern margin circles of Chandgad taluka. Sarud, Kaulav, Kasaba Walwe, Radhanagari, Karadwadi and Turkewadi circles have 0 to 40 per cent growth rate. The low range i.e. below 0 per cent is observed in 15 circles of the study area. These circles are decreased these ST population in 2001. The distribution of these circles are at north-east, central part, south-east and south-west.

As per the above analysis, it is concluded that the western forest area shows more growth rate but agricultural developed and developing area have very less growth rate, because these people have very less land or they are not land owner. ST population have best opportunities in the governmental jobs due to this these population may be migrated in the other parts of district or state.
CIRCLE-WISE CHANGE IN PROPORTION OF ST POPULATION (1981-2001)

A. SCHEDULED TRIBE POPULATION

Fig. 5.3

CIRCLE-WISE GROWTH OF SCHEDULED TRIBE POPULATION (1981-2001)
b) Changes in Proportion of Scheduled Tribe Population to total Scheduled Tribe Population

In these, considered 20 years circle-wise proportion of ST population to total ST population of the hilly area of Kolhapur district has been observed (i.e. more than 2 %) at south-western, north-eastern part of Chandgad taluka and central-eastern circles of Panhala taluka. The range of change in proportion between 1.50 to 2 per cent ST population has shown in two circles at north of Bhudargad taluka. 0 to 1.50 per cent change in ST population is observed in northern, central-eastern and extreme south-east parts. The negative change in this population reveals in 13 circles, which are located at north, north-east, central and in southern area at south-east and south-west. In this area, ST population is decreased tremendously due to out migration.

5.3.3 LITERACY

Literacy is an important indicator of social development level and educational attainment, which is considered an important factor in this process of total development. Literacy is an important variable affecting demographic structure, marriage, fertility, mortality, migration as well as the labour force. The study area has 344196 literate people in 1981 and in 2001, there is increase upto 792229 persons, which shown 56.55 per cent literacy growth rate.

5.3.3.1 Literacy Growth

Form 1981 to 2001, literacy growth is varying from circle to circle. The growth in literacy and its distribution shown in figure 5.4 (A), the significant growth in literacy i.e. more than 70 per cent is observed in Kale circle (77.93 %) and Amba circle (73.45 %). The range of literacy growth (60 to 70 %) is found in nine circles of the study area. These are distributed in patches form the western hilly area, south-eastern and eastern circles of
Fig. 5.4

CIRCLE-WISE CHANGE IN PROPORTION OF LITERATE POPULATION (1981-2001)

INDEX
VALUES IN PERCENTAGE
CIRCLE-WISE  CHANGE IN PROPORTION 
OF LITERATE POPULATION

Below -0.50
-0.50 to 0.0
0.0 to 0.50
Above 0.50

CIRCLE-WISE GROWTH IN LITERACY (1981-2001)

INDEX
VALUES IN PERCENTAGE
CIRCLE-WISE GROWTH IN LITERACY

Below -0.50
-0.50 to 0.0
0.0 to 0.50
Above 0.50
Gadhinglaj taluka. The figure 5.4 (A) and computed data reveals that the literacy growth is remarkably seen in the hilly area compare to the agricultural developed area. 50 to 60 per cent literacy growth has observed in north-eastern, central –eastern and south central and eastern portion. The low or less than 50 per cent literacy growth rate is shown in circles of the study area, which are Kodoli and Bajarbhogaon (Panhala taluka), Sarvade (Radhanagari taluka), Kadegaon (Bhudargad taluka), Uttur (Ajara taluka) and Gadhinglaj, Dundage and Mahagaon (Gadhinglaj taluka).

5.3.3.2 Change in Proportion of Literacy to Total Literate Population

The change in proportion of the literate population has been observed in the considered 20 years. The figure 5.4 (B) gives detail idea about change in proportion of literacy to the total literate population of the study area. More than 0.50 per cent change is observed in 5 circles. Out of them Kale circle recorded highest change i.e. 2.20 per cent. The other 4 circles are located in western part of Shahuwadi taluka and eastern part of Gadhinglaj and Chandgad taluka. The highest negative change in proportion of literacy is observed in 4 circles of the study area and those are Gadhinglaj (-1.88 %), Mahagaon (-1.50 %), Sarvade (-0.62 %) and Uttur (-0.52 %). The positive-change in proportion between 0 to 0.50 per cent found in western and central part of the study area. The negative change i.e. -0.50 to 0 per cent is observed in northern, south-western and south-central and eastern part of the study area.

5.3.4 FEMALE POPULATION

Female population is key factor of social and economic status of region. Sex ratio is depicting due to the increase or decrease in numbers of female population in respect of male population, which reflects in death and birth rate, fertility and mortality and working population. Here, considering these aspects,
an attempt has been made to study the sex ratio, growth rate of female population and change in their proportion. For this purpose, the years 1981 and 2001 are considered.

5.3.4.1 Sex Ratio

The sex ratio of the study area was 978 females per 1000 males in 1981 and 997 females in 2001. In this two decades the sex ratio of the study area is higher than the Kolhapur district, which was 967 (1981) and 949 (2001) females per 1000 males. The circle-wise analysis of the sex ratio of the study area depicted in figure 5.5 (A). As per this, the significant range of sex ratio i.e. more than 1000 females per 1000 males is observed in vast two areas of the study area and it includes 15 circles. First is in north-western part and second is at southern part. The highest sex ratio is depicted in Ajara circle (1191 females per 1000 males). The range of sex ratio i.e. 975 to 1000 females are observed in 4 circles, these are located at north, central-eastern, middle south-central and south centre. The sex ratio between 950 to 975 females is observed in middle western and south-eastern and in southern part extreme north-east and south-east. The low sex ratio is observed in 9 circles and these circles represents Panhala (5 circles) and Radhanagari tahsils (4 circles). In them Panhala circle shown lowest sex ratio (900 females per 1000 males).

5.3.4.2 Growth of Female Population

The growth rate of female population is computed with using 1981 and 2001 data and these figures show variation in growth rates of the circles. In 1981 there was 498942 females and 2001 it rose upto 637339, which shows 21.71 per cent growth of the study area. While the Kolhapur district shows 28.17 per cent growth in same aspect. The growth rate of the study area is less
than the Kolhapur district. The figure 5.5 (B) present clear view of female growth rate and its distribution.

The significant growth rate i.e. more than 30 per cent is observed in 5 circles and these are located at extreme north-east, middle south-central, south-west and extreme south-east. The highest growth of female population is shown in Karadwadi circle (40.79 %). The growth rate category between 20 to 30 per cent is found in 17 circles out of the total circles of study area at northern, central, south-central and north-eastern part. The low growth rate, less than 20 per cent observed in extreme margin of south-western part.

5.3.4.3 Change in Proportion of Female Population to Total Female Population

The change in proportion of female population to total female population of the study area is computed by using female population data of 1981 and 2001 decades. The figure 5.5 (C) gives the clear idea about change in proportion of females numbers. The positive and negative change is observed in the study area. The positive highest change in proportion i.e. more than 0.50 per cent is revealed in three circles, these are Kodoli (0.81 %), Ajara (0.63 %) and Karadwadi (0.61 %). The range of change between 0 to 0.50 per cent is observed in 15 circles at northern part particularly of west and south, middle north and extreme south-eastern and in southern part. The negative change in proportion of female population between -0.50 to 0 per cent is observed at extreme south-west, south-east, central-west and north central area, which covered 13 circles of the study area. The low change of female population has observed at west of Bhudargad tahsil, south-east of Radhanagari tahsil and north of Shahuwadi tahsil. The lowest negative change is observed in both Kale and Tarle Kasaba circles, which present -0.02 per cent change in proportion.
CIRCLE-WISE CHANGE IN FEMALE POPULATION TO TOTAL POPULATION (1981-2001)

INDEX VALUES IN PERCENTAGE
Below -0.50
-0.50 to 0.0
0.0 to 0.50
Above 0.60

CIRCLE-WISE GROWTH OF FEMALE POPULATION 1981-2001

INDEX VALUES IN PERCENTAGE
Below 10%
10 to 20%
20 to 30%
Above 30%

CIRCLE-WISE SEX RATIO 2001

INDEX VALUES FOR 1000 MALES
Below 850
850 to 975
975 to 1000
Above 1000

Fig. 5.5
152
5.4 ECONOMIC SETTING

Economic condition of the region presents the nature of prosperity in relation to development. For the present work, attempt has been made to know working population (primary and non-primary). The aspects are studied with their growth and change in proportion. It gives detail account of areal distribution and developmental status.

5.4.1 TOTAL WORKERS

5.4.1.1 Growth of Total Workers

The growth of total workers is considered for the study. The study area had 406219 workers in 1981. They were increased by 697595 in 2001. The net increase in total workers is 41.77 per cent. The figure 5.6 (A) shows the circle-wise change of total workers in percentage. It is clear from the figure that the significant increase, which is more than 50 per cent of total workers, is observed in the northern part, particularly along the Warana, Kasari, Dhamani and Vedaganga basins of foothill areas. The maximum growth in total workers is observed in Kale circle (61.49%). The increase of percentage in the category of 40 to 50 per cent is observed in 13 circles of the study area. These circles are at north, middle and northern part. The growth of total workers is slightly low (i.e. 30 to 40%) in southern area and it includes seven circles but middle and northern part combinely have 4 circles. These all circles are observed in hilly or foot hilly areas, with river basins. Very low growth i.e. less than 30 per cent in total workers is found in Uttur Circle (9.17%) due to its adverse condition and remoteness from major centres.

As per the above analysis and the distribution of workers, it is found that the highest increase in the number of total workers is in the areas where means of irrigation are developed and along with agro-based industrial area (sugarcane and jagary). Southern talukas with plantation agricultural...
Fig. 5.6

CIRCLE-WISE CHANGE IN PROPORTION OF TOTAL WORKERS TO TOTAL POPULATION (1981-2001)

INDEX VALUES IN PERCENTAGE CIRCLE-WISE INCREASE IN TOTAL WORKERS (1981-2001)

A

B

INDEX
CHANGE IN PERCENTAGE

Below 0
0 to 0.25
0.25 to 0.50
Above 0.50

INDEX
VALUES IN PERCENTAGE

Below 30
30 to 60
60 to 90
Above 90

N

154
dominance show less number of total workers as well as very less industrial development.

5.4.1.2 Change in Proportion of Total Workers

The change in the proportion of total workers (circle-wise) during the 20 years has been studied. It is shown in figure 5.6 (B) and it is clear that the significant increase is above 0.50 per cent in north-eastern part, south-eastern and one circle at central-east of the study area. The total workers to the total population increase in the range of 0.25 to 0.50 per cent is observed in central-west, western part and in northern part such category is located at central-western portion besides this south-eastern portion also present this categories total workers. The category like 0 to 0.25 per cent also found in northern, central and extreme south-east margin of the hilly area of Kolhapur district. The significant categories showing below 0 per cent or negative increase in total workers to the total population are observed in the circles Bajarbhogaon (-0.10 %), Saravade (-0.17 %) and Uttur (-0.28 %). Such negative change is found due to backwardness in all sectors. Therefore, the dominance of out migration is the root case of negative increase in total workers to the total population.

It is concluded that agricultural developed area with irrigation facilities has shows increase in proportion of total workers as compare to the other parts of the study area. The circles which are backward in agriculture and its alide activities have shown less growth (positive or negative).

5.4.2 GROWTH OF WORKERS IN PRIMARY SECTOR

5.4.2.1 Growth of Workers in Primary Sector

The study area reveals that during 1981 to 2001, the total number of workers in the primary sector is increased upto 32.43 per cent. The figure
INDEX PERCENTAGE INVOLVED IN CHANGE
CIRCLE-WISE CHANGES IN PROPORTION OF WORKERS IN PRIMARY SECTOR (1981-2001)

INDEX VALUES IN PERCENTAGE
CIRCLE-WISE GROWTH IN WORKERS OF PRIMARY SECTOR (1981-2001)

Fig. 5.7
5.7 (A) shows the circle-wise distribution of growth rate. More than 40 per cent is relatively high in plane area. The high growth rate in the study area reflects in north-eastern, central-western and south-eastern portion. 48.84 per cent growth is found in Kodoli circle followed by Sarud circle (48.52 %). The growth in agricultural sector is a major cause for higher growth rate of primary workers. The medium growth (i.e. 20 to 40 %) is observed in northern, central and southern part of the study area. Below 20 per cent growth rate is located at south-west in Panhala taluka, eastern circle of Radhanagari taluka, central-north circle of Chandgad taluka.

It is concluded that plane topography with agricultural prosperous area has high growth rate of primary workers. Sugarcane cultivation is a basic cause of this growth rate. Undulating topography, growth in literacy and less area under agriculture as well as poor irrigation facilities, etc. are causes significantly controlling the growth of workers in primary sector.

5.4.2.2 Change in Proportion of Workers in Primary Sector

The circle-wise percentage of workers in primary sector to total workers during the years 1981 and 2001 are computed and the difference in the proportions has been calculated. The figure 5.3 shows the distribution of changes in proportion of primary workers. The significant change, which is more than 0 per cent (positive), is shown in two circles and these are Saravade (3.83 %) and Utter (2.33 %). Remaining all circles of the study area indicates negative change and it is a good sign of areal development. The range between -10 to -20 per cent (medium) change in proportion is located in northern, central and southern part of the study area. But very less change, which is more than -20 per cent is observed in 3 circles. These are located in the northern part, Malkapur (-24.36 %), Kale (-23.22 %) and Kotoli (-20.07 %).
It is found that agriculturally developed circles have decreased their number of primary workers but the circles which have dominance of hilly topography show slight change in their proportion of primary workers. The agriculturally less developed circles show an increase in change of proportion.

5.4.3 GROWTH OF WORKERS IN NON-PRIMARY SECTOR

5.4.3.1 Growth of Workers in Non-Primary Sector

The growth of workers in the non-primary sector is computed by using 1981 and 2001 data. In 1981, there were 61172 workers while it increased up to 186923 in 2001. As per these figures, the net increase is 67.27 per cent, which reveals the some level development in the study area. It is depicted through the figure 5.8 (A). It is clear that the increase in the non-primary workers is more than 80 per cent in four circles: Sarud (87.36 %), Kale (87.09 %), Maligare (83.47 %) and Salwan (82.53 %). The low growth in the non-primary sector is observed in the north extreme part, central-west and east, central part and extreme south-west of the study area. The less growth rate in these circles is due to the traditional way of occupation, economic and educational backwardness. The medium increase range (i.e. 60 to 80 %) is observed in the northern part, central, western and southern as well as the south-eastern part, which covers 20 circles of the study area.

5.4.3.2 Change in Proportion of Workers in Non-Primary Sector

The difference between 1981 and 2001 non-primary workers is computed and it is shown in figure 5.8 (B). The computed data and figure present a clear picture of the 20 years. In the study area, 31 circles reveal positive change and only three circles have negative change in proportion of non-primary workers. The significant increase level (i.e. above 16 %) is
observed in northern portion (Malkapur, Sarud and Bambavade) and in southern part (Maligare). Among them, highest change is recorded 24.36 per cent (Malkapur). The increase in change between 8 to 16 per cent at north-east, north-central, middle-western and southern portion. 0 to 8 per cent increase is observed at eastern, central-eastern and south-eastern margin. Such all categories include 10 circles of the study area. Very low or negative increase in change is also observed in three circles these are Sarvade (-3.84 %), Gagan Bavada (-3.83 %) and Uttur (-2.33 %).

The increase in proportion of non-primary workers is due to the developing nature of education, the primary sector, it self has the limits to include in more workers in their present position, sugar industries and jagary mills, etc.

5.4.4 AGRICULTURAL LABOURERS

There is important co-relation between the number of agricultural labourers and the development of agriculture. The agricultural labourer were 53492 in 1981 and 117815 in 2001 and shows 54.60 per cent growth. So, here an attempt has been made to study the growth, change in proportion and density of agricultural labourers per 1000 hector of GSA.

5.4.4.1 Growth of Agricultural Labourers

The statistical analysis of 20 years reveals that substantial growth is observed in Shahuwadi taluka (3 circles), Panhala (1 circle) and Bhudargad taluka (2 circles). Among them Gargoti circle has 79.15 per cent highest growth rate. Negative growth rate is observed in one circle and that is Bajarbhogaon (-37.98 %). The low growth rate is shown at western part and extreme south-eastern part and the rest portion of the study area reveals medium growth rate. It is shown in figure 5.9 (A).
5.4.4.2 Changes in Proportion of Agricultural Labourers

Changes in proportion of agricultural labourers to the total agricultural labourers of the study area is an significant indicator to know the agricultural development as well as socio-economic condition. In the considered 20 years change in proportion of agricultural labourers is shown in figure 5.9 (B). The change in proportion more than 10 per cent is observed in only 03 circles at north-west and middle-western part. The highest magnitude of change is shown in Amba circle (12.08 %). The change in proportion of agricultural labourers in the range of 5 to 10 per cent increase is found in south-west, south-middle east and northern central east. The hilly area of Kolhapur district, have 15 circles, which present the change between 0 to 5 per cent increase along the north-west and east, central part and in southern area at south-east and northern-south west and central part. The change of proportion less than 0 or negative is found in the southern area at east. The highest negative change is observed in Bajarbhogaon circle (-7.82 %).

5.4.4.3 Gross Sown Area and Agricultural Labourers

The number of agricultural labourers for per 1000 hectors of GSA at each circle is considered for the present study. It gives the better idea about the development of agriculture during the period of 20 years. The difference between (1981 and 2001) agricultural labourers for per 1000 hectors of GSA has been calculated and it is depicted in figure 5.9 (C) and its statistics. The significant magnitude of agricultural labourers is at eastern part of central and northern portion of the study area. This category (above 400 agricultural labourers for per 1000 hector of GSA) includes seven circles. 759 density proportion is observed in Kale circle, followed that Sarud (584), Karadwadi (509) and Kotoli (508) etc. Below 0 proportion of density is observed in Bhudargad and Gadhinglaj talukas. The southern and central western portions
have shown the increase of proportion of agricultural labourers density between 0 to 200. The range of density between 200 and 400 is observed in northern and central eastern area of the study region.

It is found that agriculturally developed areas have more agricultural labourers, but the areas, which are under hilly topography and recent development in agriculture show moderate development in agricultural labourers. The tahsil like Gadhinglaj reveals vast land become under agriculture is the major cause of negative increase in density.

5.4.5 GROSS SOWN AREA

Agriculture is the main stay of the population of the study area. The land under GSA in 1981 was 253957 hectors and in 2001 it increased upto 341416 haectors. Here, the growth rate of GSA in the study area shows 25.62 per cent. The remarkable GSA is increased in Gadhinglaj taluka as well as western part of the study area.

5.4.5.1 Growth in Gross Sown Area

For the study of growth in GSA, 20 years period has been considered. The statistical analysis and figure 5.10 (A) depict the clear picture of distribution in growth of GSA. The positive growth rate in GSA is observed in all circles (5) of Gadhinglaj taluka. These all circles show growth rate above 60 per cent. The range of growth between 30 to 60 per cent is observed in 5 circles. These are located in western part of study area. The Warana, Kadvi, Hiranyakeshi, Tamraparni and Tilari riverside areas show 0 to 30 per cent growth. The negative growth in GSA i.e. less than 0 per cent is observed in north-central, middle eastern part of the study area.
It is observed that the Western Ghat and its finger ranges area show the growth in GSA but foot hilly and low land area show the moderate or less growth in GSA. In the western part plantation agriculture as well as development in irrigation made its impact to rise the GSA.

5.4.5.2 Change in Proportion of Gross Sown Area to Total Gross Sown Area

The 20 years (i.e. 1981 to 2001) the change in proportion of circle-wise GSA to total GSA is significantly increased in 7 circles (Fig. 5.10 (B)). These are at south-west and east in Chandgad taluka and all circles of Gadhinglaj taluka. The maximum change has been observed in Halkarni circle (4.55 %). The western and south-eastern is under the change of 0 to 1 per cent GSA. The northern and central eastern portion has also show the medium negative change in proportion (i.e. -1 to 0 %). The high negative change is observed in already agricultural developed circles, which are 7 circles at central-east, south-central and central-east of northern part of the study area.

5.4.6 NET SOWN AREA

The dominance of monsoonal climate is an important factor in the study area but the irrigation facilities also predominantly transfer the nature of agricultural land utilisation. In the year 1981, there was 328125 hectors and 352110 hectors NSA in the study region. It shows net increase or growth is 1.10 per cent. Here, the circle-wise growth of NSA, and its share of total increase or decrease are shown through the maps.

5.4.6.1 Growth in Net Sown Area

Net sown area of any region plays significant role in its socio-economic condition. Therefore, attempt has been made to study the NSA and its growth. The growth of NSA more than 50 per cent is observed in five circles and these
are located in the southern part of the study area (Gadhinglaj and northern part of Chandgad taluka). The Nesari circle shows highest growth (89.31 %), followed by Mahagaon (82.13 %), Chandgad (81.72 %), Dundage (74.17 %) and Halkarni (69.55 %). Between 25 to 50 per cent increase in NSA is shown in only three circles, which are located in central-west and south-west extreme margin. The third category of NSA growth i.e. 0 to 25 per cent is observed in 15 circles and these are distributed in northern and central part of the study area. Low growth rate is below 0 per cent is observed in central eastern circles and Radhanagari at west.

As per the analysis, it is concluded that central eastern circles are agriculturally developed and show negative growth in NSA. Higher growth rate of NSA is shown where agricultural development recent take place in those circles as well as plantation agriculture.

5.4.6.2 Change in Proportion of Net Sown Area to Total Gross Sown Area

The change in proportion of NSA to the total GSA of the study area (circle-wise) has been calculated from 1981 to 2001, which represent the agricultural development. The significant change in proportion in circles of Gadhinglaj taluka, which is above 1 per cent in the category of more than 1 per cent, is observed. The circle-wise observations shows 4.08 per cent change in proportion depict in Halkarni circle due to the population and irrigation development. Similarly, 0 to 1 per cent change is observed in central western and southern part of the study area, it includes four circles (Gagan Bavada, Radhanagari, Chandgad and Turkewadi) and is located in Sahyadrian ranges. 18 circles of the study area come under the category of -1 to 0 per cent (negative) change in proportion of NSA. It covers the northern, south-western, central part of the study area. The constraint of physiography, irrigation
projects and reservation of forest, etc. are the major causes, which decrease the
NSA particularly in these circles. The negative change (more than -1 %) has
been observed in 7 circles and number of circles are located in the eastern part.
These circles are already agriculturally developed, population is more, landuse
pattern has also changed due to this negative change is observed.

5.4.7 AGRICULTURAL LANDUSE SYSTEM

Agricultural landuse includes mainly areas under seasonal crops, and
fruit crops. Agriculture is one of the primary use of land and main resource
base of the study area. It is not only a means of livelihood but it is a way of life.
Therefore, due to its potentiality, there is a growing recognition of the crucial
role which agriculture can play in the development of the hilly area of
Kolhapur district.

Cropping pattern or the agricultural year can be broadly divided into two
seasons viz. Kharip and Rabbi. The major crops of the kharip season are rise,
jowar, nangali, maize, groundnut, soyabean, tur, mug, udithe and major cash
crops like sugarcane etc. while rabi jowar, wheat, maize, gram and sunflower,
etc. are the rabi crops (season). In the present work kharip and rabi crops are
combinally considered from 1981 to 2010 (30 years) for knowing the growth
and change in proportion (tahsil-wise) in percentage (see Appendix – V).

5.4.7.1 Cereals

a) Growth in Cereals

In the considered years, 1981 to 2010, the land under cereals was
132592 hectors (1981) and it was decreased upto 118609 hectors (2010). It
shown negative growth rate, which is -11.79 per cent. The tahsil-wise growth
rate shows both positive and negative. The positive growth rate is observed in
three talukas of the study area. The highest positive increase is observed in Radhanagari taluka (8.35 %) followed by Panhala (7.00 %) and Bhudargad taluka (1.14 %).

The highest negative growth is seen in Gadhinglaj (-47.09 %), Chandgad (-29.23 %), Ajara (-19.80 %) respectively, and low same growth rate is observed in Shahuwadi taluka (-14.69 %).

**b) Changes in Proportion of Cereals Land to Total Gross Sown Area**

The change in proportion of land under cereals to total GSA in the study area shows variation as per the talukas, but all talukas have negative change in proportion 1981 over the year 2010. The maximum change occurs in Chandgad taluka and it is also -4.71 per cent. On the other hand lowest negative change is observed in Radhanagari taluka (-1.05 %). The other talukas Gadhinglaj (-4.54 %), Ajara (-3.30 %), Shahuwadi (-2.38 %), Bhudargad (-1.87 %) and Panhala (-1.42 %) have change in there land under cereals of the study area.

As per the above discussion, it is found that in the southern portion is decreased their cereals land but middle and northern portion shows medium or less change in cereals land. All the talukas of the study area reveal negative change due to the available irrigation facilities in the considered years. The crops like cereals are replaced by the oilseeds and sugarcane.

**5.4.7.2 Pulses**

**a) Growth of Pulses Area**

Total cropped area under pulses category has shown significant growth in these 30 years span. There was 9084 hectares land in 1981 and it raised upto 11999 hectares in 2010. These figures indicate 24.29 per cent growth in the
study area. The tahsil-wise growth rate is different; however, it is positive in five tahsils and two tahsil show negative growth rate. The highest positive growth is observed in Bhudargad tahsil (73.12 %) and therefore, Shahuwadi (51.0 %), Panhala (49.37 %), Gadhinglaj (30.04 %) and Ajara (18.10 %) show less positive growth rate of pulses. The negative growth is observed higher in Chandgad (-73.28 %) and -19.03 per cent in Radhanagari taluka.

b) Change in Proportion of Pulses land to Total Gross Sown Area

The change in proportion of pulses land between 1981 to 2010 shows significant change (positive) in Panhala taluka, which is about 0.54 per cent. The positive change in proportion is found in Bhudargad (0.38 %), Shahuwadi (0.24 %) and Gadhinglaj (0.22 %). But negative change in proportion is observed in 3 tahsils, these are Chandgad (-0.17 %), Radhanagari (-0.13 %) and Ajara (-0.01 %).

5.4.7.3 Oilseeds

a) Growth of Oilseeds Land

Oilseeds are an important category of crops in the study area. The vast area of the hilly area of Kolhapur district is under oilseeds. In the considered year (1981) area under oilseeds was 20726 hectors and in the year 2010 it was tremendously rose upto 47994 hectors and it shows 56.82 per cent growth in oilseeds area. The groundnut, sunflower and soyabean are the major oil crops grown in the study region. The tahsil-wise growth rate shows positive trend, as Chandgad (70.40 %), Gadhinglaj (64.34 %), Radhanagari (51.39 %), Panhala (50.09 %), Shahuwadi (46.53 %), Ajara (45.83 %) and lowest growth rate is observed in Bhudargad tahsil, which shows only 42.53 per cent.
b) *Change in Proportion of Oilseeds Land to Total Gross Sown Area*

In these 30 years, all taluka of the study area reveal positive change in proportion. The significant change is observed in the southern part of the study area. The Gadhinglaj taluka has individually 5.08 per cent change, followed that Chandgad shows 1.06 per cent proportion in change. The other talukas growth rate is 0.86 per cent (Panhala), 0.79 per cent (Ajara), 0.58 per cent (Radhanagari) and 0.39 per cent (Shahuwadi).

5.4.7.4 Sugarcane

a) *Growth in Sugarcane Area*

Sugarcane is the chief cash crop grown in the study area. 60.46 per cent growth rate is found and it is highest in all agricultural landuse. The area under sugarcane was recorded 22367 hectors in 1981 and it is rose upto 56570 hector in 2010. The tahsil-wise growth rate of sugarcane area presents maximum growth rate in Shahuwadi (86.04 %), Chandgad (71.33 %), Ajara (69.51 %), Gadhinglaj (60.01 %), Bhudargad (56.22 %). The comparatively low growth rate is observed in Panhala (17.37 %) and Radhanagari (26.28 %).

b) *Change in Proportion of Sugarcane Area to Total Gross Sown Area*

The change in proportion of considered 30 years (1981 and 2010) reflects positive change in 6 tahsils and negative change in only one tahsil. The significant positive changes have been observed 3.93 per cent (Shahuwadi), 2.73 per cent (Chandgad), 2.30 per cent (Gadhinglaj), 1.03 per cent (Ajara), 0.89 per cent (Bhudargad) and lowest positive change is seen in Radhanagari, which is only 0.23 per cent. The negative change in proportion in the respect of sugarcane area is -0.08 per cent observed in the Panhala taluka of the study area.
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