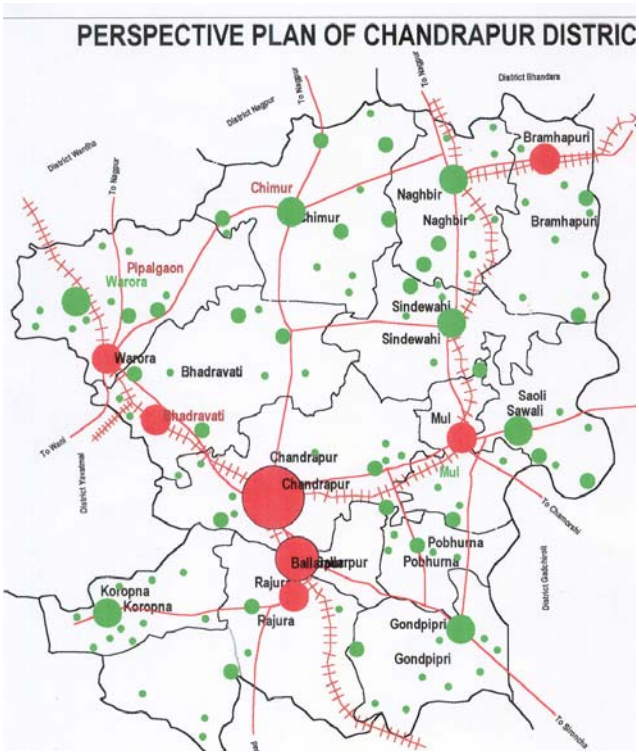
Perspective Plan of Chandrapur District, Maharashtra

(November 2005)



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Chandrapur District
Maharashtra

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PREFACE

The 73rd and 74th Constitutional Amendment Acts have ushered in a new era of decentralised and democratic process of planning and development in India where district is a key unit in the multi-level planning system. The Acts have bestowed the planning functions at the grass root level by assigning them the authority to prepare plans for panchayats and municipalities.

Town and Country Planning Organisation at the level of Central Government provide technical assistance to the state governments and union territories in the context of urban and regional planning and development. This organisation has prepared a number of regional plans and development plans for towns, on the behalf of various state government. The preparation of a perspective plan for Chandrapur district was taken up in consultation with the Government of Maharashtra. Chandrapur district is located in the south eastern part of Maharashtra. Chandrapur city is one of the important regional cities in Vidharbha region after Nagpur owing to its administrative, industrial, commercial services and institutional functions at regional level. The district, although located in a forest area, possess high potential for development in the sectors of agriculture and allied activities, transport, tourism and other services, higher education, specialised health services and industries based on resource, skill as well as modern knowledge based industries.

The present exercise is an attempt to prepare a perspective plan for Chandrapur district, which is based on the detailed studies of resources and various sectors of economy and development activities. The perspective plan provides broad directions of development in the various sectors and a spatial framework of the urban and rural settlements in the district indicating the future functional hierarchy of the settlements in the district. The District Planning Committee may consider using this plan as a long-term plan required to be prepared by the Committee.

The perspective plan provides a viable framework of development and at the same time it is flexible enough to accommodate the varying priorities at the sub-regional level. The idea is to use the perspective plan as a prototype spatial development plan, which can be followed, in other districts with necessary modifications to suit the local conditions. Detailed plans viz., Development Plans and Annual Plans will flow from the perspective plan and will conform to the local conditions and needs.

The Government of Maharashtra and particularly the Department of Planning, Govt. of Maharashtra, entrusted us with this work and helped us in the preparation of the plan. I wish to express our grateful appreciation for their help and co-operation. Shri J.P. Gupta, District Collector & Magistrate and his team of officers and staff greatly helped the planning team in the collection of data and materials for the plan from various sources and also furnished a wealth of data and materials for the plan. We are very much thankful to Shri J.P. Gupta and the officers and staff particularly Shri T.H Patel, District Planning Officer of the District Planning Office at Chandrapur.

The work of preparation of the plan was carried out by Regional Planning and Environment Division headed by Shri K.K.Joadder, Town and Country Planner. I take

the opportunity to record my appreciation of hard work put in by the planning team in the formulation of the plan in bringing out the plan document. All the members of the team enthusiastically worked in the project and made valuable contributions in various ways.

Smt Abha Agarwal, Assistant Town & Country Planner, contributed in the final editing of the report and also writing chapters on settlement structure and basic facilities. Her contribution is also appreciated.

I record my thanks and appreciation to all and every one involved in the preparation of the Report.

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Chapter 1
Introduction

1.1 Background

The process of planning at grass root level has been strengthened by enactment of the twin Constitution Amendment Acts 73rd and 74th, which enjoin upon local level institutions like District Planning Committees and panchayats to draw and formulate district level and sub-district level development plans. The process for decentralised planning and development has recognised district as a viable unit for development planning and an important unit in the multi level planning system. The Act has bestowed the planning function to local bodies at the grass root level by assigning them the authority to prepare plans for panchayats and municipalities. The spatial and environmental planning has also been envisaged by this Act in the planning system at various levels right from panchayat to metropolitan level.

The 74th Constitution Amendment Act, 1992 provides for constitution of District Planning Committee (DPC) with wide ranging powers and functions to plan and develop the district. The plans prepared by panchayats and municipalities can be integrated with district plans and thus prepare a comprehensive plan for the whole district inclusive of urban and rural areas. The scope of DPC has been further enlarged to include spatial planning, sharing of water and other natural resources, environmental conservation and integrated development of infrastructure. The Act also provides for a new dimension to the planning and development process by ensuring devolution of power to the people to prepare plan for themselves and participate in the decision making process.

As a consequence of 74th Constitutional Amendment Act, some States like Karnataka, Tripura, Sikkim, Rajasthan, Haryana etc. have made provisions in their modified Panchayat Act to establish District Planning Committee (DPC). Other States like Gujarat, Orissa, Madhya Pradesh, Maharashtra etc. have enacted separate enabling legislation for the constitution of DPC, instead of incorporating such provisions in the Panchayat Acts. In fact Maharashtra is one of the pioneer states, which has already enacted enabling legislation titled "Maharashtra District Planning Committee (Constitution & Functions) Act, 1998" under the administrative control of Department of Planning. The Act clearly brings out the composition, powers and functions of the District Planning Committee as an effective tool for micro-level planning throughout the state. Similarly, Maharashtra Metropolitan Planning Committee (Constitution and Function) Act, 1998 is under the administrative control of the Department of Urban Development.

With this background in view, it was thought appropriate to prepare a district level perspective plan so that various District Planning Committees may benefit from this exercise. The planning and development problems of each district may vary according to its location, topography, climatic conditions and pattern of development, hence it cannot be said that a plan prepared for district X will be replicable in district Y, nevertheless it is hoped that the District Planning Committees will be able to draw a district level perspective plan on the lines of this plan, incorporating, of course the necessary local variants and constraints of development. The present plan for Chandrapur district of Maharashtra state is second in the series of TCPO's endeavour to prepare proto-type perspective plan for selected districts.

1.2 Objectives

The main objectives of the model perspective plan for Chandrapur district are:

1. To prepare a long term perspective plan for the District Planning Committee (DPC), who is supposed to prepare a draft long-term development plan for the district as a whole after consolidating the plans prepared by the panchayats and municipalities.
2. The proposed plan would focus on all round development of the district, taking into consideration the constraints of economic and physical development.
3. To build the capacities of District Planning Committee and local bodies like panchayats.

1.3 Nature and Scope of the Plan

The scope of the district perspective plan is confined to draw a long-term development plan by integrating the various sectors of development with the sectoral plans as well as regional and state development plans. The plan would integrate all the settlements in the district both rural and urban in an appropriate hierarchical pattern and plan for their all round development on long term basis by proposing for up-gradation of various infrastructural facilities. The district plan will take into account regional socio-economic and cultural practices while proposing for new schemes of development.

There is also a need to plan at the sub-regional level as a district is often found to be fairly large in area. With the decentralization of administrative functions at the panchayat level and in the light of 73rd Constitutional Amendment, Panchayat Samities and Tehsils (Talukas) are suitable as basic planning units as most of the data required for planning is available at these levels.

The plan will cover an assessment of existing resources in terms of availability of land, mineral and water and identify gaps in relation to the population served. The plan will also study various sectors of economy such as agriculture, industry, mining, trade and commerce, tourism, traffic and transportation forest cover from ecological and environmental upgradation point of view. The development potentials and constraints for development in the district will be identified both for rural and urban areas.

The perspective plan can serve as a policy document, which would help in identifying policies and programmes for socio-economic development and setting a trend of spatial development for different sectors.

1.3 Methodology

A three-stage strategy has been adopted for preparing this Plan. The first part can be considered as a status report on availability and distribution of economic and physical resources particularly in the agriculture and Industrial sectors in relation to demographic profile of the district. An existing inventory of resources such as land, forest cover, minerals, agriculture, water resources, industries etc. will be prepared. Availability of socio-economic infrastructure e.g. educational & health facilities, traffic and transportation, marketing, and communication facilities is also examined.

In the next part the development potentials and constraints are analysed and assessed. Projections of population both urban and rural have been attempted. Development programmes pertaining to the various sectors of activities are co-related and necessary fine-tuning is attempted. After assessing the various development potentials and constraints vis-a-vis the projection of population and activities during the plan period a development strategy for spatial planning is formulated for the district.

In the third and final segment, the proposed settlement system for the district is being formulated both for the urban and rural settlements. Development programmes and schemes, on the basis of the studies and projections undertaken are formulated Development programmes are integrated at the settlement level by filling up the gaps in the settlement system and also by integrating the schemes of the urban and rural settlements.

1.5 Earlier regional plan

The Government of Maharashtra established Chandrapur Region and its boundaries notified under urban Development and Public Health Department Resolution dated 10th May, 1979 as a resource region called the "Chandrapur-Ballarpur Region". The boundaries of the region are of the old Chandrapur district. The region, therefore, now comprises both the new Chandrapur and Gadchiroli districts, following the bifurcation of the old Chandrapur district in August, 1982.The Regional Planning Board for this Region was constituted on 31st March 1981 under UD & PHD Notification. As required under the Maharashtra Regional and Town Planning Act, 1966, the Board is a multi disciplinary body which comprises of persons from different fields. However, to avail the knowledge of different disciplines in plan preparation as many as eighteen experts have been associated with the Board. The Board published the draft Regional Plan within two years from its constitution. After considering the objections raised to the draft, final shape to the regional plan was given in the meeting of the Board held on 9th February, 1984.

For the preparation of the Regional Plan a number of study groups were formed for arriving at the proposals of Regional Plans. All the background papers on technical aspects were put up before the Board for their consideration and approval. This could be possible because a number of studies have been done on all the important aspects such as minerals, forests, industries, agriculture etc.

However, sub-committee on Perspective Cropping Pattern was constituted under the chairmanship of Superintending Engineer, Irrigation Project circle, Chandrapur to go into the greater details of the cropping pattern. The sub-committee, the perspective cropping pattern of the region which was approved by the Board on 10.12.1982 at its meeting. The Regional Planning Board also carried out a number of surveys and studies through their and other department staff. The principle surveys and studies carried out are as follows:

1. Survey of existing landuse map of the region.
2. Survey of industries.
3. Traffic-transport survey at outer corden points on important regional roads in the region.
4. Population studies.
5. Study of mineral and power resources of the region.
6. Study of accessibility of villages.
7. Study of climatology.
8. Study of survey of regional income.
9. Survey of tourist and picnic spots in the region.

The synthesis of findings and conclusions of all available literature stated above, alongwith the surveys and studies made by the staff and policy decisions taken by the Government and the Board from time to time formed the background of the draft Regional Plan. The Board also obtained advice and assistance of a number of other experts and officials and utilised their experience and knowledge in their respective fields.

The Board identified following objectives for the integrated, balanced and planned development of the Region:-

1. To study and examine the degree of backwardness of the region with the help of various indicators such as Agriculture, Industry etc. and also identify the reasons for backwardness.
2. Identify sub-regions and examine intra-regions imbalance in development in different sectors of the economy.
3. To identify un-utilised resources, to examine present exploitation of natural resources such as water, forests, resources etc. and to work out plan for their optimum utilisation and to suggest remedies for increasing standard of living of rural population.
4. To identify the tribal areas and study their problem. To suggest short term measures for upliftment of tribal population.
5. To analyse existing pattern of industrial development, problem of industries. Accordingly, suggest a broad plan for industrialization for optimum exploitation of industrial potential and suggest industrial location policy for the region.
6. Suggest efficient transportation and communication network for the region and improve accessibility to inaccessible areas of the region.
7. To identify growth centres and their linkages with surrounding areas for providing social and physical infrastructure.
8. To suggest ways and means for presentation and conservation of historical and archaeological monuments and development of new places for promoting tourism.

Chapter-2
Chandrapur District

2.1. Location

Chandrapur district is located in the eastern edge of Maharashtra in Nagpur division and forms the eastern part of 'Vidharbha' region. It lies between 20^0 43' to 19^0 27' North latitude and 79^0 59' to 78^0 48' East longitude. The district is bounded by Nagpur, Bhandara and Wardha on the northern side, Yavatmal on western side, Gadchiroli on the eastern side and Adilabad district of Andhra Pradesh on the southern side. Physiographically, the district is situated in the Wainganga and Wardha river basin. The eastern and western boundaries of the district are well defined by the river Wainganga and Wardha, the tributaries of Godavari. (Figure 2.1). Chandrapur district occupies an area of 11,443 sq.km[1] which constitutes 3.72 percent of the total area of the state and had a population of 1,771,994. It is 10^{th} district in terms of area and 23^{rd} in terms of population among the 30 districts of the state.

2.2 Historical background

The district Chandrapur was earlier known as 'Chanda'. According to tradition and legend the name of the place was 'Lokapura' which was first changed to 'Indupur' and subsequently to Chandrapur. During the British colonial period it was called Chanda district, which was again changed to its original name 'Chandrapur' around 1964. Other places of the region in ancient times include Wairangad, Kosala, Bhadravati and Markanda. Hindu and Buddhist kings are said to have ruled the area for a long time. Later on, Gonds overtook Dana Chiefs who ruled Chandrapur around 9^{th} century and Gond kings ruled the area till 1751 after which the Maratha period started. Raghuji Bhonsale, the last king of the dynasty, died heirless in 1853 and Nagpur province together with Chandrapur was declared annexed to the British Empire.

In 1854, Chandrapur formed an independent district and in 1874, it comprised of three tehsils viz. Mul, Warora, and Brahmapuri. In 1874, however, upper Godavari district of Madras was abolished and four tehsils were added to Chandrapur district to form one tehsil with Sironcha as its headquarters. In 1895, the headquarters of one tehsil was transferred from village Mul to Chandapur. A new tehsil with headquarter at Gadchiroli was created in 1905 by transfer of zamindari estates from Brahmapuri and Chandrapur tehsils. A small zamindari tract from Chandrapur district was transferred to newly formed Durg district in 1907. In the same year an area of about 1560 sq.km. comprising of three divisions of the lower Sironcha tehsil namely Cherla, Albak and Nugur were transferred to Madras State.

No major changes occurred in the boundaries of the district or its tehsils between 1911-1955. Consequent upon the reorganization of states in 1956, the district was transferred from Madhya Pradesh to Bombay State. In the same year Rajura tehsil, a part of Adilabad district of Hyderabad State, was transferred to Nanded district. Subsequently it was transferred to Chandrapur district in 1959. The district became part of Maharashtra since its creation in May 1960. For administrative convenience and industrial and agricultural development, this district was again divided into Chandrapur and Gadchiroli districts after 1981 census. Chandrapur district now comprises of the tehsils of Chandrapur, Bhadravati, Warora, Chimur, Nagbhir, Brahmapuri, Sindewahi, Mul, Gondpipri and Rajura. Chandrapur town is the headquarter of this district.

[1] Source: District Census Handbook-1991

2.3. Administrative Set-Up

There were major changes in the administrative set up of Maharashtra immediately after the 1981 Census, resulting in an increase of 2 divisions and 4 districts. Konkan Division includes 5 districts, the newly created Nashik Division 4 districts, Pune Division 5 districts, Aurangabad Division 7 districts, newly created Amravati Division 4 districts and Nagpur Division 5 districts. Thus in 1991 the state had 30 districts spread over 6 divisions.

Chandrapur had 12 towns and 1790 villages spread over 10 tehsils namely, Chandrapur (126), Bhadravati (160), Warora (188), Chimur (253), Nagbhir (138), Brahmapuri (136), Sindewahi (160), Mul (170), Gondpipri (168) and Rajura (291). After 1991, 5 new tehsils were added in the district, namely, Ballarpur, Pombhurna, Sawli, Koropna and Jiwati. The following statement indicates the changes, which occurred after 1981 in the number of villages, towns in each tehsil and the reasons for variation in brief:

Table 2.1: Jurisdictional changes in the villages of tehsils between 1991-2001

S.No.	Tehsil As on 1991 Census	Population		Number of Villages		Remarks
		1991	2001	1991	2001	
1.	Chandrapur	469771	448631	126	90	-36 villages
2.	Bhadrawati	132321	156720	160	155	-5
3.	Warora	155594	166151	188	188	-
4.	Chimur	142062	157828	253	253	-
5.	Nagbhir	112728	124358	138	138	-
6.	Brahmapuri	136636	153112	136	136	-
7.	Sindewahi	130536	106286	160	114	-46
8.	Mul	154924	109947	170	105	-65
9.	Gondpipri	108741	74574	168	98	-70
10.	Rajura	228681	152169	291	109	-182
Tehsils created after 1991						
11.	Sawli	-	104583	-	111	Villages transferred from Mul & Sindewahi
12.	Pombhurna	-	47631	-	71	Villages transferred from Gondpipri
13.	Ballarpur	-	133660	-	36	Villages transferred from Chandrapur
14.	Korpana	-	142257	-	109	Villages transferred from Rajura
15.	Jiwati	-	-	-	76	Villages transferred from Rajura
Total		**1771994**	**2077909**	**1790**	**1789**	

Jurisdictional changes during 1981-91:

Name of District/Tehsil	-	Chandrapur	
No.of Villages as per 1981 Census	-	Chandrapur District	- 3454
Adjusted as per 1991 Jurisdiction	-	1782	
1991 Census			-1790
No. of new villages created	-	30	
No. of towns	-	1981 Census	- 8
	-	1991 Census	- 12

Changes since 1981 and

Government Notification No. - 2 Tehsils (Gadchiroli, Sironcha) (1670 villages) transferred to newly formed Gadchiroli district after 1981 Census.

No.REN.5181-4412-(940)-M-10 dated 23.8.82.

After 1981 Census, 6 new tehsils formed from the existing four tehsils.

Chandrapur, Bhadravati, Warora, Chimur, Nagbhir, Brahmapuri, Sindewahi, Mul, Gondpipri and Rajura tehsils.

No.REN-2481-1421-(727)-m-10 dated 30.4.1981.

2 villages (Kota, Paramdoh) transferred to Andhra Pradesh from Rajura tehsils after 1981 Census.

30 new villages created after 1981 Census.

4 villages received the status of Census Town.

12 villages received the status of Municipalities.

15 Villages merged in different Municipalities.

5 villages included from other tehsils.

5 villages transferred to other tehsils.

1 Census Town declassified.

1 village submerged.

1 non-revenue village included in 1981 Census.

Changes since 1991

Government Notification No. -	5 new tehsils were formed from existing 10 tehsils namely, Ballarpur, Pombhurna, Sawli, Koropna and Jiwati.
	373 villages transferred to the new tehsils from 6 existing tehsils viz., Chandrapur, Bhadrawati, Sindewahi, Mul, Gondpipri, Rajura. The total number of villages was 1790 in 1991 that has been reduced to 1789.
	One Census Town declassified.
	Three villages classified as Census towns.

Chapter-3
Physiography

3.1. Physical features

Chandrapur is situated between the two important river valleys of Wardha and Wainganga on the western and eastern boundaries of the district. The central upland of Mul-Chimur-Parasgrah-Nagbhir Hills acts as water divide of Wardha and Wainganga rivers. Numerous tributaries of these two major rivers flow from the central upland. The southern part of the district comprises of Rajura, Koropna and Jiwati tehsils. This is an exception to the general pattern since there being a plateau to the south of Painganga and Wardha rivers is formed by horizontal lava-flows along eastward protruding tongue of basic trap (Figure 3.1).

Physiographically, the district is divided into four sub-divisions;

(i) Wardha plain.
(ii) Central hilly region.
(iii) Wainganga plain.
(iv) Southern upland.

3.1.1 Wardha Plain

It is an alluvial plain on an elevation between 250 metres above mean sea level with two prominent river valleys namely Wardha and Painganga with many tributaries and streams, mostly ephemeral in nature originating from the central hilly region and flowing towards southeast. The sub-region comprises parts of Warora, Bhadravati, Chandrapur and Rajura tehsils. The valley has gentle slope towards south and east with no variations in relief as is quite evident from the drainage pattern. The land is very fertile due to alluvial deposits, rich with black regurs, which is very suitable for intensive agriculture. Population density is relatively high in this sub-division due to availability of good agricultural land. Important settlements located in the sub division are Warora, Bhadravati, Chandrapur and Rajura.

3.1.2 Central Hilly Region:

This hilly region is located in the north central part of the district comprising of Chimur, Brahmapuri and Chandrapur tehsils. It is a dissected plateau comprising of highly denuded hills of Chimur-Parasgarh-Nagbhir-Mul. The average altitude ranges from 300-400 metres above mean sea level and acts as water divide of Wardha and Wainganga river valleys. Chimur hills commence from east of Chimur and stretch southward with a break from north to south at an elevation of 137 metres. The highest peak in the range has an elevation of 409 metres. Mul hills run east and parallel to Chimur hills and forms the boundary between Warora and Brahmapuri tehsils. The general height is about 274 metres above M.S.L. in the north of the district and falling 200 metres at Chandrapur. All the drainage from this sub-region flows southeast and southwest and flows into Wainganga and Wardha rivers. Most of the rural settlements are clustered where stretch of flat land are available along the road and railway lines. The topography of the region being hilly is ideal for construction of large number of irrigation tanks in the sub-region. Rice, Jowar, Sugarcane are the important crops of this region. The main settlements are Chimur, Nagbhir and Sindewahi.

3.1.3 Wainganga Plain:

It is a strip of lowland in the eastern part of Brahmapuri, Sindewahi, Mul and Gondpipri tehsils along the valleys of Wainganga river having a length of 165 km and 10–15 km in width. It is a rolling plain sloping gently towards southward and tapered. The average elevation is about 200 metres with sporadic hillocks due to residual knolls and elongated

hills. The entire plain area is very fertile due to presence of black loamy soils suitable for rice cultivation and is well irrigated. The main settlements in this sub-region are Mul, Brahmapuri and Gondpipri.

3.1.4 Southern upland

This sub-division lies in the south and south-western and western part of the district covering the tehsils of Jiwati, Koropna and Rajura with an average altitude of 500 to 600 metres above M.S.L. It is a dissected plateau of basaltic trap made of horizontal lava flows with thin beds limestone, shale, sandstone and quartz.. There are number of hills, the highest being the Manickgarh Hills which rises to about 600 metres abruptly from the valley floor of Painganga and Wardha rivers at a distance of 10 km from the river belt. The rise is through a steep slope within a distance of 1 and 2 km from the river valleys. The plateau records the same height overlooking the Wardha river at the north-eastern edge of the plateau. Most of the hills are highly denuded and are dome shaped. Rock outcrops, rocky slopes and cliffs are common features in this part of the sub-region. There is hardly any flatland on this plateau except in a few areas near the villages of Chikli Khurd, Chikli Bujruk, Tumriguda, Ringurda and Kalamguda. The extensive Manickgarh forests comprising of high grass and bamboos cover the entire lateau surface. The soil conditions are poor being laterite and stony in nature. However, small patches of agricultural land may be seen near Chikli village. Gonds tribes inhabit the entire plateau. The important settlements are Korpana, Rajura and Jiwati.

3.2 Drainage

Chandrapur district falls within the Godavari river basin and is drained by two of its main tributaries viz.,Wardha and Wainganga flowing north to south on the western and eastern boundaries of the district.

Wainganga river is a perennial river flowing about 165 km in a meandering course through the district along the eastern border with extensive flood plains, alluvial flats and terraces. The main tributaries are Mul, Buti and Andhari flowing on the west bank within the district in south-eastern direction. Other tributaries on the east bank, which is part of Gadchiroli district, are Garvi, Khobragadi, Kathani, Potphodi and Pohar. The western bank of the river, which is part of Chandrapur district, is accessible, fertile and agriculturally more developed in comparison to the eastern bank, which is part of Gadchiroli district and is economically backward, tribal dominated and heavily forested. Numbers of large and medium irrigation projects are being constructed in the west bank in the district Jiwati which would bring more area under intensive agriculture.

Wardha river flows along the western boundary of the Warora, Bhadravati and Chandrapur tehsils in southeastern direction till it meets Painganga on its west bank. After this confluence, the river turns east and meets with the Wainganga river. The entire stretch measuring about 160 km in length forms the boundary of the district and the state boundary. The main tributaries are Erai, Wunna, Sarni flowing through the fertile land of the district. The river Erai flows from north to south for about 80 km before it meets Wardha river on the north bank. Other tributaries such as Wunna and Pohar rivers on the north bank form the boundary of the Wardha district and Warora tehsil for a short distance. The river is navigable and ideal for large irrigation projects.

Painganga river flows southwest to northeast along the northern boundary of Rajura tehsil for about 50 km, before it joins the Wardha river. The south bank, part of Rajura tehsil, being low lying is subject to flooding and widespread waterlogging during monsoon.

Apart from rivers, the district has many natural and artificial tanks and lakes in the northern part between rivers Erai and Wainganga that are ideal for irrigation, fishing and a source of drinking water. These large water bodies are the main source of irrigation and provide irrigation to 83 percent of the net irrigated land of the district. The important lakes are Ghodazari, Asolamendha, Naleshwar and the famous Taboda lake. The topographic condition of the northern part of the district is ideal for construction of check dams, reservoirs and small dams on streams, which provide perennial source of water.

3.3 Climate

Owing to the geographical location and physical features, the climate of the district can be classified as tropical hot climate with high range of temperature through out the year. Primarily there are two prominent seasons in the district – the very hot summer and moderate winter. The summer months are very hot and prolonged while the winter is short and mild. The monsoon season starts immediately after summer till late September. The southwest monsoon brings lot of rainfall during rainy season and there is no draught prone area in the district.

The temperature starts decreasing from the month of October. December is the coldest month. Mean maximum temperature during December is 28.2 degree centigrade and mean minimum temperature is 11.6 degree centigrade. The southern part is comparatively warmer than the north, which ranges between 29.6 degree to 14.6 degree centigrade. The lowest recorded temperature in the north is 3 degree and 8 degree in the south. The daily mean temperature starts rising from the month of February and May is the peak summer month when mean maximum temperature goes upto 43 degree centigrade and the mean minimum temperature is 28 degree to 29 degree centigrade. In severe heat condition, temperature rises upto 46 degree centigrade. However, temperature starts reducing after May due to onset of monsoon, which lasts from June to September when it is hot and humid.

The rainy season sets usually in the second or third week of June and lasts till the middle of October. The rainfall is more or less assured and the south-western monsoon is the main source of rainfall. Intensity of the rainfall increases from west towards east and is highest in the month of July. The average annual rainfall is about 1420 mm. The eastern part receives more rainfall than the west. About 89 percent of the rainfall is received during June to September due to south-west monsoon and the remaining 11 percent is during November and December, partly due to northeast monsoon. Average number of rainy days is 60 to 65 through out the district. The relative humidity is very high during monsoon season, which exceeds 70 percent, but after the monsoon season it falls down rapidly and in summer it is only 20 percent.

The prominent wind direction is from south to north. In summer the wind direction is from east and south and during monsoon from south to east. During winter, the wind direction changes from north to east. February is characterized by the blowing of wild and violent winds heralding the approach of hot season which lasts till the middle of June.

3.4 Soil:

The soil of the district is well defined and conducive for growing crops of various kinds. The most fertile soils are found in the Wardha and Wainganga valleys. The numerous varieties of soils are known by many local names they are grouped under the following representative classes: (Figure 3.2).

- *Kali* - This type of soil is mainly confined to the riverine tracts and is found in the valley of Wardha and Wainganga. It is suitable only for rabi crop.

- *Kanhar* – It contains small amount of grit in the form of lime. Inferior type of Kanhar is known as bersi Kanhar and is coarser in texture. It is mainly noticed in the Wainganga valley.

- *Morand* – It responds well to irrigation due to its loamy texture. Both kharif and rabi crops can be grown on this soil.

- *Khardi* – This is light in colour and full of stones, but when embanked sometimes improves itself into morand. In the open it grows only til and jowar.

- *Wardi* – It is the principal rice soil of the heavy rice tracts. It is a light coloured soil, as good as sand with just sufficient clay to keep it from crumbling in the dry season.

- *Pandhri* – It is the gray soil which is found in and around village site from where it gets its colour and fertility from the ashes and refuse that accumulate upon it from the neighbouring houses. It grows maize, tobacco and similar crops even, without irrigation.
- *Retari* and *bardi* – The first type of soil is mostly sand and the second is nothing but pebbles.

The soil conditions along the Wardha–Painganga valleys are rich with black regur loams and clay loams along the river bed. These soils, locally known as kali soils, are very productive and suitable for rabi crops due to high moisture retention capacity. However, water logging is very common during monsoon and is therefore not suitable for khariff crops. Away from the rivers over the relatively higher grounds, these soils are replaced by shallow yellow loam locally known as Bardi and Kanha soil, which are relatively inferior and only ideal for rabi crops. The soil in the central upland between Wardha and Painganga rivers are generally shallow brown and yellow loam soils, which are only suitable for rice and sugarcane cultivation if irrigated. Where the slope is steeper, the sandy retari, bardi and pandhri soils are found which are generally covered by thick forests. Along the banks of the Painganga River, the black loamy soils are found which are more productive. On the higher grounds, the soils are stony and gravely morand and khardi soils which is relatively poor. Rajura uplands comprises of poor, stony red laterite soils.

3.5 Vegetation

The vegetation of the district is characterized as Southern Tropical Dry Deciduous Forest where teak is the dominant species. Other associated species are Ain, Bamboo, Bija, Dhada, Haldu, Halai, Semal, Tendu etc. depending upon the physiographic features. Jamun, Mango, Arjun are found in the moist area. The slopes of the hills have poor and low density vegetation. The plains of the tract have luxuriant forests. According to Land Revenue Department, the district had about 3651 sq.km forest cover in 1998-99, which accounted for 33.44 percent of the total geographical area of the district. However, according to the District Forest Department, the district has an area of 5005 sq.km under forest, which works out to 46.80 percent against the state average of 17.45 percent.

3.6 Land Utilisation

According to the official figure of the District Administration published in the District Statistical Abstract 1999-2000, the total geographical area of the district is 10,919 sq.km. Of the total area, the total cultivable land is about 5,618 sq.km (1998-99) that accounts for 51.45 percent of the total area. The next highest area (33.44 percent) is under forests. The land, which is either not available or suitable for cultivation amounts to 12.68 percent and the area not used for cultivation, is about 5.56 percent.

The total cultivable land has decreased from 53.24 percent in 1995-96 to 51.45 in 1998-99. Consequently, the area under forests in 1995-96 was 32.25 percent that has increased to 33.44 percent and the area not available/suitable for cultivation has increased from 10.56 percent in 1995-96 to 12.68 percent in 1998-99. This is because the barren land not suitable for cultivation has increased from 2.17 percent in 1995-96 to 5.93 in 1998-99. The net sown area in 1995-96 was 43.31 percent that marginally decreased to 42.58 percent in 1998-99. The pasture land and area under horticulture during these two years in district was quite negligible (less than 1 percent).

The tehsilwise distribution of cultivable land shows that highest percentage of 74.97 percent was in Korpana followed by Mul (67.62 percent), Warora (64.78 percent), Sawli (56.77 percent) and Chimur (56.41 percent) tehsils. The lowest percentage (28.45 percent) was in Sindewahi tehsil. The area under forests was highest (66.02 percent) was in Sindewahi tehsil followed by Nagbhir (47.70), Brahmapuri (42.10 percent), Bhadrawati (41.61 percent) and the lowest (14.89 percent) was in Koropna.

Tehsilwise distribution of net sown area indicates that the highest percentage (59.05 percent) was in Koropna followed by Warora (55.91 percent), Chimur (51.17 percent), Gondpipri (46.10 percent) and Sawli (46.10 percent). The lowest percentage (24.45 percent) was in Sindewahi tehsil.

Rajura tehsil has the highest area (26.54 percent) under uncultivable land that includes the land not available for cultivation and barren land. This figure was only 10.47 percent in 1995-96. This sudden increase of uncultivable land is due to increase in the barren land, which increased from 1.79 percent in 1995-96 to 22.81 percent in 1998-99. The next highest percentage (25.96 percent) of uncultivable land is in Chandrapur tehsil where there was no barren land during 1998-99. This indicates that due to rapid urbanisation and extension of habitation area, the cultivable land and the net sown area has been decreasing very fast. The percentage of barren land has also been increasing very fast in Mul and Brahmapuri tehsils. The lowest percentage (4.01 percent) of uncultivable land was in Sindewahi tehsil.

The highest area (16.08 percent) of total fallow land, was in Mul Tehsil followed by Chandrapur (13.08 percent) and the lowest area (0.74 percent) was in Brahmapuri. The area not used for cultivation other than fallow land was highest in Korpana (13.22 percent) followed by Brahmapuri (11.24 percent) and Warora (6 percent). Koropna tehsil had highest area (6.42 percent) of cultivable land, but not used for cultivation followed by 4.92 percent in Sawli. Brahmapuri had the highest area (9.97 percent) under permanent pasture followed by 3.96 percent in Mul. Horticulture land was found to highest (4.14 percent) in Rajura followed by 2.95 percent in Koropna. The cultivable land used for more than one crop was highest in Brahmapuri (11.35 percent) followed by 7.49 percent in Chimur. However, the gross cropped area was found to be highest in Warora (735 ha) followed by 650 hectares in Chimur.

From the above analysis, it appears that tehsils, which are heavily forested, have low percentage of cultivable land. The tehsils that are agriculturally more developed are Korpana,

Mul, Warora, Sawli, Chimur, Rajura and Gondpipri. The tehsils of Sindewahi, Nagbhir, Brahmapuri, Bhadrawati are primarily forested and agriculturally less developed and irrigation facilities are not available. The horticulture in the district is not yet developed. Similarly, the pasture land in all the tehsils except Brahmapuri, Mul, Sawli and Korpana is not available or negligible.

Chapter-4
Population Characteristics

4.1 Population of the district and its growth

Demography of a district such as population and its growth, density, occupational structure, sex ratio etc. are the basic elements to be considered while planning for the development of any region. The total geographical area of Chandrapur district is 10,695 sq.km of which 10521 sq.km. is rural and 174 sq. km is urban. In 1991, there were only 10 tehsils, which has increased to 14 in 2001. The total population is distributed among 1473 inhabited villages and 14 towns. The average number of inhabited villages per tehsil comes to about 105. The highest number of inhabited villages (176) is in Chimur having 11.96 percent of the total villages followed by Warora (156). The least number of inhabited villages (32) are in Ballarpur tehsil. Tehsil wise distribution of settlements during 1991 and 2001 are given in table 4.1.

Table 4.1: Decadal change in distribution of settlements, 1991-2001

Sl.No	Tehsil	No. of Urban settlements		No. of inhabited villages	
		1991	2001	1991	2001
1	2	3	4	5	6
1	Chandrapur	5	5	113	80
2	Bhadrawati	2	2	125	119
3	Warora	1	1	154	156
4	Chimur	NA	NA	178	176
5	Nagbhir	NA	NA	114	114
6	Brahmapuri	1	1	111	110
7	Sindewahi	NA	NA	131	92
8	Mul	1	1	133	79
9	Sawli	NA	NA	NA	95
10	Gondpipri	NA	NA	144	89
11	Rajura	2	2	270	130
12	Koropna	NA	1	NA	142
13	Pombhurna	NA	NA	NA	58
14	Ballarpur	NA	1	NA	32
District Total		**12**	**14**	**1473**	**1472**

Source: Census of India, 1991 & 2001 (Provisional)
Note: The tehsils of Sawli (from Mul & Bhadravati), Koropna, Pombhurna (from Gondpipri) & Ballarpur (from Chandrapur) were created after 1991.

According to the latest Census (2001), the total population of Chandrapur district was 20,71,101 persons of which 14,06,034 persons (67.89 percent) were residing in rural areas and 6,65,067 persons (32.11 percent) were in urban areas. In 1991 Chandrapur had 2.24 percent of state's population over 3.72 percent of its area and in 2001 it came down to 2.14 percent.

Chandrapur tehsil (4,40,897) is the most populous, inhabited by 21.29 percent of the total population of the district and Pombhurna tehsil (47,906) has the least with 2.31 percent of the district. Other Tehsils in order of their size of population are: (1) Warora (16,65,843), (2) Bhadravati (1,56,995), (3) Chimur (1,57,772), (4) Brahmapuri (1,53,486), (5) Rajura (1,52,216), (6) Korpana (1,43,210), (7) Ballarpur (1,33,772), (8) Nagbhir (1,24,425), (9) Mul (1,10,109), (10) Sindewahi (1,06,275), (11) Sawli (1,04,686), (12) Gondpipri (74,559). Tehsilwise distribution of population is given in table 4.2.

Table 4.2: Tehsil wise distribution of population, 2001

Sl.No	Tehsil	Area in sq.km.	Population				
			Total	Male	Female	Rural	Urban
1	2	3	4	5	6	7	8
1	Chandrapur	941	440897	229818	211079	86065	354832
2	Bhadrawati	1121	156995	81290	75705	85295	71700
3	Warora	1184	165843	85622	80221	123872	41971
4	Chimur	1015	156772	79926	76846	156772	0
5	Nagbhir	656	124425	62743	61682	124425	0
6	Brahmapuri	943	153486	77564	75922	122279	31207
7	Sindewahi	620	106275	53399	52876	106275	0
8	Mul	495	110109	55755	54354	87779	22330
9	Sawli	633	104686	52259	52427	104686	0
10	Gondpipri	1076	74559	38032	36527	74559	0
11	Rajura	1242	152216	78439	73777	120915	31301
12	Koropna	768	143210	74584	68626	121479	21731
13	Pombhurna	NA	47906	24314	23592	47906	0
14	Ballarpur	NA	133722	69248	64474	43727	89995
District Total		**10695**	**2071101**	**1062993**	**1008108**	**1406034**	**665067**

Source: Census of India - 2001 (PCA)

Chimur is the largest tehsil in terms of rural population (1,56,772) accounting for 11.15 percent of district's rural population and Ballarpur (43727) had the least 3.11 percent of the total rural population of the district. There are 14 towns in this district, of which 7 are categorized as municipal towns and the rest 7 are census towns. Chandrapur is the most populous town. Tehsil wise rural urban population of 1981, 1991 and 2001 are given in table 4.3.

Table 4.3: Decadal change in distribution of population, 1991-2001

Sl. No	Tehsil	POPULATION								
		1981			1991			2001		
		Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
1	2	3	4	5	6	7	8	9	10	11
1	Chandrapur	318957	126568	192889	469771	119101	350670	440897	86065	354832
2	Bhadrawati	108368	108368	-	132321	99895	32426	156995	85295	71700
3	Warora	134525	98444	36081	155594	111878	43721	165843	123872	41971
4	Chimur	127637	127637	-	142062	142062	0	156772	156772	0
5	Nagbhir	98227	98227	-	112728	112728	0	124425	124425	0
6	Brahmapuri	118892	118892	-	136636	110005	26631	153486	122279	31207
7	Sindewahi	112708	112708	-	130536	130536	0	106275	106275	0
8	Mul	133862	133862	-	154921	136916	18008	110109	87779	22330
9	Sawli	-	-	-	-	-	-	104686	104686	0
10	Gondpipri	97346	97346	-	108741	108741	0	74559	74559	0
11	Rajura	166431	118669	17762	228681	203314	25367	152216	120915	31301
12	Koropna	-	-	-	-	-	-	143210	121479	21731
13	Pombhurna	-	-	-	-	-	-	47906	47906	0
14	Ballarpur	-	-	-	-	-	-	133722	43727	89995
District Total		**1416953**	**1170721**	**246232**	**1771994**	**1275171**	**496823**	**2071101**	**1406034**	**665067**

Source: Census of India, 1991 & 2001 (PCA)

Note: The tehsils of Sawli (from Mul & Bhadravati), Koropna, Pombhurna (from Gondpipri) & Ballarpur (from Chandrapur) were created after 1991

The population of the district increased from 14.17 lakh in 1981 to 17.72 lakh in 1991 to 20.71 lakh in 2001, an increase of 3.55 lakh and 2.99 lakh during 1981-1991 and 1991-2001 respectively. During 1981–1991, the growth rate of the district was 25.06 percent against the state average of 25.73 percent and the national average of 23.85 percent. During the last decade i.e. 1991-2001, it came down to 16.88 percent whereas state's average was 22.73 and national average was 21.34 percent. Comparative picture of the population growth rate of the district with the Maharashtra state and India as given in table 4.4, shows that the growth rate of the district during the last two decades has fallen down by 8.18 percent whereas it fell only by 3.00 percent in Maharashtra and 2.51 percent in India. The decrease in population growth during the last decade is attributed to out-migration owing to lack of employment and slow economic growth. The growth rates for the district and tehsils in total, rural and urban areas and percentage of urban population to total population are given in Table 4.5. (Figure 4.1).

Table 4.4 Comparative decadal growth of population

Area	Decadal Growth of Population (percent)		Difference in growth rate
	1981-1891	1991-2001	
Chandrapur District	25.06	16.88	(-) 8.18
Maharashtra State	25.73	22.73	(-) 3.00
India	23.85	21.34	(-) 2.51

Table 4.5: Percentage decadal variation of tehsil wise population, 1981-2001

(Population of 2001 adjusted as per the Tehsils of 1991)

Sl.No	Tehsil	Percentage Decadal Variation						Percentage of Urban Population		
		1981-1991			1991-2001					
		Total	Rural	Urban	Total	Rural	Urban	1981	1991	2001
1	2	9	10	11	12	13	14	15	16	17
1	Chandrapur	47.28	-5.90	82.27	22.32	8.98	26.85	60.32	74.65	77.41
2	Bhadrawati	22.10	-7.82	-	18.65	-14.62	121.12	-	24.51	45.67
3	Warora	15.66	13.64	21.17	6.59	10.72	-4.00	26.82	28.10	25.31
4	Chimur	11.30	11.30	-	10.35	10.35	0.00	-	0.00	0.00
5	Nagbhir	14.76	14.76	-	10.38	10.38	0.00	-	0.00	0.00
6	Brahmapuri	14.92	-7.47	-	12.33	11.16	17.18	-	19.49	20.33
7	Sindewahi	15.82	15.82	-	21.51	21.51	0.00	-	0.00	0.00
8	Mul	15.73	2.28	-	4.86	2.34	24.00	-	11.62	13.75
9	Sawli	-	-	-	0.00	0.00	0.00	-	0.00	0.00
10	Gondpipri	11.71	11.71	-	12.62	12.62	0.00	-	0.00	0.00
11	Rajura	37.40	36.76	42.82	29.19	19.22	109.06	10.67	11.09	17.95
12	Koropna	-	-	-	-	-	-	-	-	0.00
13	Pombhurna	-	-	-	-	-	-	-	-	0.00
14	Ballarpur	-	-	-	-	-	-	-	-	0.00
District Total		**25.06**	**8.92**	**101.8**	**16.88**	**10.26**	**33.86**	**17.38**	**28.04**	**32.11**

Source: Census of India, 1991 & 2001 (Provisional)

Note: The tehsils of Sawli (from Mul & Sindewahi), Koropna (from Rajura), Pombhurna (from Gondpipri) & Ballarpur (from Chandrapur) were created after 1991.

Within the district there are significant differences in the rates of growth of population in various tehsils. For the purpose of comparison, the population of 2001 census in 14 tehsils has been adjusted to the 10 tehsils of 1991 census. All the 10 tehsils of the district registered a positive growth rate both in 1991 and in 2001. The highest growth rate (47.28 percent) during 1981-1991 was in Chandrapur tehsil, which came down to 22.32 percent during 1991-2001. Rajura experienced the highest growth (29.19 percent) in 1991-2001. Chimur had the

lowest growth (11.30 percent) during 1981-1991 and Mul experienced the lowest (4.86 percent) during 1991-2001 that was 15.73 percent during 1981-1991. Except Sindewahi and Gondpipri, the growth rate fell in all the tehsils during the last two decades. The growth rate in Chandrapur, Rajura Bhadravati and Sindewahi was above the district average (16.88 percent) and in the remaining 6 tehsils the growth rate was below the district average.

The average growth rates during 1991 and 2001 for the rural and urban areas of the district were 10.26 and 33.86 percent respectively. The district recorded 101.77 percent growth in urban areas during 1981-1991, which came down to 33.86 percent during 1991-2001. For the purpose of comparing the urban population of tehsils during 1991-2001, the urban population of 2001 census in 14 tehsils has been adjusted to the 10 tehsils of 1991 census. As in 2001 census the tehsils of Chimur, Nagbhir, Sindewahi, Sawli and Gondpipri do not have urban areas. Bhadravati tehsil has recorded the highest growth in urban areas (121.12 percent) during 1991–2001 followed by Rajura (109.06 percent), Chandrapur (26.85 percent), Mul (24.00 percent) and Brahmapuri (17.18 percent). The highest growth rate of 82.27 percent in urban population during 1981–1991 was in Chandrapur tehsil which came down to 26.85 percent during 1991-2001 and only Warora tehsil had recorded a negative growth rate (-4.00 percent) during 1991-2001 which was 21.17 percent during 1981-1991. It may be observed that Chandrapur, Bhadravati, Warora and Rajura tehsils had 77.41 percent, 45.67 percent, 25.31 percent and 17.95 percent urban population respectively in 2001 and it was higher than that of 1991 urban population. With 32.11 percent of its population in urban area against state average of 42.92 percent, is the most urbanized district in the state.

In the rural areas, tehsils of Warora, Chimur, Nagbhir, Sindewahi, Gondpipri and Rajura have recorded the higher growth rate than the district rural average (8.92 percent) during 1981-1991. But Chandrapur, Bhadravati and Brahmapuri tehsils had recorded a negative growth rate i.e. –5.90 percent, -7.82 percent, -7.47 percent respectively and Mul had a low growth of 2.28 percent only. During 1991-2001 all tehsils except Bhadravati recorded positive growth of rural population. But Mul and Chandrapur had a very low growth of 8.98 percent and 2.34 percent below the district average (10.26 percent). The negative and lower growth of rural population may be attributed to shifting of population from rural to urban area due to creation of new urban areas and extension of existing urban areas.

The district had 12 towns in 1991 which increased to 14 in 2001. Bhadravati town recorded the highest (196.62 percent) growth rate during 1991-2001, whereas during 1981-1991 Chandrapur town had the highest (95.29 percent) which came down to 28.02 percent during 1991-2001. Rajura town recorded the next highest growth rate (36.24 percent) during 1991-2001. The towns of Ballarpur, Brahmapuri, Rajura, Mul, Ghugus experienced lower growth rate than the district average of 33.86 percent during 1991-2001. As far as Warora, Nakoda and Sasti towns are concerned, the 1991-2001 decade witnessed negative growth rate of -4 percent, -15.79 percent and -14.69 percent respectively. In the previous decade also Sasti town witnessed negative growth although Warora town had a positive growth of 27.89 percent in all the numbers. The decreasing trend in Sasti and in other two towns may be attributed to out migration to other places due to lack of employment opportunity. Town wise population of 1991 and 2001 and growth are given in table 4.6.

Table: 4.6 Decadal change of population in urban settlements, 1991-2001

Sl. No.	Town	Civic Status	Area in Sq.km	Population 1991			Population 2001			Percentage Growth 1991-2001
				Total	Male	Female	Total	Male	Female	
1	2	3	4	5	6	7	8	9	10	11
1	Chandrapur	M.Cl.	56.28	226,105	119407	106,698	289450	151202	138248	28.02
2	Ballarpur	M.Cl.	16.51	83,511	43735	39776	89995	46575	43,420	7.76
3	Bhadravati	M.Cl.	3.39	19,184	9880	9,304	56903	29812	27,091	196.62
4	Warora	M.Cl.	7.92	43,721	22976	20,745	41971	21684	20,287	-4.00
5	Brahmapuri	M.Cl.	21.91	26,631	14222	12,409	31207	15957	15,250	17.18
6	Ghugus	C.T.	12.94	25,002	13241	11,761	29945	15658	14,287	19.77
7	Rajura	M.Cl.	2.93	18,969	10146	8,823	25843	13539	12,304	36.24
8	Mul	M.Cl.	23.15	18,008	9109	8,899	22330	11366	10,964	24.00
9	Chandur	C.T.	0	0	0	0	21731	11556	10,175	0.00
10	Durgapur	C.T.	0	0	0	0	17714	9127	8,587	0.00
11	Shivajinagar	C.T.	2.00	13,242	7199	6,043	14797	7897	6,900	11.74
12	Kondumal	C.T.	0	0	0	0	11721	6089	5,632	0.00
13	Nakoda	C.T.	3.51	7,127	3710	3,417	6002	3183	2,819	-15.79
14	Sasti	C.T.	7.81	6,398	3368	3,030	5458	2887	2,571	-14.69
15	Visapur	C.T.	3.83	8,925	4560	4,365	NA	0	0	0.00
Total			**162.18**	**496,823**	**261553**	**235270**	**665,067**	**346532**	**318525**	**33.86**

Source: Census of India, 1991 & 2001 (PCA)

4.2 Density of Population

Distribution of population density indicates the availability of economic opportunities and level of development within a district or region. It is observed that this region is very meagerly populated and thus less developed as compared to the state. The average density of population in 1991 was 162 persons per sq.km, which increased to 190 persons per sq.km in 2001. The corresponding density of population in Maharashtra during the same period was 257 and 314 respectively. The tehsilwise density of population in the district according to 1991 and 2001 is given in table 4.7. (Figure 4.2).

Table 4.7: Tehsilwise population density, 1991 & 2001

Sl.No	(Tehsil Population of 2001 Adjusted for comparison with 1991)						PC of Urban Population	
	Tehsil	Area in Sq.Km.	Population		Average Density			
			1991	2001	1991	2001	1991	2001
1	Chandrapur	994	469771	574619	473	578	74.65	80.48
2	Bhadrawati	1132	132321	156995	117	139	24.51	45.67
3	Warora	1184	155594	165843	131	140	28.10	25.31
4	Chimur	1108	142052	156772	128	141	0.00	0.00
5	Nagbhir	724	112728	124425	156	172	0.00	0.00
6	Brahmapuri	943	136636	153486	145	163	19.49	20.33
7	Sindewahi	620	130536	106275	211	171	0.00	0.00
8	Mul	495	154924	110109	313	222	11.62	20.28
9	Sawli	633	NA	104686	NA	165	0.00	0.00
10	Gondpipri	1076	108741	122465	101	114	0.00	0.00
11	Rajura	1242	228681	152216	184	123	11.09	20.56
12	Koropna	768	NA	143210	NA	186	-	15.17
13	Pombhurna	NA	NA	(Adjusted)	NA	NA	-	0.00
14	Ballarpur	NA	NA	(Adjusted)	NA	NA	-	67.30
District Total		**10919**	**1771984**	**2071101**	**162**	**190**	**28.04**	**32.11**

Source: Census of India - 1991 & 2001 (PCA)

Within the district there was a wide variation in population density among tehsils ranging from 578 persons per sq.km. in Chandrapur tehsil to 114 persons per sq.km. in Gondpipri. Except Chandrapur and Mul, all other tehsils recorded lower density than that of district average (190 persons per sq.km.), which shows that almost 86 percent of land area is susceptible to backwardness having 67 percent of the district population. In other words, 33 percent of the population is concentrated within 14 percent of the relatively more developed areas comprising Chandrapur, Ballarpur and Mul tehsils.

Chandrapur tehsil had the maximum population density (473 persons per sq.km) in 1991 which increased to 578 in 2001. The high density is due to very high urban population and availability of infrastructural facilities. Mul tehsil, which is agriculturally very prosperous, had a density of 313 persons per sq.km. in 1991 which came down to 222 persons per sq.km. in 2001 after the creation of Sawli tehsil out of Mul and Sindewahi tehsils. Spatial distribution of density pattern of 2001 shows high population concentration in the central part of the district comprising Chandrapur, Ballarpur and Mul tehsil which is well developed and urbanized with good rail and road linkages. Nagbhir, Brahmapuri and Sindewahi tehsils which mostly occupy north western part along the Wainganga river is well drained, fertile with moderate density. The tehsils of Chimur, Warora, Bhadravati, Rajura and Gondpipri located on the southern and western part and are mostly forested with limited agricultural land and low population density.

4.3 Sex Ratio

Sex ratio reflects the socio-economic and demographic characteristics. Higher sex ratio denotes higher out-migration of male population and lower sex ratio is the sign of immigration of single male population. Better economic opportunities have dominant effect on in migration and vice-versa. If compared with the average sex ratio 922 females for every thousand males of the state, Chandrapur has 948 which is higher than that of the state average. It is interesting to note that the sex ratio of Chandrapur district remained constant during the period 1991-2001 where as it decreased from 934 to 922 during the same period in Maharashtra. Generally, rural areas have higher proportion of females than the urban areas as higher degree of urbanization means lower sex ratio. The sex ratio figures for rural and urban areas is 962 and 919 as compared to the state average of 960 and 873 respectively. Higher sex ratio than the state average indicates that out migration of male population from the district for better economic opportunities due to lack of employment within the district. Increasing trend of sex ratio supports the argument that male dominated out migration, perhaps for better employment opportunities which is the main cause for poor growth rate and increasing preponderance of females. The district level decrease was also marginal during 1981-91. The Table 4.8 shows the sex ratio for district and state from 1901 to 2001.

The sex ratio in the district has remained higher than that of state since 1901. As regards total area, sex ratio at the state level declined by 56 points and at district level by 75 points during the last 100 years. Similarly the sex ratio for the rural area at state level decreased by 43 points and at district level by 65 points. The decrease is more at the district than state in total as well as rural areas. But for the urban areas a reverse in trend was seen i.e. for the state it increased by 11 points and for the district it decreased by 50 points during the last 10 decades. When the difference in sex ratios of District and State in points is compared, it is observed that up to 1961, the difference remained stable. It started to decrease after 1971 and registered the minimum in 1991 (14 points). From 1901 to 2001 the sex ratio in the district fluctuated between 1023 and 948 exhibiting generally a decreasing trend and the state average varied between 976 to 930, generally indicating a decreasing trend. The decreasing trend of sex ratio since 1971 coincided with the large coal scale mining operation, power

generation and manufacturing industries, which started after 1971 and resulted in higher economic growth and in-migration.

Table 4.8 Sex Ratio 1901-1991

Year	State			District			Difference in district figures over the state		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1901	978	1003	862	1023	1027	969	**+45**	**+24**	**+107**
1911	966	1000	796	1005	1005	1004	**+39**	**+5**	**+208**
1921	950	994	776	1004	1006	985	**+54**	**+12**	**+209**
1931	947	987	790	990	992	969	**+43**	**+5**	**+179**
1941	949	989	810	989	993	956	**+40**	**+4**	**+146**
1951	941	1000	807	994	997	976	**+53**	**-3**	**+169**
1961	936	995	801	979	990	901	**+43**	**-5**	**+100**
1971	930	985	820	963	978	872	**+33**	**-7**	**+52**
1981	937	987	850	959	972	901	**+22**	**-15**	**+51**
1991	934	972	875	948	967	900	**+14**	**-5**	**+25**
2001	922	960	873	948	962	919	**+26**	**+2**	**+46**
Difference in points (1901-2001)	**-56**	**-43**	**+11**	**-75**	**-65**	**-50**	**-19**	**-22**	**-61**

Source: District Census, 1991, Chandrapur district.

Table: 4.9 Distribution of Sex Ratio 1991 & 2001

Sl. No.	Name of Tehsil	No. of females per 1000 males					
		Total		Rural		Urban	
		1991	2001	1991	2001	1991	2001
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	Chandrapur	900	918	904	931	899	915
2	Bhadravati	935	931	947	957	899	901
3	Warora	935	937	948	937	903	926
4	Chimur	975	961	975	961	-	-
5	Nagbhir	992	983	992	983	-	-
6	Brahmapuri	972	979	998	985	873	956
7	Sindewahi	1004	990	1004	990	-	-
8	Mul	1000	975	1003	977	977	965
9	Sawli	-	1003	-	1003	-	-
10	Gondpipri	977	960	977	960	-	-
11	Rajura	932	941	939	950	877	906
12	Koropna	-	920	-	927	-	880
13	Pombhurna	-	970	-	970	-	-
14	Ballarpur	-	931	-	929	-	932
District Total		**948**	**948**	**967**	**962**	**900**	**919**
Maharashtra		**934**	**922**	**972**	**960**	**875**	**873**

Source: District Census, 1991 Chandrapur District.

Tehsilwise distribution of sex ratio shows that there was a wide variation within the district ranging from 1003 in Sawli to 918 in Chandrapur tehsil in 2001 which was 1004 and 900 respectively in 1991. Other than Sawli, higher sex ratio more than the district average (948) was observed in Sindewahi (990), Nagbhir (983), Brahmapuri (979), Mul (975),

Chimur ((961) and Gondpipri (960). These seven tehsils are predominantly rural in character. Spatial distribution of sex ratio within the district shows that very high sex ratio (above 975) are in Nagbhir, Brahmapuri, Sindewahi, Sawli and Mul tehsils. Chimur, Pombhurna and Gondpipri. The tehsils of Warora, Bhadravati, Rajura and Ballarpur are falling in the medium category whereas Chandrapur and Koropna have the lowest ratio below 921. So there is a strong correlation between the lower sex ratio and high urban population. (Figure 4.3)

In the urban area of different tehsils too the sex ratio varied from tehsil to tehsil. The lowest sex ratio was in Korpana (880) and highest in Mul tehsil (965). Among the 14 towns of the district the sex ratio varies between 880 in Chandur and 956 in Brahmapuri. Out of these towns sex ratios of Ballarpur (932), Warora (936) Brahmapuri (956), Mul (965) and Kondumal (925) were above the district average. In Chandrapur (914), Bhadravati (909), Ghugus (912), Rajura (909), Chandur ((880), Durgapur (941), Shivaji Nagar (874), Nakoda (886) and Sasti (891) towns it was below the district average. (Table 4.10)

Table 4.10: Town wise Sex Ratio 1991,2001

Sl.No.	Town	Civic Status	Sex Ratio	
			1991	2001
1	**2**	**3**	**5**	
1	Chandrapur	M.Cl.	894	914
2	Ballarpur	M.Cl.	909	932
3	Bhadravati	M.Cl.	942	909
4	Warora	M.Cl.	903	936
5	Brahmapuri	M.Cl.	873	956
6	Ghugus	C.T.	888	912
7	Rajura	M.Cl.	870	909
8	Mul	M.Cl.	977	965
9	Chandur	C.T.	NA	880
10	Durgapur	C.T.	NA	941
11	Shivajinagar	C.T.	839	874
12	Kondumal	C.T.	NA	925
13	Nakoda	C.T.	921	886
14	Sasti	C.T.	900	891
15	Visapur	C.T.	957	0
Total			**900**	**919**

Source: District Census, 1991 Chandrapur District.

4.4 Literacy

A person who can both read and write with understanding in any language is to be taken as literate by the Indian census. A person, who can merely read but cannot write, is not literate. It is not necessary that a person who is literate should have received any formal education or should have passed any minimum educational standard. In addition to this for 1991 census, all children of age 6 years or less are treated as illiterates even though they may be going to school and can read and write a few odd words. In earlier census, this limitation was up to the age of 4. It has been also decided to use only effective literacy rates for the 1991 census i.e. the ratio of literates and population excluding the age group of 0.6. Factors such as location, proximity to urban centres, caste composition, settlement pattern, level of social and economic development, attitude of villagers towards literacy and females education, availability of school and teachers etc. are quite important factors and each one of these factors exert considerable influence on the literacy rate.

Though the population of Maharashtra during 1961-91, almost doubled, the jump in literacy was almost 4 times which itself was a significant/achievement. Chandrapur district

reported 17,91,611 persons as literates in 2001, which constituted 73.17 percent of the total population (excluding 0.6 age group). The literacy rate in the district has shown an increasing trend since 1981 from 47.16 percent it increased to 59.41 percent in 1991. The literary rate for the district was 73.17 percent which was less than the state average of 76.88 percent in 2001. However has made tremendous progress in literacy during 1981 and 2001 by narrowing the gap only to 3.71 percent from the state average literacy. Tehsil wise literacy rates of 1991 and 2001 are presented in Table-4.11.

Table 4.11 Literacy rates by rural/urban and sex, 1991, 2001
(Excluding children in the age group 0-6)

Sl. No.	Tehsil		Percentage of literates					
			Persons		Male		Female	
			1991	2001	1991	2001	1991	2001
1	2	3	4	5	6	7	8	9
1	Chandrapur	**T**	**70.82**	**82.94**	**79.82**	**89.87**	**60.71**	**75.42**
		R	58.77	72.39	69.69	81.73	46.53	62.38
		U	74.84	85.45	83.20	91.79	65.45	78.55
2	Bhadravati	T	**64.75**	**78.68**	**75.37**	**86.98**	**53.35**	**69.71**
		R	61.48	72.52	72.35	82.37	49.97	62.18
		U	75.07	85.83	84.59	92.19	64.35	78.74
3	Warora	T	**67.47**	**77.37**	**77.83**	**85.91**	**56.37**	**68.28**
		R	60.96	73.99	72.35	83.38	48.98	63.97
		U	83.65	87.27	91.03	93.32	75.87	80.85
4	Chimur	T	**56.51**	**70.37**	**68.35**	**80.61**	**44.89**	**59.74**
		R	56.51	70.37	68.35	80.61	44.89	59.74
		U	-	-	-	-	-	-
5	Nagbhir	T	**55.53**	**69.35**	**70.14**	**80.62**	**40.94**	**57.94**
		R	55.53	69.35	70.14	80.62	40.94	57.94
		U	-	-	-	-	-	-
6	Brahmapuri	T	**56.85**	**70.11**	**70.61**	**81.77**	**42.70**	**58.21**
		R	50.88	65.98	65.35	78.81	36.46	52.97
		U	81.05	85.99	90.39	93.01	70.16	78.7
7	Sindewahi	T	**53.00**	**68.55**	**68.76**	**81.66**	**37.39**	**55.32**
		R	53.00	68.55	68.76	81.66	37.39	55.32
		U	-	-	-	-	-	-
8	Mul	T	**47.27**	**63.52**	**61.74**	**75.01**	**32.84**	**51.77**
		R	44.42	60.21	59.33	72.44	29.61	47.72
		U	68.34	76.45	79.27	84.99	57.11	67.65
9	Sawli	T	**-**	**60.57**	**-**	**73.91**	**-**	**47.36**
		R	-	60.57	-	73.91	-	47.36
		U	-	-		-	-	-
10	Gondpipri	T	**45.05**	**62.13**	**58.51**	**73.99**	**31.27**	**49.77**
		R	45.05	62.13	58.51	73.99	31.27	49.77
		U	-	-	-	-	-	-
11	Rajura	T	**51.16**	**68.45**	**62.77**	**78.19**	**38.52**	**58.07**
		R	48.26	64.72	60.20	75.23	35.36	53.60
		U	73.50	82.64	81.91	89.26	63.77	75.38
12	Koropna	T	**-**	**69.72**	**-**	**79.96**	**-**	**58.56**
		R	-	67.86	-	78.62	-	56.24
		U	-	80.14	-	87.30	-	71.95
13	Pombhurna	T	**-**	**60.96**	**-**	**73.04**	**-**	**48.59**

		R	-	60.96	-	73.04	-	48.59
		U	-	-	-	-	-	-
14	Ballarpur	T	**-**	**80.12**	**-**	**88.29**	**-**	**71.37**
		R	-	74.34	-	83.82	-	64.08
		U	-	82.89	-	90.45	-	74.84
District Total		T	**59.41**	**73.17**	**71.30**	**82.94**	**46.81**	**62.89**
		R	53.02	67.65	66.04	78.84	39.55	56.04
		U	75.88	84.69	84.19	91.32	66.12	77.50
Maharashtra		T	**64.87**	**76.88**	**76.56**	**85.97**	**52.32**	**67.03**
		R	**-**	70.36	-	81.93	-	58.40
		U	**-**	85.48	-	91.03	-	79.09

Source: District Census, 1991 Chandrapur District.

For the district as a whole, the literacy rate for males was much higher than that of females. As much as 82.94 percent of the males are literates while females account for only 62.89 percent. The tehsilwise break up shows that Chandrapur tehsil with 82.94 percent literates tops the list and Sawli with only 60.57 percent stands at the bottom. The remaining eight tehsils are in between these two. It may be observed that the tehsils having urban components have better infrastructure as far as the educational facilities are concerned. The tehsils without any urban centre have the literacy rate below the district average. Chandrapur tehsil has the highest literacy rates for both males and females i.e. 89.87 percent and 75.42 percent respectively and Pombhurna tehsil has the lowest rate i.e. 73.04 percent male literacy and Sawli has the lowest 47.36 percent female literacy (Figure 4.4).

As regards rural area of the district the total literacy rate was 67.65 percent with 78.84 percent male literates and female literates accounting for 56.04 percent. The corresponding figures in 1991 were 53.02 percent total literacy for rural areas with 66.04 percent male and 39.55 percent female. Ballarpur tehsil had the highest literacy rate of 74.34 percent with 83.82 percent of the males and 64.08 percent of females were literate. The lowest literacy rate was in Mul tehsil (60.212 percent). As far as male and female literacy rates are concerned Mul (72.44 percent) and Sawli (47.36 percent) respectively stand at the bottom of the list. There was significant difference in literacy rates between males and females in the district.

The Table 4.12 indicates the urban literacy rates in the district. Kodumal census town had the highest literacy rates among the fourteen towns i.e., 95.50 percent of the population is literate. Ballarpur, Ghugus, Rajura, Mul, Chandur, Durgapur, Shivaji Nagar Nakoda and Sasti towns had literacy rates below the district urban average (84.69 percent) and the remaining 5 towns had above the district average. As far as the towns are concerned the differential between male and female literacy rate was about 15 to 25 points unlike rural areas where it was 20 to 30 points. It may be observed that the females are better educated in urban areas than their counterparts in rural areas. Kondumal town tops the list for male and female literacy rate at 98.42 percent for males and 92.38 percent for females. The lowest literacy rates for males and females were in Sasti 82.71 percent and 63.53 percent respectively.

Table: 4.12 Distribution of literacy sex wise in urban areas 1991 & 2001

Sl.No.	Tehsil		Percentage of literates					
			Persons		Male		Female	
			1991	2001	1991	2001	1991	2001
1	2	3	4	5	6	7	8	9
1.	Chandrapur	MCI	76.89	85.40	84.97	91.82	67.73	78.40
2.	Ballarpur	MCI	73.91	82.89	82.87	90.45	64.00	74.84
3.	Bhadravati	MCI	82.29	87.54	91.33	93.36	72.70	81.12
4.	Warora	MCI	83.65	87.27	91.03	93.32	75.37	80.85
5.	Brahmapuri	MCI	81.05	85.99	90.39	93.01	70.16	78.67
6.	Ghugus	CT	65.02	83.59	73.47	90.17	55.49	76.39
7.	Rajura	MCI	77.53	84.57	85.47	90.69	68.25	77.89
8.	Mul	CT	68.34	76.45	79.27	84.99	57.11	67.65
9.	Chandur	CT	-	80.14	-	87.30	-	71.95
10.	Durgapur	CT	-	83.39	-	89.93	-	76.46
11.	Shivaji Nagar	CT	63.56	78.94	74.60	87.58	49.85	68.92
12.	Kondumal	CT	-	95.50	-	98.42	-	92.38
13.	Nakoda	CT	69.98	83.53	77.51	90.77	61.58	75.52
14.	Sasti	CT	81.70	73.68	71.80	82.71	50.93	63.53
15.	Visapur	CT	62.59	-	72.29	-	52.39	-
District Total		**U**	**75.68**	**84.69**	**84.19**	**91.32**	**66.12**	**77.50**

Source: District Census, 1991 Chandrapur District.

4.5 Level of Urbanisation

Level of urbanisation is an indicator of development. Chandrapur district has low level of urbanization as compared with Maharashtra which is one of the most urbanized states. The district has relatively low level of economic development and industrialization. As per 2001 census about 6,65,067 persons were living in 14 towns out of the total population of 20,71,101 of the district which accounted for 32.11 percent. This figure is comparatively very low than the state average (42.92 percent). The level of urbanisation of the district has increased from 17.38 percent in 1981 to 28.04 percent in 1991 whereas the state average was 35.03 percent in 1981 and 38.69 percent in 1991. The trend shows that the difference with the state average is narrowing down due to opening up of coal mining activities and heavy industries like cement industry, paper industry etc. in the district. During the last two decades the levels of urbanization were higher than the national average of 25.71 percent in 1991 and 27.78 percent in 2001.

The tehsilwise distribution of percentage of urban population shows that of the 14 tehsils, 8 tehsils had urban population and rest 6 tehsils namely Chimur, Nagbhir, Sindewahi, Sawli, Gondpipri and Pombhurna did not have urban population. Chandrapur tehsil has the highest percentage of urban population (80.48 percent) followed by 67.30 percent in Ballarpur and 45.67 percent in Bhadravati tehsil. Warora, Brahmapuri, Mul, Rajura and Koropna tehsils had lower percentage of urban population than the district average. (Table 4.13) (Figure 4.5).

Table 4.13 Level of Urbanisation, 1981-2001

Sl. No	Tehsil	Population						Percentage of Urban Population		
		1981		1991		2001				
		Total	Urban	Total	Urban	Total	Urban	1981	1991	2001
1	2	3	4	5	6	7	8	9	10	11
1	Chandrapur	318957	192889	469771	350670	440897	354832	60.47	74.65	80.48
2	Bhadrawati	108368	0	132321	32426	156995	71700	0.00	24.51	45.67
3	Warora	134525	36081	155594	43721	165843	41971	26.82	28.10	25.31
4	Chimur	127637	0	142062	0	156772	0	0.00	0.00	0.00
5	Nagbhir	98227	0	112728	0	124425	0	0.00	0.00	0.00
6	Brahmapuri	118892	0	136636	26591	153486	31207	0.00	19.49	20.33
7	Sindewahi	112708	0	130536	0	106275	0	0.00	0.00	0.00
8	Mul	133862	0	154921	18008	110109	22330	0.00	11.62	20.28
9	Sawli	0	0	0	0	104686	0	0.00	0.00	0.00
10	Gondpipri	97346	0	108741	0	74559	0	0.00	0.00	0.00
11	Rajura	166431	17762	228681	25367	152216	31301	10.67	11.09	20.56
12	Koropna	0	0	0	0	143210	21731	0.00	0.00	15.17
13	Pombhurna	0	0	0	0	47906	0	0.00	0.00	0.00
14	Ballarpur	0	0	0	0	133722	89995	0.00	0.00	67.30
Total		**1416953**	**246232**	**1771994**	**496823**	**2071101**	**665067**	**17.38**	**28.04**	**32.11**
Maharashtra								**35.03**	**38.69**	**42.92**
India								**23.70**	**25.71**	**27.78**

Source: Census of India, 1991 & 2001 (Provisional)

Chandrapur district has 14 towns as per 2001 census. In 1981 it was only 12. The towns of Chandrapur, Ghugus, Durgapur, Kondumal and Nakoda are in Chandrapur tehsil. Bhadravati and Shivaji Nagar are located in Bhadravati tehsil. Rajura has two towns and the tehsils of Ballarpur, Warora, Brahmapuri, Mul and Koropna have one town each. Of the 14 towns in the district, Chandrapur is the only Class-I town. Ballarpur and Bhadravati are the two Class-II towns. There are six Class-III towns namely Warora, Brahmapuri, Ghugus, Rajura, Mul and Chandur. The towns of Durgapur, Shivaji Nagar and Kondumal fall in the category of Class-IV. Nakoda and Sasti are in Class-V. Ghugus, Chandur, Durgapur, Shuivaji Nagar, Kondumal, Nakoda and Sasti have been declared as census town in 2001 whereas Visapur, which was declared as census town in 1991, has now been declassified as rural in 2001 census (Table 4.14).

Table 4.14: Class Size Distribution of Towns 1991, 2001

Class	Population	No. of Towns	
		1991	2001
Class I	100,000 and above (Generally referred as City)	1	1
Class II	50,000 to 99,999	1	2
Class III	20,000 to 49,999	3	6
Class IV	10,000 to 19,999	4	3
Class V	5,000 to 9,999	3	2
Class VI	Less than 5,000	-	-
Total		**12**	**14**

Source: Census of India, 2001.

As far as the density of population in the urban areas is concerned, the highest density of population is in Shivaji Nagar having 6621 persons / Sq.Km. in 1991 followed by Rajura (6474), Bhadravati (5659), Warora (5520) and Chandrapur (4018). The lowest density of 819 persons / Sq.Km. is in Sasti town. The growth of population during 1991-2001 shows that Bhadravati has the highest growth rate of 196.62 percent and lowest is in Nakoda town with -15.79 percent. The towns of Rajura and Bhadravati experienced higher growth than the district average of 33.86 percent. The towns of Warora, Nakoda and Sasti have shown negative growth during the same period (Table 4.15).

Table 4.15: Town wise density and growth 1991 & 2001

Sl. No.	Town	Civic Status	Area in Sqm.	Population		Class		Density		Percentage Growth 1991-2001
				1991	2001	1991	2001	1991	2001	
1	2	3	4	5	6			7	8	9
1	**Chandrapur**	M.Cl.	56.28	226,105	289450	I	I	4018	5143	28.02
2	**Ballarpur**	M.Cl.	16.51	83,511	89995	II	II	5058	5451	7.76
3	**Bhadravati**	M.Cl.	3.39	19,184	56903	IV	II	5659	16786	196.62
4	**Warora**	M.Cl.	7.92	43,721	41971	III	III	5520	5299	-4.00
5	**Brahmapuri**	M.Cl.	21.91	26,631	31207	III	III	1215	1424	17.18
6	**Ghugus**	C.T.	12.94	25,002	29945	III	III	1932	2314	19.77
7	**Rajura**	M.Cl.	2.93	18,969	25843	IV	III	6474	8820	36.24
8	**Mul**	M.Cl.	23.15	18,008	22330	IV	III	778	965	24.00
9	**Chandur**	C.T.	0	0	21731	NA	III	0	0	0.00
10	**Durgapur**	C.T.	0	0	17714	NA	IV	0	0	0.00
11	**Shivajinagar**	C.T.	2.00	13,242	14797	IV	IV	6621	7399	11.74
12	**Kondumal**	C.T.	0	0	11721	NA	IV	0	0	0.00
13	**Nakoda**	C.T.	3.51	7,127	6002	V	V	2030	1710	-15.79
14	**Sasti**	C.T.	7.81	6,398	5458	V	V	819	699	-14.69
15	**Visapur**	C.T.	3.83	8,925	NA	V	NA	2330	0	0.00
Total			**162.18**	**496,823**	**665,067**			**3063**	**4101**	**33.86**

Source: Census of India, 2001.

4.6 Scheduled Castes and Scheduled Tribes

According to 2001 census, Chandrapur district recorded 2, 96,927 scheduled caste persons and 3, 75,256 scheduled tribe persons, which constitute 14.34 percent and 18.12 percent respectively. The corresponding figures in 1991 census were 16.90 percent and 19.70 percent respectively. The same figures for the state in 1991 were 11.10 percent and 9.27 percent respectively. Chandrapur district has higher proportion of SC and ST population than the state average. However, the comparative figures of 1991 and 2001 reveal that the proportion of SC and ST population is decreasing. This may be due to out migration of the people of these communities from the district. In fact the SC population during 1991 and 2001 showed negative growth of -0.87 percent and ST population increased during the last decade only by 7.47 percent that was less than the natural growth.

Table: 4.16 Tehsilwise distribution of Scheduled Caste/Scheduled Population, 2001

Sl.No.	Tehsil	Total Population	Scheduled Caste Population	Scheduled Tribe Population	Percentage of Scheduled Caste Population	Percentage of Scheduled Tribe Population
1	**2**	**6**				
1	Chandrapur	289450	75492	47303	17.12	10.73
2	Bhadrawati	89995	24798	27362	15.80	17.43
3	Warora	56903	14994	34486	9.04	20.79
4	Chimur	41971	23507	50919	14.99	32.48
5	Nagbhir	31207	16720	23374	13.44	18.79
6	Brahmapuri	29945	23747	13026	15.47	8.49
7	Sindewahi	25843	13523	30543	12.72	28.74
8	Mul	22330	8212	17257	7.46	15.67
9	Sawli	21731	10210	16212	9.75	15.49
10	Gondpipri	17714	11510	14069	15.44	18.87
11	Rajura	14797	23720	34304	15.58	22.54
12	Koropna	11721	19624	36573	13.70	25.54
13	Pombhurna	6002	3473	13482	7.25	28.14
14	Ballarpur	5458	27397	16346	20.49	12.22
District Total		**665,067**	**296927**	**375256**	**14.34**	**18.12**

Source: Census of India, 2001.

Tehsilwise Distribution of Scheduled Caste Population shows that Ballarpur had highest percentage (20.49 percent) followed by Chandrapur (17.12 percent), Bhadravati (15.80 percent) and the lowest was in Pombhurna (7.25 percent). The tehsils of Warora, Nagbhir, Sindewahi, Mul, Sawli and Korpana have scheduled caste population lower than the district average (14.34 percent). The spatial distribution of scheduled caste population showed that the tehsils of Bhadravati, Chandrapur, Rajura, Gondpipri and Brahmapuri apart from Ballarpur have relatively higher concentration of scheduled caste population (over 15 percent) and in rest of the tehsils it is below 15 percent (Table 4.16) (Figure 4.6).

Table 4.17: Distribution of Scheduled Caste Population 2001

Sl.No	Tehsil	Scheduled Caste Population			P.C. to total		
		Total	Rural	Urban	Total	Rural	Urban
1	**2**	**6**	**7**	**8**	**9**	**10**	**11**
1	Chandrapur	75492	13082	62410	17.12	15.20	17.59
2	Bhadrawati	24798	9490	15308	15.80	11.13	21.35
3	Warora	14994	10177	4817	9.04	8.22	11.48
4	Chimur	23507	23507	0	14.99	14.99	0.00
5	Nagbhir	16720	16720	0	13.44	13.44	0.00
6	Brahmapuri	23747	17549	6198	15.47	14.35	19.86
7	Sindewahi	13523	13523	0	12.72	12.72	0.00
8	Mul	8212	6052	2160	7.46	6.89	9.67
9	Sawli	10210	10210	0	9.75	9.75	0.00
10	Gondpipri	11510	11510	0	15.44	15.44	0.00
11	Rajura	23720	17809	5911	15.58	14.73	18.88
12	Koropna	19624	16528	3096	13.70	13.61	14.25
13	Pombhurna	3473	3473	0	7.25	7.25	0.00
14	Ballarpur	27397	4874	22523	20.49	11.15	25.03
District Total		**296927**	**174504**	**122423**	**14.34**	**12.41**	**18.41**

Source: Census of India, 2001.

As far as rural areas are concerned, the highest percentage was recorded in Gondpipri (15.44 percent) followed by Chandrapur (15.20 percent), Chimur (14.99 percent) and the lowest in Mul (6.89 percent). The scheduled caste population was more concentrated in urban areas than the rural areas with 18.41 percent and 12.41 percent respectively for the district. This may be due to the growing literacy among the scheduled caste population and shifting from the traditional agricultural activities to other non-agricultural activities (Table 4.17).

Table 4.18: Percentage of Scheduled Caste/Scheduled Tribe Population, 1991

Sl.No.	TOWN	Civic Status	Scheduled Caste Population	Scheduled Tribe Population	P.C. of S.C. Population	P.C. of S. T. Population
1	**2**	**3**				
1	Chandrapur	M.Cl.	47865	25565	16.54	8.83
2	Ballarpur	M.Cl.	22523	6573	25.03	7.30
3	Bhadravati	M.Cl.	11592	4471	20.37	7.86
4	Warora	M.Cl.	4817	4362	11.48	10.39
5	Brahmapuri	M.Cl.	6198	2471	19.86	7.92
6	Ghugus	C.T.	6378	1529	21.30	5.11
7	Rajura	M.Cl.	3824	2220	14.80	8.59
8	Mul	M.Cl.	2160	1849	9.67	8.28
9	Chandur	C.T.	3096	2668	14.25	12.28
10	Durgapur	C.T.	4678	1057	26.41	5.97
11	Shivajinagar	C.T.	3716	1175	25.11	7.94
12	Kondumal	C.T.	1671	1407	14.26	12.00
13	Nakoda	C.T.	1818	606	30.29	10.10
14	Sasti	C.T.	2087	336	38.24	6.16
Total			**122423**	**56289**	**18.41**	**8.46**

Source: Census of India, 2001.

Chandrapur town had the lowest percentage number of scheduled caste population (16.54 percent) of the total population. The highest percentage of 38.24 percent was in Sasti town followed by Nakoda (30.29 percent), Durgapur (26.41 percent) and the lowest percentage of 9.67 percent was in Mul. The towns of Ballarpur, Bhadravati, Ghugus also had more than 20 percent scheduled caste population. The towns of Warora, Rajura, Chandur and Kondumal had less than the district average of 18.41 percent scheduled cast population (Table 4.18).

The tehsilwise distribution of scheduled tribe population showed that Chimur had the highest percentage of 32.48 percent followed by Sindewahi (28.74 percent), Pombhurna (28.14 percent), Koropna (25.54 percent) and the lowest was recorded in Brahmapuri tehsil (8.49 percent). Warora and Rajura tehsils had 20 to 25 percent scheduled tribe population. The tehsils of Chandrapur, Brahmapuri and Ballarpur had less than 15 percent scheduled tribe population. The distribution pattern of scheduled tribe population reveals that the concentration was higher in tehsils, which are relatively underdeveloped, forested with limited agricultural land. It was very low (less than 15 percent) in the tehsils of Chandrapur, Ballarpur and Brahmapuri that are relatively more developed in terms of non-agricultural activities. The tehsils of Chimur, Sindewahi, Pombhurna and Koropna are mainly forested and agriculturally backward (Table 4.19) (Figure 4.7).

Table 4.19: Distribution of Scheduled Tribe Population, 2001

Sl.No	Tehsil	Scheduled Tribe Population			P.C. to total		
		Total	Rural	Urban	Total	Rural	Urban
1	2	6	7	8	9	10	11
1	Chandrapur	47303	17139	30164	10.73	19.91	8.50
2	Bhadrawati	27362	21716	5646	17.43	25.46	7.87
3	Warora	34486	30124	4362	20.79	24.32	10.39
4	Chimur	50919	50919	0	32.48	32.48	0.00
5	Nagbhir	23374	23374	0	18.79	18.79	0.00
6	Brahmapuri	13026	10555	2471	8.49	8.63	7.92
7	Sindewahi	30543	30543	0	28.74	28.74	0.00
8	Mul	17257	15408	1849	15.67	17.55	8.28
9	Sawli	16212	16212	0	15.49	15.49	0.00
10	Gondpipri	14069	14069	0	18.87	18.87	0.00
11	Rajura	34304	31748	2556	22.54	26.26	8.17
12	Koropna	36573	33905	2668	25.54	27.91	12.28
13	Pombhurna	13482	13482	0	28.14	28.14	0.00
14	Ballarpur	16346	9773	6573	12.22	22.35	7.30
District Total		**375256**	**318967**	**56289**	**18.12**	**22.69**	**8.46**

Source: Census of India, 1991 & 2001 (Provisional)

The rural urban distribution of scheduled tribe population showed that 22.69 percent rural population is scheduled tribe whereas in urban areas it was only 8.46 percent. Rural areas of Chimur tehsil had the highest percentage of scheduled tribe population. The tehsils, which had no urban population or very low urban population, had comparatively high percentage of scheduled tribe population. The town wise distribution of scheduled tribe population states that Chandur has the highest percentage (12.28 percent) followed by Kondumal (12 percent), Warora (10.39 percent) and the lowest was in Ghugus (5.11 percent) (Table 4.19).

The growth of scheduled cast and scheduled tribe population showed that the scheduled tribe population during 1991-2001 had increased only by 7.47 percent in the district whereas the scheduled caste population has shown a negative growth of 0.87 percent during the same period. (Table 4.20)

Of the total 1472 villages in the district, 280 villages (19.02 percent) had no scheduled caste population at all. Among the remaining 1192 villages, 315 villages had scheduled caste population (less than 5 percent), 279 villages have 5 to 10 percent, 181 villages have 10 to 15 percent and 131 villages have 15 to 20 percent. About 141 villages which constitute only 9.58 percent had scheduled caste population above 50 percent. This shows that in about 71.67 percent villages scheduled caste population was less than 15 percent of the village population. As far as the scheduled tribe population was concerned, there are 107 villages which had no scheduled tribe population. Of the remaining 1365 villages, 348 villages (23.65 percent) had 50 percent or more scheduled tribe population. In 585 villages (40 percent) have scheduled tribe population less than 15 percent (Table 4.21 & 4.22).

Table 4.20: Decadal change in distribution of SC/ST Population, 1991-2001

Sl.No	Tehsil	Total Population		S.C. Population		Growth	S.T. Population		Growth
		1991	2001	1991	2001		1991	2001	
1	2	3	4	5	6	7	8	9	10
1	Chandrapur	469771	440897	100611	75492	-24.97	56091	47303	-15.67
2	Bhadrawati	132321	156995	22255	24798	11.43	27981	27362	-2.21
3	Warora	155594	165843	17387	14994	-13.76	33121	34486	4.12
4	Chimur	142062	156772	25802	23507	-8.89	48303	50919	5.42
5	Nagbhir	112728	124425	17735	16720	-5.72	23772	23374	-1.67
6	Brahmapuri	136636	153486	24269	23747	-2.15	13172	13026	-1.11
7	Sindewahi	130536	106275	18427	13523	-26.61	37756	30543	-19.10
8	Mul	154924	110109	20529	8212	-60.00	25776	17257	-33.05
9	Sawli	0	104686	0	10210	0.00	0	16212	0.00
10	Gondpipri	108741	74559	17583	11510	-34.54	26157	14069	-46.21
11	Rajura	228681	152216	34935	23720	-32.10	57040	34304	-39.86
12	Koropna	0	143210	0	19624	0.00	0	36573	0.00
13	Pombhurna	0	47906	0	3473	0.00	0	13482	0.00
14	Ballarpur	0	133722	0	27397	0.00	0	16346	0.00
District Total		**1771994**	**2071101**	**299533**	**296927**	**-0.87**	**349169**	**375256**	**7.47**

Source: Census of India, 1991 & 2001 (Provisional)

Note: The tehsils of Sawli (from Mul & Sindewahi), Koropna (from Rajura), Pombhurna (from Gondpipri) & Ballarpur (from Chandrapur) were created after 1991.

Table 4.21: Proportion of Scheduled Caste Population, 1991 & 2001

Percentage range of Scheduled Caste population to total population	No. of villages in each range		Percentage of villages in each range	
	1991	2001	1991	2001
No S.C. Population	272	280	18.46	19.02
5.00 and below	271	315	18.40	21.40
5.01–10.00	220	279	14.93	18.95
10.01-15.00	181	181	12.29	12.30
15.01-20.00	157	131	10.56	8.90
20.01-30.00	176	145	11.95	9.85
30.01 and above	196	141	13.31	9.58
All ranges	1473	1472	100.00	100.00

Source: District Census, 2001 Chandrapur District.

Table 4.22: Proportion of Scheduled Tribe Population to total population, 1991 & 2001

Percentage range of Scheduled Tribe population to total population	No. of villages in each range		Percentage of villages in each range	
	1991	2001	1991	2001
No. of S.T.Population	94	107	6.38	7.27
5.00	142	168	9.64	11.41
5.01–15.00	297	310	20.16	21.05
150.01-25	217	215	14.73	14.60
25.01-35.00	173	148	11.75	10.05
35.01-50.00	191	176	12.97	11.95
50.01 and above	359	348	24.27	23.64
All ranges	1473	1472	100.00	100.00

Source: District Census, 2001 Chandrapur District.

As many as 52 castes were recorded in the district. The main among them were Basor, Bhambi, Bnangi, Madgi, Mahar and Mang, among them Mahar constituted 56.57 percent of the total scheduled caste population. All these scheduled caste were found scattered all over the district. Of the total Scheduled Caste population, 40.50 percent were recorded to be main workers. In Basor, Bhamabi, Bhangi and Madgi there were more agricultural labourers than cultivators, but it was just opposite among Mahar and Mang. Among Basor 71.44 percent of the main workers were engaged in household industry. Similarly among Bhangi 65.04 percent of the main workers were engaged in other services. More than three-fourth of the main workers, among Mang and Mahar were recorded in the primary sector i.e., agriculture. Among the females in the age group of 15-19, 42.20 percent of the women were recorded as married. About 54.15 percent of the males and 79.96 percent of the females were found to be illiterate. In the rural areas 452 persons were found to be graduate and above and the bulk (383) were from Mahar Community. In the urban areas 147 persons were found to be graduates other than technical degree, the majority i.e. 114 from Mahar community. Similarly of the 54 persons with post graduate degree other than technical degree, 50 percent were from Mahar community. Of the 48 persons with technical degree or diploma equal to degree or post graduate degree, only 4 were graduates of medicine and all the 4 belonged to Mahar community.

As many as 44 tribes were recorded in 1981 census. The main among them were Gond, Hal, Kharia, Oraon and Pardhan. Gond tribes constitute 79.74 percent of the total scheduled tribe population. These scheduled tribes were found scattered all over the district. Of the total scheduled tribes population 48.15 percent were main workers. There were agricultural labourers for every 5 cultivators. In Pardhan tribe there were more agricultural labourers than cultivators, whereas in other main tribes cultivators were more than the agricultural labourers. Among the main workers of Gond and Kharia tribes more than 90 percent were engaged in agriculture. About 66.90 percent of the males and 88.72 percent of the females were found to be illiterates. Among the females in the age group of 15.19, 35.44 percent of the women were found to be married. In the rural areas 424 persons were found to be graduates and above. Among these 214 were found from Gond and 118 were reported from Halba tribes. In the urban areas 184 persons were reported to be holding graduate degree other than technical degree and 37 were holding post graduate degree other than technical degree. Similarly 49 persons were holding technical degree or diploma equal to degree or post graduate degree. Among these 8 were holding a degree in medicine and 12 in engineering. Females were holding such a degree in teaching only and all of them belonged to Halba tribe.

4.8 Work Force Participation

Definition of Work and Classification of Workers

The term “Work” is used in a special sense in the census. “Works may be defined as participation in any economically productive activity”. Such participation may be physical or mental in nature. “Work” involves not only actual wok but also effective supervision and direction of work. It also includes unpaid work on farm or in family enterprise**.”**

Types of Workers

All those who had worked for the major part of the preceding year were recorded as **main workers** (at least 6 months or 183 days) while those who worked for some time during the preceding year but not for the major part, have been treated as **marginal workers**. All those who had not worked at all during the last year, were recorded as **non-workers**. Persons engaged in household duties, students, dependents, retired persons, renters, beggars are some of the categories grouped as non-workers.

At the 2001 census there has been mainly a three-fold classification of population namely main workers, marginal workers and non-workers which was adopted for 1991 also. In addition to this the main workers are distributed in nine industrial categories of economic activities but in earlier census of 1981 this presentation was up to four industrial categories only. The main workers and marginal workers of 2001 are comparable with the main workers and the marginal workers of 1991. The main workers of 1991 are distributed in nine industrial categories of economic activities. The 2001 census data on the nine categories of main workers are yet to be published and thus not available. In fact, nature of one's activity and extent of participation in economically productive work are the decisive factors for such classification. Level of economic development of different regions within the district, availability of opportunities besides willingness to work especially among women, initiative and entrepreneurship evinced by the men folk in general etc. are the important factors that influence the distribution of population under these three categories i.e., main workers, marginal workers and non-workers., Table 4.22 shows the distribution of main workers, marginal workers and non-workers for total, rural and urban areas in 2001.

The work participation rate for total workers is defined as the percentage of total workers to total population. In a similar way it is defined for main and marginal workers. The 2001 census recorded 32.98 percent of the district population as main workers, 11.96 percent as marginal workers and the remaining 55.06 percent as non-workers. The corresponding figures for the state are 35.87 percent, 6.63 percent and 57.50 percent. Compared to 1991 census there has been significant decrease in work participation rate among the main workers of the district as well as state (42.05 percent in 1991 and 32.98 in 2001), (state 39.28 percent in 1991 and 35.87 percent in 2001). Thus the ratio of persons engaged in economically productive activity to total population for the district was higher in 1991 and in 2001 it became lower than the state.

The distribution of main workers to the total population in the district showed that Chimur had the highest percentage of 39.37 followed by Koropna (38.80), Pombhurna (38.23), Warora (37.82) and lowest was in Ballarpur tehsil (27.16 percent). The percentage of main workers was higher in rural areas than the urban areas having 36.25 percent and 26.06 percent respectively. Similarly, the tehsils, which had no urban population, recorded higher percentage of main workers to the total population. The rural areas of Warora tehsil had the highest percentage (41.97 percent), Koropna (40.79 percent), Chimur (39.37 percent) and Ballarpur had the lowest (33.03 percent) main workers. Among the urban areas of the tehsils Koropna had the highest percentage of main workers (27.67 percent), Chandrapur (26.63 percent), Rajura (26.51 percent) and the lowest was in Mul tehsil (22.92 percent)(Table 4.23).

The percentage of marginal workers of the district was 11.96 percent with 15.61 percent in rural areas and 4.25 percent in urban areas. The highest percentage of marginal workers was in Nagbhir (24.17 percent) followed by Sindewahi (23.63 percent), Sawli (21.46 percent) and the lowest marginal workers was in Chandrapur with 4.84 percent. The distribution of marginal workers among the tehsils reveals that the tehsils with low urbanization rate has higher percentage of marginal workers i.e. the marginal workers is mainly concentrated in the agricultural sector. The comparison with the state shows that the district has very high percentage of marginal workers with an average of 11.96 percent whereas the state has recorded only 6.63 percent in 2001. Similarly, the marginal workers are more in the rural areas than the urban areas. The proportion of female marginal workers was higher than that of male because the females besides attending their household duties also perform one or more economic activities to supplement the family income.

The percentage of total workers in the district (44.94 percent) was higher than the state average of 42.50 percent whereas the district had a lower percentage of main workers than the state. The higher percentage of workers was mainly due to high percentage of marginal workers in the district particularly in the rural areas. The tehsils wise distribution of the total workers shows that Sawli had the highest percentage of 55.40 percent followed by Pombhurna (55.12 percent), Sindewahi (52.88 percent) Chimur (52.47 percent), Nagbhir (52.38 percent) and the lowest is in Ballarpur (33.05 percent). All these tehsils have high percentage of total workers that are entirely rural and are mainly engaged in agricultural activities. Obviously the womenfolk residing in rural areas are economically more active than their counterparts in urban areas. This is due to the disparity in the nature of economy of the two sectors for which the statistical data has been complied separately. Generally the rural area offer more opportunities for men and women to work in the sphere of primary activities like agriculture, animal husbandry, mining etc., and as mechanization has not made significant dent in the rural agricultural economy. The per capita income is comparatively low. In view of the labour intensive nature of agricultural economy a large number of women are required to participate in work, especially during the peak seasons of agricultural operations like sowing and harvesting which are to be carried out in a short span of time covering large areas in each village.

The town wise distribution of main workers revealed that Chandur town has the highest percentage (27.65 percent) of main workers followed by Bhadravati (27.23 percent), Chandrapur (27.03 percent) and the lowest is in Shivaji Nagar (22.50 percent). The percentage of marginal workers is highest (14.08 percent) in Mul town followed by Sasti (9.49 percent), Brahmapuri (8.40), Nakoda (7.66 percent) and lowest was in Kondumal (0.71 percent). The percentage of total workers was highest in Mul town (37.00 percent) followed by Chandur (34.03 percent), Brahmapuri (33.93 percent) and the lowest was in Ballarpur town (27.21 percent). Generally higher degree of urbanisation of any particular area or region leads to a decrease in the proportion of workers in the population of the unit. Since Chandrapur is more urbanised, it is natural to find that the work participation rate is the lowest. By the same reasoning Sasti being the least urbanised town naturally contains a higher proportion of workers in its population. Town wise distribution of total worker, main worker and marginal workers is shown in Table 4.23.

Table 4.23 Percentage of Main workers, Marginal workers and Non-workers, 2001

Sl.No.	Town	Civic Status	Percentage of			
			Main workers	Marginal Workers	Total workers	Non-workers
1	2	3	4	5	6	7
1	Chandrapur	M.Cl.	27.03	3.67	30.70	69.30
2	Ballarpur	M.Cl.	24.31	2.90	27.21	72.79
3	Bhadravati	M.Cl.	27.23	3.17	30.39	69.61
4	Warora	M.Cl.	25.59	4.28	29.88	70.12
5	Brahmapuri	M.Cl.	25.53	8.40	33.93	66.07
6	Ghugus	C.T.	24.72	4.18	28.90	71.10
7	Rajura	M.Cl.	27.09	2.69	29.78	70.22
8	Mul	M.Cl.	22.92	14.08	37.00	63.00
9	Chandur	C.T.	27.65	6.39	34.03	65.97
10	Durgapur	C.T.	24.42	5.77	30.19	69.81
11	Shivajinagar	C.T.	22.50	1.87	24.36	75.64
12	Kondumal	C.T.	26.67	0.71	27.38	72.62
13	Nakoda	C.T.	23.16	7.66	30.82	69.18
14	Sasti	C.T.	23.74	9.49	33.24	66.76

Source: Census of India, 2001

Chapter-5
Economy

5.1 Agriculture

5.1.1 Distribution of Agricultural Workforce

The relative importance of the main spheres of economic activity may be gauged from the pattern of distribution of main workers according to the broad four-fold classification namely, cultivation, agricultural labour, household industry and other economic activities. The economic activity of the district is primarily dependent on agriculture, which is supported by the fact that the cultivators (32.54%) and agricultural labourers (35.56%) together constitute 68.10 per cent of the total workers of the district as against the state average of 59.62 per cent. The agricultural sector has absorbed about two-third of the total main workers, this is so because there is no alternative employment available in the district. The ratio between cultivators and agricultural labourers of 10:11 in the district differs from the state average of 10:8. The proportion in other workers categories is lower in the district, than the proportion of workers in the state except for livestock, forestry, fishing, hunting and plantation, orchard and allied activities, mining and quarrying and manufacturing, processing servicing and repairs in Household Industry. It may be seen that only one-third of the workers are engaged in the work other than agriculture. Among them the major categories are livestock, forestry, fishing, hunting and plantation, orchard and allied activities (2.43%), manufacturing processing, servicing and repairs in other than household industry (1.78%), trade and commerce (4.53%) and other services (8.99%). Lack of employment opportunities in other activities and over dominance of agricultural workers depicts poor income and low level of development (Table 5.1).

The employment of people in the tehsils indicates that around 84 percent of workers in Mul, Brahmapuri, Gondpipri, Chimur, Nagbhir and Sindewahi tehsils are engaged as cultivators and agricultural labourers, whereas in other tehsils such as Bhadravati, Warora and Rajura about 65 percent persons work as cultivators and agricultural labourers. Chandrapur is the only tehsil where a very low proportion of workers are employed in agriculture (22 percent). This may be due to the fact that large proportion of the workers is employed in other services (19.13 percent), manufacturing processing, servicing and repairs (15.58 percent) and in mining and quarrying activities (12.51 percent). Similar trend is observed in Bhadravati and Warora tehsils where more than 11 percent of the workers are engaged in other services whereas in rest of the tehsils it varies between 4 to 6 percent. The predominance of agricultural workers (cultivators and agricultural labourers) in the district indicates that agriculture is the predominant economic activity in the district and the mainstay of economy. However the variations within the district are due to the difference in the fertility of soils and resultant cropping and land holding patterns. Tehsil wise distribution of workers in nine industrial categories of economic activities is shown in table (5.2).

The predominance of agriculture has also led to very high dependency on agricultural land. According to 1991 census data, on an average 119 persons are dependent on every 100 hectares of cultivable land. The dependency ratio is very high in tehsils of Chandrapur, Nagbhir, Brahmapuri, Sindewahi and Mul ranging from 114 to 203. Scarcity of good arable land due to predominantly forested, low urbanisation and lack of employment opportunities in other non-agricultural sectors are the main reasons for high dependency. However with the increase of irrigation facilities and improvement of electric supply the use of electric pump sets for lift irrigation has increased manifold for agriculture during the last decade. As a result the cultivable land has increased since large amount marginal agricultural land has already been brought under cultivation. In spite of this, the tehsils of Chimur, Sindewahi, Nagbhir, Brahmapuri and Mul would continue to have high dependency on cultivable land due to

labour intensive predominantly rice cultivating area, availability of irrigation and limited arable land due to presence of forests. This also indicates low levels of development and relatively poor standard of living. The table 5.3 gives the tehsil wise distribution of persons engaged in agriculture per 100 hectares of cultivable area.

Major Findings

- Agriculture is the predominant economic activity in the district and is the mainstay of the economy. The employment opportunities in other economic activities is comparatively less leading to high dependency on agricultural land.
- Only 8.99 percent workers are in other services and repairs, 5.51 percent are engaged in manufacturing, processing, servicing and other than household industries.
- Workers in primary sector in the district have declined substantially since 1981 from 80 to 70 percent.

Table 5.1: Distribution of workers in nine categories of economic activities-1991

Categories of Workers	Maharashtra			Chandrapur District		
	P	M	F	P	M	F
1.	2.	3.	4.	5.	6.	7.
I. Cultivators	10172108 (32.81)	6230844 (29.79)	3941264 (39.07)	242426 (32.54)	152904 (32.57)	89522 (32.48)
II. Agricultural Labourers	8313223 (26.81)	3905511 (18.67)	4407712 (43.70)	264959 (35.56)	111132 (23.67)	153827 (55.87)
III. Livestock, Forestry, Fishing, Hunting and Plantations, Orchards & allied activities	471731 (1.52)	403833 (1.93)	67898 (0.67)	18076 (2.43)	16439 (3.50)	1637 (0.60)
IV. Mining and Quarrying	115075 (0.37)	98335 (0.47)	16740 (0.17)	29032 (3.90)	26956 (5.74)	2076 (0.75)
V(a).Manufacturing, Processing, Servicing and Repairs in Household industry	498431 (1.61)	336644 (1.61)	161787 (1.60)	13288 (1.78)	10261 (2.19)	3027 (1.10)
V(b).Manufacturing, Processing, Servicing and Repairs in other than Household industry	3597883 (11.60)	32506.8 (15.54)	847275 (3.44)	41066 (5.51)	36784 (7.84)	4282 (1.55)
VI. Constructions	801735 (2.59)	709015 (3.39)	92720 (0.92)	19006 (2.55)	15592 (3.32)	3414 (1.24)
VII. Trade and Commerce	2656519 (8.57)	2400024 (11.47)	256495 (2.54)	33722 (4.58)	29719 (6.33)	4008 (1.45)
VIII.Transport, Storage & Communications.	1160239 (3.74)	1115676 (5.33)	44563 (0.44)	16451 (2.21)	16069 (3.42)	382 (0.14)
IX. Other Services	3219165 (10.38)	2468051 (11.80)	51114 (7.45)	67090 (8.99)	53636 (11.42)	13454 (4.88)
Total	31006109 (100.00)	20918541 (100.00)	8756 (100.00)	745116 (100.0)	469492 (100.00)	275624 (100.00)

Source: District Census, 1991 Chandrapur District.

Table: 5.2 Tehsil wise Distribution of Workers in Nine Categories of Economic Activities - 1991

District/Tehsil	I Cultivators	II Agricultural Labourers	III Live Stock, Forestry, Fishing, Hunting and Plantations, Orchards and allied activities	IV Mining and Quarrying	V(a) Manufacturing, Processing, Servicing and Repairs in Household industry	V(b) Manufacturing, Processing, Servicing and Repairs in other than Household industry	VI Constructions	VII Trade and Commerce	VIII Transport, Storage and Communications	IX Other Services	Total Main Workers
1	2	3	4	5	6	7	8	9	10	11	12
1. Chandrapur	15526 (10.49)	16641 (11.24)	5215 (3.52)	18515 (12.51)	2564 (1.73)	23039 (15.58)	11203 (7.57)	16661 (11.25)	10365 (7.00)	28308 (19.13)	148035 (100.00)
2. Bhadravati	14540 (27.18)	19460 (36.38)	882 (1.65)	5047 (9.44)	946 (1.77)	2397 (4.48)	1314 (2.46)	1695 (3.17)	863 (1.61)	6344 (11.86)	53488 (100.00)
3. Warora	20426 (31.02)	24730 (37.56)	1317 (2.00)	1114 (1.69)	875 (1.38)	3488 (5.30)	1840 (2.79)	3085 (4.69)	1466 (2.23)	7497 (11.39)	65838 (100.00)
4. Chimur	24851 (36.05)	33839 (49.09)	1372 (1.99)	304 (0.44)	1247 (1.81)	1172 (1.70)	517 (0.75)	1735 (2.52)	268 (0.39)	3624 (5.26)	68929 (100.00)
5. Nagbhir	20678 (38.58)	25042 (46.72)	1084 (2.02)	47 (0.09)	1025 (1.91)	576 (1.07)	500 (0.93)	1440 (2.69)	565 (1.05)	2640 (4.94)	53597 (100.00)
6. Brahmapuri	29070 (44.88)	25499 (39.36)	995 (1.54)	211 (0.33)	874 (1.35)	1431 (2.27)	611 (0.94)	1880 (2.90)	570 (0.88)	3635 (5.61)	64776 (100.00)
7. Sindewahi	23045 (36.39)	30656 (48.41)	1576 (2.49)	466 (0.74)	1360 (2.15)	1003 (1.58)	463 (0.73)	1631 (2.58)	184 (0.29)	2944 (4.64)	63328 (100.00)
8. Mul	30994 (40.22)	33795 (43.86)	2028 (2.63)	61 (0.08)	1557 (2.02)	1407 (1.83)	635 (0.82)	2185 (2.84)	583 (0.76)	3809 (4.94)	77054 (100.00)
9. Gondpipri	22172 (46.09)	18562 (38.58)	1871 (3.89)	103 (0.21)	1184 (2.46)	461 (0.96)	402 (0.84)	806 (1.68)	180 (0.37)	2368 (4.92)	48109 (100.00)
10. Rajura	41124 (40.33)	36735 (36.03)	1736 (1.70)	3164 (3.10)	1656 (1.62)	6094 (5.93)	1521 (1.49)	2604 (2.55)	1407 (1.38)	5921 (5.82)	101962 (100.00)
District Total	242426 (32.54)	264959 (35.56)	18076 (2.43)	29032 (3.90)	13288 (1.78)	41066 (5.51)	19006 (2.55)	33722 (4.53)	16451 (2.21)	67090 (8.99)	745116 (100.00)

Source: District Census, 1991 Chandrapur District.

Table 5.3: Tehsil wise distribution of persons engaged in agriculture
per 100 hectares of cultivable area - 1991 & 2001

Sl.No.	Tehsils	Cultivators and agricultural labourers per 100 hectares of cultivable area	
		1991	2001
1	**2**	**3**	**4**
1	Chandrapur	146	76
2	Bhadravati	83	66
3	Warora	71	57
4	Chimur	114	88
5	Nagbhir	177	151
6	Brahmapuri	190	158
7	Sindewahi	203	125
8	Mul	178	144
9	Gondpipri	61	54
10	Rajura	91	60
District Total		**119**	**85**

Source: Zila Samajik Wo Arthik Samalochana 1999-2000

5.1.2 Agricultural Land Utilisation

It can be inferred from the table (5.4) that nearly one third of geographical area of the district is under forests. The net sown area is more than 42.58 percent and the fallow land is about 5.75 percent. Percentage of area not used for cultivation is 12.68 percent, which includes barren and uncultivable land. Cultivable land not used for cultivation other than fallow land accounts for 5.56 percent, which includes 2.16% cultivable waste, 2.44% permanent pasture and 0.96% land used for horticulture. Total cultivable land, which includes net area sown, cultivable waste and fallow land, accounts for 51.45 percent. There is a possibility of increasing the cultivable land by reducing the areas under culturable waste and fallow land (Figure 5.1).

The total cultivable land accounts for more than half of total geographical area of the district. There was a decline of more than 1.5 percent during 1995-96 to 1998-99. Similarly the area where more than one crop is grown showed a sharp decline of more than six percent and the gross cropped area also decreased substantially (7.2 percent) in the same time period. The net area sown showed a very slight decrease. The total uncultivable land increased by two percent. The land not available for cultivation and barren land unsuitable for cultivation increased drastically. The area not used for cultivation other than fallow land declined marginally. The land under permanent pasture and cultivable land but not cultivated also showed a slight decline. But there was some increase in the area under horticulture. The fallow land indicated a slight decline in the same period and the land under current fallow and other fallow land also showed a decreasing trend. Thus it can be observed that the barren land is increasing at a faster rate in the district whereas the cultivable land is declining at a slightly lower rate, but it has decreased very rapidly under gross cropped area and double cropped area. Table 5.5 shows the tehsilwise distribution of land utilisation for the year 1995-96 and 1998-99 (Table 5.5).

Table 5:4 Land utilisation pattern of Chandrapur district

Area in ('00 Hectares)

Sl.No.	Land utilisation category	1995-96		1998-99	
		Area	**P.C.**	**Area**	**P.C.**
1	**Total geographical area**	10919	100.00	10919	100.00
2	**Forest**	3521	32.25	3651	**33.44**
3	**Area not available / suitable for cultivation**				
a	Land not available for cultivation	916	8.39	737	6.75
b	Barren land not suitable for cultivation	237	2.17	647	5.93
	Total uncultivable Land (3a+3b)	1153	10.56	1384	**12.68**
4	**Area not used for cultivation other than fallow land**				
a	Cultivable land but not cultivated	289	2.65	236	2.16
b	Permanent Pasture	432	3.96	266	2.44
c	Horticulture	73	0.67	105	0.96
	Total (4a+4b+4c)	794	7.27	607	**5.56**
5	**Fallow land**				
a	Current Fellow	360	3.30	327	2.99
b	Other fellow	362	3.32	301	2.76
	Total Fellow (5a+5b)	722	6.61	628	**5.75**
6	**Net Area Sown**	4729	43.31	4649	**42.58**
7	**More than one crop**	1178	10.79	470	4.30
8	**Gross Cropped area (6+7)**	5907	54.10	5119	46.88
9	**Total Cultivable land (4a+4c+5+6)**	5813	53.24	5618	51.45

Source: Zila Samajik Wo Arthik Samalochana 1999-2000

As already mentioned the district has 33.44 percent land under forest. Sindewahi tehsil has the highest percentage of 66 percent of area under forest followed by Nagbhir (47 percent), Brahmapuri (42 percent) and Bhadravati (41 percent). Koropna has the lowest percentage of 14.89 under forest and Mul has only 16.30 percent. In sharp contrast to this the net sown area is recorded to be highest in Koropna followed by Warora, Chimur and Mul tehsils having above 50 percent of the total area. Similarly, the tehsils of Sindewahi and Chandrapur have less than 30 percent area under cultivation. The tehsils of Rajura, Gondpipri and Sawli also have 40 to 50 percent area under cultivation, whereas the forests cover in those tehsils is less than 40 percent. In addition to this Koropna, , Mul, Sawli, Warora have high (10 to 20%) area under cultivable waste and fallow land combined together. The distribution pattern of forest and cultivable land in various tehsils shows that the tehsils that have maximum forest cover have less cultivable land. At the same time the availability of cultivable land and its distribution is the result of the availability of good fertile land and water resources being close to the major river basins of Wardha on the west and south and Wainganga on the eastern border of the district. Higher forest cover is also related with factors such as elevated or undulating land with poor quality soil where cultivation is not possible. The trend of forest cover during 1995-96 to 1998-99 shows that except Koropna, Rajura, Sawli and Chandrapur, area under forest has increased in all the tehsils, highest increase has been recorded in Sindewahi tehsil from 36.74 percent in 1995-96 to 66.00 percent in 1998-99. However the trend in case of net area sown during 1995-96 and 1998-99 shows that there is not much of a change in the share in all the tehsils. On the contrary the gross cropped area has reduced from 5,90,000 ha to 5,12,000 ha during 1995-96 and 1998-99. The area sown more than once has also correspondingly reduced from 1.18 lakh hectares to 47,000 ha which accounts for only 10 percent of the total net sown area. The figure was 24.90 percent in 1995-96. Tehsilwise distribution shows that Brahmapuri has the highest percentage

Table 5.5 Tehsilwise land utilisation pattern

Sl.No.	Tehsils	Forest		Uncultivable land		Cultivable Waste		Fellow Land		Net Sown Area		Total Cultivable Land	
		Percentage		Percentage		Percentage		Percentage		Percentage		Percentage	
		95-96	98-99	95-96	98-99	95-96	98-99	95-96	98-99	95-96	98-99	95-96	98-99
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Chandrapur	33.40	31.79	15.90	25.96	10.26	0.00	12.58	13.28	27.87	28.97	44.47	42.25
2	Bhadravati	39.31	41.61	9.54	10.07	9.19	6.18	4.06	5.39	37.90	36.75	48.50	45.76
3	Warora	24.07	25.68	8.36	8.11	3.72	6.00	10.39	4.31	53.46	55.91	65.37	64.78
4	Chimur	32.49	33.21	6.86	9.21	5.05	3.34	0.63	3.07	54.96	51.17	57.85	56.41
5	Nagbhir	43.09	47.10	10.91	8.43	6.22	4.70	7.32	5.80	32.46	33.98	40.61	41.99
6	Brahmapuri	42.52	42.10	14.00	11.45	6.79	11.24	0.64	0.74	36.06	34.46	37.54	36.48
7	Sindewahi	36.74	66.02	10.22	4.01	5.25	2.76	16.16	2.76	31.63	24.45	49.17	28.45
8	Mul	12.78	16.30	15.64	12.11	7.71	4.19	15.64	16.08	48.24	51.32	67.18	67.62
9	Sawli	31.63	30.40	11.42	8.96	9.14	8.79	1.76	5.80	46.05	46.05	51.67	56.77
10	Gondpipri	27.51	34.01	7.06	12.45	5.48	3.53	7.25	3.90	52.70	46.10	63.66	52.88
11	Rajura	33.93	20.05	10.47	26.54	8.69	4.79	6.01	6.66	40.91	41.96	51.46	52.84
12	Koropna	21.57	14.89	11.04	6.29	11.30	13.22	1.54	6.55	54.56	59.05	62.26	74.97
TOTAL		**32.25**	**33.44**	**10.56**	**12.68**	**7.27**	**5.56**	**6.61**	**5.75**	**43.31**	**42.58**	**53.24**	**51.45**

Source: Zila Samajik wo Arthik Samalochona (Table No.3.1 Page 31-34)

Table 5.6: Distribution of area sown more than once

Sl. No.	Tehsils	Net Area Cropped		Total Area under crop (gross)		Area sown more than once		P.C. of area sown more than once	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8	9	10
1	**Chandrapur**	27753	28788	31420	29458	3667	670	13.21	2.33
2	**Bhadravati**	42911	41587	48379	44094	5468	2507	12.74	6.03
3	**Warora**	63261	66223	77839	73554	14578	7331	23.04	11.07
4	**Chimur**	60899	56754	75504	65013	14605	8259	23.98	14.55
5	**Nagbhir**	23463	24567	33148	29265	9685	4698	41.28	19.12
6	**Brahmapuri**	34038	32494	45082	43225	11044	10731	32.45	33.02
7	**Sindewahi**	22873	17690	26482	23338	3609	5648	15.78	31.93
8	**Mul**	21857	23280	27553	25579	5696	2299	26.06	9.88
9	**Sawli**	26240	26229	40711	29368	14471	3139	55.15	11.97
10	**Gondpipri**	56678	49591	61922	50546	5244	955	9.25	1.93
11	**Rajura**	50448	51677	59816	52451	9368	774	18.57	1.50
12	**Koropna**	42518	46027	62847	46027	20334	0	47.82	0.00
TOTAL		**472939**	**464907**	**590703**	**511918**	**117769**	**47011**	**24.90**	**10.11**

Source: Zila Samajik Wo Arthik Samalochana 1999-2000.

(33 percent) of area sown more than once followed by Sindewahi (31.93 percent) and Nagbhir (19.12 percent). Koropna tehsil has recorded a nil percentage of area under double crop. The trend during 1995-96 and 1998-99 shows that figure has declined in all the tehsils during this period. The table 5.6 shows the tehsilwise distribution of gross cropped area and area sown more than once.

Mul tehsil has the highest percentage (16 percent) of area under fallow land and Chandrapur has the next highest percent of 13.28 percent. Similarly, Koropna tehsil has highest percentage of cultivable waste-land (13.22 percent) followed by Brahmapuri (11.24 percent) and the lowest is in Sindewahi (2.76 percent). The total cultivable land, which includes cultivable waste, fallow land and net area sown accounts for 51.45 percent of the

total area of the district. The total cultivable land is highest in Koropna tehsil (74.97 percent) and the lowest is in Sindewahi, which is mostly forested.

The highest percentage of uncultivable land apart from forest cover is in Rajura tehsil (26.54 percent) followed by Chandrapur (25.96 percent). In rest of the tehsils it is below the district average of 12.68 percent and the lowest is in Sindewahi. The higher percentage in Chandrapur and Rajura is mainly due to high urbanisation rate and high population density. The trend shows that area not available and not suitable for cultivation has increased substantially in Chandrapur and Rajura tehsils by 10 percent and 16 percent respectively during 1995-96 to 1998-99. This is mainly due to the increase of urban area following the extension of municipal limit in Chandrapur and Rajura towns. Many rural areas around these two towns including agricultural land have been brought within the municipal limit.

Major findings:

- The district has considerable area under agriculture along the Wardha and Wainganga river valley on the west, east and northern side of the district. The central and southern most part of the district is mainly forested. The distribution of net area sown and the total cultivable land is inversely related with the availability of forests in the tehsils.
- The tehsils, which are located along the railroad corridors with higher population density, have relatively higher uncultivable land and it is quite likely that the cultivable land along this corridor is going to reduce due to higher concentration of population and urbanisation.
- The tehsils located on relatively higher land are forested and have less cultivable land. The land that is available outside the forest is not suitable for cultivation due to poor soil condition and non-availability of water resources. Therefore, the tehsils of Sindewahi, Chandrapur, parts of Nagbhir and Brahmapuri and Bhadravati have low potentialities in terms of agricultural development.
- The cultivable waste land and fallow land which are not presently used for cultivation is high in the tehsils of Chandrapur, Brahmapuri, Koropna and Mul which may be brought under cultivation or horticulture crop.
- All tehsils excluding four have more than one-third area under forests. Forest products are found in large quantity in the district such as bamboo, timber, firewood and tendu leaves and there are many forest-based units that provide large-scale employment to the villagers.
- The uncultivable land has shown increasing trend in many tehsils but it has risen more in Rajura and Chandrapur tehsils, whereas in Sindewahi and Koropna it has declined sharply.
- The forest area showed a very steep declining trend in Sindewahi (21 percent), Rajura (13 percent) and Koropna (6 percent). But it increased in Mul, Gondpipri and Bhadravati by more than two percent and remained almost constant in others. Thus it can be observed that while the cultivable land has shown a decreasing trend in almost all the tehsils, the barren land seem to be increasing faster and the fallow land depicts a mixed trend.
- In the district nearly one-third of the geographical area is under forests. At the district level the net sown area is 4,65,000 hectares (42.5%). It is also observed that percentage of area not used for cultivation is quite high viz. 18.38 percent that may include barren and uncultivable land and land under mines etc. Sindewahi tehsil had the largest proportion of land (66.02%) under forests, followed by Nagbhir (47.1%) and Brahmapuri tehsils (42.9%). Mul tehsil had least (16.5%) area under forests.
- There is scope for expansion of cultivated area. Fallow land which currently account for 5.8 percent of total area can at least partly be bought under cultivation.

5.1.3 Agricultural land holdings

The district has about 520081 Ha of agricultural land distributed among 2,01,500 land holdings. The land holdings are generally small. Of the total holdings 55.70 percent are less than 2 ha in the district against the state average of 64 percent. Between 2-10 ha there are about 35 percent land holding in the state and for the district it is 42 percent. The land holdings above 10 ha are very sparse both in the district (2.24 percent) and the state (1.81 percent). Thus dominance of small holdings states that the population of small farmers is high in the district as is evident from the table (5.7). Farmers having holdings between 2 to 10 hectares hold nearly two- third of the land, whereas big farmers who account for 2.24 percent of farmers have 12 percent of land with them (table 5.7) (Figure 5.2).

The land holdings of small size (less than 2 ha) are largely found in the district (55 percent) and the state (about 64 percent). The smaller size of holdings affects the productivity of crops and input costs of produce and as such economies of scale do not apply in this sector. The land holdings of small farmers having land less than two hectares account only for one-fourth of total area under agricultural holdings.

Fig 5.2: Distribution of land holdings by size

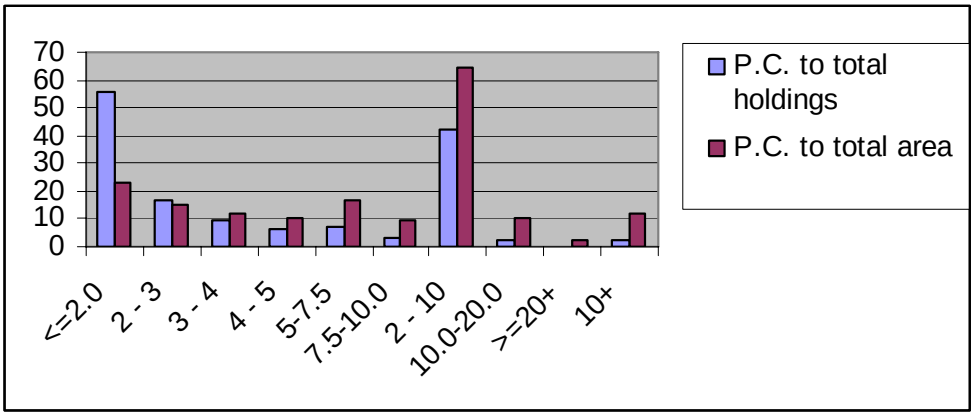


Table 5.7: Distribution of land holdings by size

Size (in ha.)	Number	Percentage	Area	Percentage
Up to 0.02	490	0.24	2	-
0.02-0.5	24403	12.11	7428	1.43
0.5-1.0	33001	16.38	24812	4.77
1.0-2.0	54333	29.68	88736	17.06
<=2.0	**112227**	**55.70**	**120978**	**23.26**
2-3	33611	16.68	79972	15.38
3-4	18446	9.15	63484	12.21
4-5	12344	6.12	54862	10.55
5-7.5	14703	7.30	88752	17.07
7.5-10.0	5654	2.81	48303	9.29
2-10	**84758**	**42.06**	**335373**	**64.48**
10.0-20.0	4163	2.07	53348	10.26
>=20+	352	0.17	10382	2.00
10+	**4515**	**2.24**	**63730**	**12.25**
Total	**201500**		**520081**	

Source: Zila Samajik Wo Arthik Samalochana 1999-2000.

5.1.4 Cropping Pattern

Rice, wheat, jowar, pulses, cotton and oilseeds are the major crops grown in the district. Rice is the staple diet of the people since more than 25 percent of total area is under it. Similarly 20 percent is under pulses, 16 percent under jowar, 13 percent under oilseeds and 10.15 percent under cotton. It can be seen from table 5.8 (A) & (B) that out of total gross cropped area of 5,11,918 ha, food crops alone account for more than 76.40 percent and non food crops account for 23.60 per cent. Among the food crops, cereals accounts more than half of the gross cropped area (52.15 percent) followed by pulses 20.21 per cent, oil seeds 13.20 percent, species 2.66 percent and fruits and vegetables are cultivated in a very small percentage of land (1.34 per cent). Food grains alone accounts for 72.36 per cent. Of the total non-food crops, fibre crops are the most prominent crops occupying about 10.37 per cent of the gross cropped area and other non-food crops account for 13.23 per cent (Figure 5.3).

Table : 5.8 (A) Area under major crops

Sl. No.	Tehsil	Rice	Wheat	Jowar	Pulses	Cotton	Oilseeds	Other Crops
1	Chandrapur	17.21	7.46	30.68	10.51	6.99	20.11	7.04
2	Bhadravati	8.81	13.07	21.68	10.50	8.33	33.85	3.76
3	Warora	3.47	10.98	13.23	25.87	25.27	8.44	12.73
4	Chimur	22.19	9.13	14.41	30.50	1.84	15.46	6.47
5	Nagbhir	55.08	6.90	0.00	15.63	0.00	2.96	19.43
6	Brahmapuri	55.89	6.52	3.86	26.79	0.00	3.04	3.91
7	Sindewahi	62.78	1.47	0.00	0.08	0.00	1.13	34.54
8	Mul	64.47	0.71	11.87	14.00	0.01	5.15	3.80
9	Sawli	62.96	0.88	13.37	19.26	0.00	2.76	0.76
10	Gondpipri	25.01	2.62	22.08	18.61	1.57	23.88	6.23
11	Rajura	5.97	6.23	24.09	23.79	25.20	8.44	6.29
12	Koropna	2.29	0.00	25.46	20.83	27.00	20.40	4.02
	TOTAL	**25.91**	**6.29**	**15.99**	**20.21**	**10.15**	**13.20**	8.25

Source: Zila Samajik Wo Arthik Samalochana 2001.

The tehsil-wise distribution under cereals indicates that Sindewahi accounts for highest percentage of area under cereals (97.79 percent) followed by Nagbhir (80.36 percent) and Sawli (77.21 percent), which is more than the district average. The lowest area is in Koropna (27.85 percent), Warora and Rajura tehsils (36.00 percent) each. Chimur accounts for the highest area (30.50 percent) under pulses followed by Brahmapuri (26.79 percent) and Warora (25.87 percent), whereas it is lowest in Sindewahi (less than one percent) and 10.5 percent in both Chandrapur and Bhadravati tehsils. The highest area under food grains (more than 96 percent) is in Sindewahi and Sawli and least in Koropna (48.68 percent) and Bhadravati ((54.06 percent). In other tehsils viz. Brahmapuri, Nagbhir and Mul more than 90 percent area is under this crop while in rest of the tehsils it is more than 60 percent. The area under food crops is highest in Sindewahi (98.84 percent) followed by Nagbhir (97.02 percent) and Sawli (97.92 percent) tehsils. It is least in Koropna (52.00 percent), Bhadravati (57.74 percent), while in rest of the tehsils it varies between 65 percent to 83 percent.

Fibre crops are cultivated in only 10 percent of area in the district. Koropna accounts for the highest area (27.60 percent), Rajura (25.85 percent) and Warora (25.31 percent), which is far better than the district average. It occupies a very small area in Nagbhir, Sindewahi and Sawli (less than 1 percent). Thus these crops are largely cultivated only in five tehsils including Chandrapur and Bhadravati where between 7-8 percent area is under it.

A very small percentage (more than 2 percent) is under spices, of which the highest area is in Rajura (5.12 percent), Chimur (4.95 percent) and Gondpipri (4.09 percent) whereas in Nagbhir and Sindewahi (less than one percent) land is under it. Fruits and vegetables occupy a very negligible area (1.34 percent), which is highest in Chandrapur (3.23 percent), Brahmapuri (2.21 percent) and Mul (2.13 percent). It is least in Koropna, Rajura and Sindewahi (less than one percent). In other tehsils excluding Sawli and Nagbhir, a little above one percent area is under this crop (Figure 5.4).

Table 5.8(B) Cropping pattern 1995 - 99

Sl. No.	Tehsil	Gross cropped area (Ha.)		All Cereals		All Pulses		Total Food grains		All Spices		Fruits and Vegetables	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
								(5+7)	(6+8)				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	**Chandrapur**	31420	29458	59.48	55.41	11.83	10.51	71.31	65.91	5.55	3.40	2.90	3.23
2	**Bhadravati**	48379	44094	48.33	43.56	10.25	10.50	58.58	54.06	1.76	1.85	1.74	1.83
3	**Warora**	77839	73554	27.95	36.72	10.43	25.87	38.38	62.59	1.44	1.63	1.40	1.76
4	**Chimur**	75504	65013	47.68	45.74	11.66	30.50	59.34	76.24	4.28	4.95	0.97	1.36
5	**Nagbhir**	33148	29265	78.06	80.36	15.53	15.63	93.59	95.99	0.28	0.31	0.62	0.71
6	**Brahmapuri**	45082	43225	66.24	66.28	26.72	26.79	92.97	93.07	1.13	1.54	1.88	2.21
7	**Sindewahi**	26482	23338	84.87	97.79	12.33	0.08	97.21	97.87	0.49	0.47	0.83	0.48
8	**Mul**	27553	25579	80.66	77.06	12.65	14.00	93.30	91.06	0.86	1.32	1.33	2.13
9	**Sawli**	40711	29368	84.92	77.21	11.71	19.26	96.62	96.47	0.65	0.00	0.65	0.67
10	**Gondpipri**	61922	50546	57.47	50.20	13.85	18.61	71.32	68.80	2.43	4.09	0.89	1.22
11	**Rajura**	59816	52451	35.00	36.42	17.91	23.79	52.92	60.21	3.22	5.12	0.33	0.38
12	**Koropna**	62847	46027	25.62	27.85	12.29	20.83	37.91	48.68	2.33	3.11	0.11	0.20
TOTAL		**590703**	**511918**	**52.05**	**52.15**	**13.77**	**20.21**	**65.82**	**72.36**	**2.22**	**2.66**	**1.07**	**1.34**

Sl. No.	Tehsil	All Oil Seeds		All Food crops		All Fibre Crops		Other Nonfood crop		All Nonfood crop	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
				(9+11+13+15)	(10+12+14+16)					(19+21)	(20+22)
1	2	15	16	17	18	19	20	21	22	23	24
1	**Chandrapur**	13.92	20.11	93.68	92.66	6.29	7.22	0.03	0.12	6.32	7.34
2	**Bhadravati**	31.59	33.85	93.70	91.59	6.30	8.41	0.00	0.00	6.30	8.41
3	**Warora**	33.77	8.44	75.01	74.56	24.94	25.31	0.05	0.13	24.99	25.44
4	**Chimur**	34.23	15.46	98.82	98.16	1.18	1.84	0.00	0.00	1.18	1.84
5	**Nagbhir**	5.49	2.96	100.00	99.98	0.00	0.01	0.00	0.01	0.00	0.02
6	**Brahmapuri**	3.83	3.04	99.83	99.85	0.16	0.14	0.01	0.01	0.17	0.15
7	**Sindewahi**	1.39	1.13	99.95	99.97	0.05	0.03	0.00	0.00	0.05	0.03
8	**Mul**	4.33	5.15	99.83	99.67	0.17	0.20	0.00	0.13	0.17	0.33
9	**Sawli**	2.02	2.76	99.94	99.91	0.06	0.09	0.00	0.00	0.06	0.09
10	**Gondpipri**	23.93	23.88	98.57	97.99	1.43	2.01	0.00	0.00	1.43	2.01
11	**Rajura**	21.06	8.44	77.53	74.15	22.47	25.85	0.00	0.00	22.47	25.85
12	**Koropna**	12.79	20.40	53.14	72.40	46.86	27.60	0.00	0.00	46.86	27.60
TOTAL		**19.16**	**13.20**	**88.27**	**89.60**	**11.72**	**10.37**	**0.01**	**0.03**	**11.73**	**10.40**

Source: Zila Samajik and Arthic Samalochan 1999-2000.

The oilseeds account for only 13.20 percent of total area in the district, which is highest in Bhadravati (33.85 percent), Gondpipri (23.88 percent) and Koropna (20.40 percent). It is lowest in Sindewahi (1.13 percent) and Sawli (2.76 percent). It is far below the district average in Sindewahi, Sawli, Brahmapuri, Warora and Rajura. Thus it is above the district average in only four tehsils.

There has been slight increase in the gross cropped area from 1995-96 to 1998-99. There was large-scale increase (around 7 percent) in the area under food crops and food grains from 1995-96 to 1998-99. But this area declined in almost the same proportion under all non-food crops, other non-food crops and oilseeds. The area under cereals remained almost constant whereas those under pulses rose by around six percent. It declined marginally under fibre crops and showed almost negligible rise under spices and fruits and vegetables. Thus food crops, food grains and cereals are cultivated on a large scale in the district.

The tehsilwise distribution (table 5.8-B) states that there has been increase in the area under cereals in Sindewahi, Warora and Nagbhir between 4 to 15 percent from 1995-96 to 1998-99, but it has declined by almost 7 percent in Gondpipri and more than 4 percent in Chandrapur and Bhadravati. The area under pulses rose drastically in Chimur (29 percent), Warora (15 percent), Koropna (8.5 percent) and Sawli (7.6 percent) and Rajura (5.9 percent). It declined very steeply in Sindewahi (12 percent) and very slightly in others. Under food grains, it rose by almost 17 percent in Chimur, Warora (24.2 percent) and around 11 percent in Koropna. It declined in Gondpipri, Bhadravati, Mul etc between 2 to 4.5 percent. The area under spices increased slightly in Chandrapur, Gondpipri and Rajura by 1.5 to 2.5 percent but it declined marginally in Sawli, Bhadravati, Sindewahi etc. The area under fruits depicted an upward trend in Chandrapur, Mul, Brahmapuri, Chimur and showed steep decline only in Sindewahi tehsil. An upward rise was observed under oilseeds in Koropna (around 7 percent), Chandrapur (6.2 percent) and Bhadravati (2.3 percent). It shows a steep declining trend in Warora (25 percent), Chimur (19 percent) and Rajura (13 percent). Area under all food crops rose sharply in Chimur, Warora and Koropna by 11 to 25 percent, whereas it went down slightly in Rajura (9.2 percent) and Bhadravati (4.4 percent). The fibre crops rose slightly in Bhadravati, Chandrapur, Warora, Rajura etc. but showed a declining trend in Koropna (almost 12 percent) which was highest among all the tehsils. The area under other non-food crops declined sharply in Warora, Chimur and Rajura by 12 to 25 percent. It showed an increase of more than 7 percent in Koropna, Chandrapur (6 percent) and Bhadravati (more than 2 percent). All non-food crops declined sharply in Warora, Chimur, Rajura and Koropna, between 9 to 25 percent. They depicted slight increase in Chandrapur (7 percent) and Bhadravati (4 percent).

5.1.4.1 Cereals

Cereals include wheat, rice, jowar, makka etc. More than 50 percent area is under cereals in the district (table 5.9). Among the tehsils, more than 97 percent gross cropped area in Sindewahi is under cereals followed by Nagbhir (80.3 percent) and 77 percent in Sawli and Mul, which was far above the district ratio. It was very low in Koropna (27.8 percent) and 36 percent in both Warora and Rajura tehsils. Thus in five tehsils it is far below the district average. The area under cereals remained almost static in the district from 1995-56 to 1998-99. There was drastic increase of more than 13 percent in Sindewahi, Warora (9 percent), Nagbhir (2.3 percent). There was steep decline in Warora (more than 8 percent), Sawli (7.7 percent), Gondpipri (7.2 percent) and around 4 percent in both Bhadravati and Chandrapur tehsils. Thus there has been a declining trend under this crop in majority of the tehsils which can be attributed to decline in cultivable area, infertile soil, terrain, increase in uncultivable land and lack of irrigation facilities. (Table 5.9).

Rice

Out of gross cropped area of 5,11,918 ha, rice is grown in 26 percent of the area (table 5.9) of the district. This crop is grown in northern and eastern parts especially in Mul, Sawli, Sindewahi, Brahmapuri and Nagbhir tehsils. This area varies from 55 percent to more than 60 percent in these tehsils. It is also grown along with oilseeds in Gondpipri tehsil (south eastern part) where more than 20 percent area is under both the crops which can be attributed to the presence of perennial river, fertile soil, good irrigation network, etc. The highest rice growing tehsil is Mul (64.5 percent), Sawli and Sindewahi (more than 62 percent) each. Thus in five tehsils, Mul, Sawli, Sindewahi, Brahmapuri and Nagbhir, this area is more than three times above the district average. This may be due to good drainage network, presence of fertile alluvial soils, high net sown area, low uncultivable land, level land, large number of irrigation tanks with regular water supply etc. In Koropna only 2 percent area is under rice followed by Warora (3.47 percent) and Rajura (5.97 percent) due to presence of poor laterite soil, lack of irrigation facilities, hilly terrain etc. The gross cropped area increased slightly in the district. Similar trend was noticed in Sawli where it increased by more than 19 percent, Mul (5 percent), Sindewahi (5 percent) which is quite substantial. There was sharp decline in this area in Nagbhir (around 11 percent) and Brahmapuri (5 percent).

Wheat

Around 6 percent of gross cropped area is under wheat in the district (table 5.9). It is grown in scattered form all over the district in small patches unlike rice. It is grown chiefly in north western, north eastern, north and south east parts in Bhadravati, Warora and Chimur tehsils on proportionately larger area and to some extent in Rajura, Gondpipri etc. This is highest in Bhadravati (13 percent) followed by Warora (10.9 percent) and Chimur (9.13 percent), which is far better than district average. This may be due to the presence of productive kali soils with high moisture retention capacity, fertile river basins, irrigation facility, climate, high cultivable land, less forest cover etc. It was lowest in Koropna, Mul and Sawli where less than 1 percent of area was under it due to the presence of infertile soil, poor drainage network, large percentage of uncultivable land etc. In five tehsils, the area is very much below the district average which may be due to infertile soil, lack of irrigation facilities, relief etc. There was very little increase in this area from 1995-96 to 1998-99 in the district. Slight increase was observed in Chimur, Rajura, Bhadravati and Warora. There was some decline in Koropna, Nagbhir and Sindewahi.

Jowar

It is cultivated in 16 percent area in the district. Chandrapur has the largest area (30.6 percent) under this crop followed by more than 24 percent in Koropna and Rajura, which is better than the district average. This can be attributed to the presence of good drainage network, high cultivable land and high net sown area, proper irrigation facilities, low forest cover etc. It was least in Sindewahi followed by Brahmapuri , it is grown in less than 4 percent area followed by Mul (11.87 percent) and Warora (13.23 percent). Thus excluding seven tehsils, the area under jowar is far above the district average in others. There has been a decline of about 4 percent in this area in the district. Steep decline was noticed in Sawli (27 percent), Gondpipri (13 percent) and 9 percent in Mul. It declined slightly in Bhadravati, Brahmapuri and Chimur between 2.8 to 6.5 percent. In Nagbhir and Sindewahi there was no area under jowar in both 1995-96 and 1998-99. Large scale increase took place only in Chandrapur tehsil by around 27 percent which was prominent among all the tehsils and around 4 percent increase was noticed in Koropna. This increase in Chandrapur may be due to less infertile soil, decline in gross cropped area, low area under rice and wheat, increase in uncultivable land, good irrigation facility etc.

Table-5.9 Percentage of area under different cereals – 1991

Sl.No.	Tehsil	Gross cropped area		Rice		Wheat		Jower		Makka		Other Cereals		All Cereals	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
1	**Chandrapur**	31420	29458	16.36	17.21	6.14	7.46	3.33	30.68	0.08	0.05	33.58	0.00	59.48	55.41
2	**Bhadravati**	48379	44094	8.14	8.81	12.05	13.07	28.14	21.68	0.00	0.00	0.00	0.00	48.33	43.56
3	**Warora**	77839	73554	3.43	3.47	9.11	10.98	15.40	13.23	0.00	0.00	0.00	9.04	27.95	36.72
4	**Chimur**	75504	65013	23.17	22.19	7.28	9.13	17.23	14.41	0.00	0.00	0.00	0.00	47.68	45.74
5	**Nagbhir**	33148	29265	66.78	55.08	7.58	6.90	3.71	0.00	0.00	0.00	0.00	20.82	78.06	80.36
6	**Brahmapuri**	45082	43225	50.23	55.89	5.75	6.52	10.25	3.86	0.00	0.00	0.00	0.00	66.24	66.28
7	**Sindewahi**	26482	23338	59.66	62.78	3.41	1.47	2.92	0.00	0.00	0.00	18.88	33.54	84.87	97.79
8	**Mul**	27553	25579	58.83	64.47	0.67	0.71	21.14	11.87	0.02	0.02	0.00	0.00	80.66	77.06
9	**Sawli**	40711	29368	43.47	62.96	0.91	0.88	40.53	13.37	0.00	0.00	0.00	0.00	84.92	77.21
10	**Gondpipri**	61922	50546	20.57	25.01	1.43	2.62	35.02	22.08	0.44	0.49	0.00	0.00	57.47	50.20
11	**Rajura**	59816	52451	5.70	5.97	4.41	6.23	24.85	24.09	0.05	0.14	0.00	0.00	35.00	36.42
12	**Koropna**	62847	46027	1.91	2.29	2.23	0.00	21.41	25.46	0.07	0.11	0.00	0.00	25.62	27.85
TOTAL		**590703**	**511918**	**23.88**	**25.91**	**5.39**	**6.29**	**20.08**	**15.99**	**0.06**	**0.08**	**2.63**	**4.02**	**52.05**	**52.15**

Source: Zila Samajik and Arthic Samalochan 1999-2000.

Makka

Area under makka in the district is almost negligible in comparison to the gross cropped area. It is cultivated only in Gondpipri, Rajura and Koropna tehsils on less than one percent area, which is still better than the district ratio. It is also cultivated in Mul and Chandrapur. There was marginal increase in the area under this crop. Similar trend was observed in Gondpipri, Rajura and Koropna from 1995-96 to 1998-99, whereas it declined in Chandrapur and remained almost static in others.

Other Cereals

They account for four percent of total cultivable area in the district. It is largely cultivated only in Sindewahi (33.54 percent), Nagbhir (20.82 percent) and Warora (less than 10 percent) tehsils, which is far better than the district ratio. This area increased by about 2 percent in the district. Similar trend was observed in Nagbhir where it increased by 20 percent and warlord (9 percent). In Sindewahi, it increased by more than 4 percent but there was steep decline in Chandrapur where it went down from 33 percent to zero in this period.

5.1.4.2 Pulses

They include gram, tur, moong, urad, wal kulith, matki and other pulses. Of the total cultivable area, 20.21 percent area is under pulses (table 5.10). It is largely grown in very few tehsils in seclusion such as Chimur, Brahmapuri, Warora etc and in some tehsils such as Rajura and Koropna, it is grown along with cotton. This can be due to the presence of fertile soil, good irrigation facility, less forest cover, high cultivable land and high net sown area, undulating topography etc. The maximum area is in Chimur (30.50 percent) followed by Brahmapuri (27 percent) and more than 23.5 percent in Warora and Rajura tehsils. It was least in Sindewahi (less than one percent) and around 10 percent in both Chandrapur and Bhadravati tehsils. This area increased by about seven percent from 1995-96 to 1998-99. It rose sharply in Warora from 10.43 percent to 25.87 percent and from 11.66 percent to 30.50 percent in Chimur. Large scale rise was also observed in Koropna, Rajura (between 7-8 percent), Sawli and Gondpipri. It declined in Sindewahi from 12.33 percent to 0.08 percent since large cultivable area is under rice in this tehsil (Table 5.10)

Gram

It is cultivated on only 2 percent of land and showed a slight increase. It is largely grown in Rajura (9.71 percent) and Koropna (8.55 percent) and in more than 5 percent are in Chimur and Warora which is above district average. Sindewahi and Mul have very less area devoted for this crop. Sudden spurt in the area was observed in Koropna and Rajura with slight increase in Chimur while it declines in Brahmapuri and Nagbhir.

Tur

About 4 percent of total cultivable area is under this crop in the district. It is largely cultivated in Gondpipri, Koropna and Rajura where more than 6 percent of the area is under tur. In Sindewahi tur area is negligible, Nagbhir (1.32 percent) and Mul (1.52 percent) which is far below district average. The area under tur declined slightly in the district from 1995-96 to 1998-99. It increased drastically in Gondpipri (around 5 percent) and slight increase was noticed in Bhadravati and Warora and showed a declining trend in Rajura and Koropna (more than 2 percent).

Table 5.10: Percentage of area under different pulses - 1991

Sl. No.	Name of Tehsil	Total Area under crop(gross)		Gram		Tur		Moong		Urad		Wal		Kulith		Matki		Other Pulses		All Pulses	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	**Chandrapur**	31420	29458	1.36	1.35	2.32	2.81	3.01	2.59	2.87	1.68	0.40	0.04	1.09	0.82	0.15	0.14	0.63	1.07	11.83	10.51
2	**Bhadravati**	48379	44094	3.07	3.10	3.28	4.00	0.61	0.57	0.43	0.56	0.23	0.05	0.67	0.32	0.04	0.05	1.91	1.85	10.25	10.50
3	**Warora**	77839	73554	3.57	5.00	5.26	6.37	0.13	0.14	0.13	0.18	0.00	0.03	0.33	0.13	0.11	0.12	0.89	13.90	10.43	25.87
4	**Chimur**	75504	65013	2.90	3.85	5.74	2.73	0.45	0.38	0.43	0.31	0.00	0.00	0.05	0.03	0.00	0.00	2.08	23.20	11.66	30.50
5	**Nagbhir**	33148	29265	3.05	2.75	1.05	1.32	0.58	0.82	1.51	1.12	0.02	0.02	0.27	0.21	0.00	0.00	9.04	9.38	15.53	15.63
6	**Brahmapuri**	45082	43225	3.03	3.53	1.86	2.27	6.90	4.04	8.26	6.81	0.02	0.00	0.45	0.35	0.02	0.00	6.18	9.79	26.72	26.79
7	**Sindewahi**	26482	23338	1.99	0.06	0.55	0.00	0.34	0.00	0.24	0.00	0.05	0.00	0.55	0.00	0.00	0.00	8.62	0.02	12.33	0.08
8	**Mul**	27553	25579	0.85	0.88	0.89	1.52	1.89	1.68	0.99	1.18	0.41	1.18	2.13	1.49	0.00	0.00	5.48	7.19	12.65	14.00
9	**Sawli**	40711	29368	0.95	1.09	0.69	1.64	1.69	2.64	0.65	1.31	0.01	0.15	0.99	1.50	0.00	0.00	6.69	10.94	11.71	19.26
10	**Gondpipri**	61922	50546	1.00	1.47	2.63	7.14	4.84	3.09	0.82	1.20	0.24	0.75	2.07	1.79	0.08	0.10	2.19	3.06	13.85	18.61
11	**Rajura**	59816	52451	1.24	1.25	9.71	6.58	2.09	2.72	1.51	1.35	0.00	1.18	1.98	1.01	0.00	0.00	1.39	9.70	17.91	23.79
12	**Koropna**	62847	46027	0.76	0.00	8.55	6.72	1.20	1.48	0.37	0.92	0.51	0.01	0.67	0.67	0.00	0.00	0.22	11.03	12.29	20.83
	TOTAL	**590703**	**511918**	**2.07**	**2.39**	**4.30**	**4.19**	**1.91**	**1.61**	**1.35**	**1.32**	**0.14**	**0.28**	**0.89**	**0.64**	**0.04**	**0.04**	**3.05**	**9.80**	**13.77**	**20.21**

Source: Zila Samajik and Arthic Samalochan 1999-2000.

Moong

The area under this crop is less than 2 percent in the district. Largest area is in Brahmapuri (4.04 percent) followed by Gondpipri (2.72 percent) in Rajura and 2.64 percent in Sawli. Area under this crop is negligible in Sindewahi followed by Warora and Chimur. There was a slight decline in the area from 1995-96 to 1998-99 in the district. Similar trend was observed Brahmapuri (2 percent), Mul and Gondpipri. But it increased in Sawli (1.69 percent to 2.64 percent), Koropna and Rajura tehsils.

Urad

The area under this crop is very less in the district. The highest area is in Brahmapuri tehsil (6.81 percent) followed by Chandrapur (1.68 percent) and Rajura (1.35 percent). It occupies a small area in Sindewahi, Warora and Chimur. It decreased marginally in the district and similar trend was observed in Brahmapuri, Chandrapur and Rajura. There was some increase in Sawli, Gondpipri and Koropna.

Wal, Kulith, Matki

These crops occupy a very small area in the district. While wal is grown largely in Mul and Rajura, Kulith in Gondpipri and Sawli and Matki in Chandrapur and Warora tehsils. The area under wal has increased slightly in the district but declined sharply under kulith and remained constant under Matki. Similar trend can be observed in Gondpipri, Mul and Rajura whereas it declined in Koropna, Sindewahi and Brahmapuri. The area under kulith rose slightly in Sawli only but went down in Mul, Chandrapur, Rajura etc. and under matki there was an increase in Gondpipri, Warora and Bhadravati with some decline in Chandrapur and Brahmapuri.

Other Pulses

These crops occupy significantly large area (9.80 percent) in the district. The highest area is in Chimur (23.20 percent), Warora (13.90 percent) and Brahmapuri (9.7 percent). Very little area in Sindewahi, Bhadravati and Chandrapur tehsils is under this crop. An increasing trend is noticed from 1995-96 to 1998-99 where it rose by more than six percent. Similar trend is observed in Chimur (21 percent), Warora (13 percent), Koropna (10 percent) and Sawli (4 percent). But it declined steeply in Sindewahi (more than 8 percent), Koropna (10 percent) and Mul (1.7 percent).

5.1.4.3 Spices, fruits and vegetables

These crops are cultivated on a very small percentage of area (between 1 to 3 percent) of the gross cropped area in the district. They include mangoes, orange, lemon and other citrus fruits. Spices consist of chillies, turmeric, pepper etc. Rajura tehsil accounts for the largest area under spices (5.12 percent) followed by Chimur (4.95 percent) and Gondpipri (4.09 percent), which was far above the district average. This may be due to the less fertile soil, less requirement of water and low percentage of net sown area, undulating topography etc. The area under spices was zero in Sawli followed by less than 1 percent in Nagbhir and Sindewahi. Thus apart from above three tehsils, spices are grown in low proportion in rest of the tehsils. There was almost negligible increase in the area from 1995-96 to 1998-99. Maximum increase was observed in Gondpipri and Rajura (less than 2 percent), which was far above the district average. It showed a sudden decline in Chandrapur (2 percent) and Sawli where it declined from 0.65 percent to zero. In other tehsils, there was a slight increase in the area in Koropna, Mul, Warora and Bhadravati. (Table 5.11).

Table 5.11 Percentage of area under spices, fruits & vegetables – 1991

Sl No.	Tehsils	Total Area under crop(gross)		Total Spices		Total Fruits and Vegetables	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8
1	Chandrapur	31420	29458	5.55	3.40	2.90	3.23
2	Bhadravati	48379	44094	1.76	1.85	1.74	1.83
3	Warora	77839	73554	1.44	1.63	1.40	1.76
4	Chimur	75504	65013	4.28	4.95	0.97	1.36
5	Nagbhir	33148	29265	0.28	0.31	0.62	0.71
6	Brahmapuri	45082	43225	1.13	1.54	1.88	2.21
7	Sindewahi	26482	23338	0.49	0.47	0.83	0.48
8	Mul	27553	25579	0.86	1.32	1.33	2.13
9	Sawli	40711	29368	0.65	0.00	0.65	0.67
10	Gondpipri	61922	50546	2.43	4.09	0.89	1.22
11	Rajura	59816	52451	3.22	5.12	0.33	0.38
12	Koropna	62847	46027	2.33	3.11	0.11	0.20
	TOTAL	**590703**	**511918**	**2.22**	**2.66**	**1.07**	**1.34**

Source: Zila Samajik and Arthic Samalochan 1999-2000.

The area under fruits and vegetables is very meagre (1.34 percent) in the district in comparison to the total gross cropped area. Maximum area was in Chandrapur (3 percent) followed by 2 percent each in Brahmapuri and Mul, which was above the district figure. It was almost negligible (below 1 percent) in Koropna, Rajura, Sindewahi and Sawli, which was far below the district figure. There was a marginal increase in this area from 1995-96 to 1998-99. Similar trend is observed in Chandrapur, Brahmapuri and Mul, which was far better than the district figure. There has been slight decline only in Sindewahi, while in others it has shown a little increase.

5.1.4.4 Oilseeds

They occupy an area of 13.20 percent in the district and include peanut, Karkai, sunflower, till and other oilseeds. It is largely grown in the western part and some cultivation is also done in the south-eastern and south-western parts of the district. This can be due to the presence of fertile alluvial soils, good network of rivers, less forest cover, level plain land, more net sown area, agricultural market yard, more cultivable land etc. Maximum area is in Bhadravati (34 percent) followed by Gondpipri (24 percent) and 20 percent each in Koropna and Chandrapur tehsils which is far above the district average. Sindewahi has the lowest area (1.13 percent) under oilseeds followed by Sawli (2.76 percent) and (Nagbhir 2.96 percent). Thus excluding seven tehsils, the area under oilseeds is far above the district ratio. This area declined by more than five percent from 1995-96 to 1998-99. Similar trend was noticed in Rajura where it declined sharply by more than 12 percent, 25 percent in Warora and by 18 percent in Chimur. It increased sharply only in Koropna and Chandrapur tehsils between 6-7 percent. (Table 5.12).

Table 5.12 Percentage of area under oilseeds – 1991

Sl. No.	Tehsil	Total Area under crop(gross)		Peanut		Kardai		Sunflower		Til		Other Oilseeds		Total Oil Seeds	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	**Chandrapur**	31420	29458	0.00	0.01	0.00	0.01	4.98	4.13	0.10	0.02	8.84	15.95	13.92	20.11
2	**Bhadravati**	48379	44094	0.00	0.00	0.04	0.04	13.19	10.76	4.41	0.10	13.95	22.96	31.59	33.85
3	**Warora**	77839	73554	0.00	0.00	0.03	0.02	9.07	7.78	6.98	0.39	17.70	0.26	33.77	8.44
4	**Chimur**	75504	65013	0.01	0.00	0.02	0.02	9.32	9.95	2.65	0.00	22.23	5.48	34.23	15.46
5	**Nagbhir**	33148	29265	0.21	0.09	0.30	0.14	2.84	2.58	0.09	0.12	2.05	0.03	5.49	2.96
6	**Brahmapuri**	45082	43225	0.26	0.19	0.01	0.00	2.11	2.11	0.12	0.20	1.34	0.53	3.83	3.04
7	**Sindewahi**	26482	23338	0.09	0.23	0.11	0.00	0.81	0.54	0.21	0.35	0.17	0.01	1.39	1.13
8	**Mul**	27553	25579	0.00	0.00	0.00	0.00	3.08	2.74	0.49	0.57	0.75	1.84	4.33	5.15
9	**Sawli**	40711	29368	0.01	0.01	0.03	0.00	1.44	1.47	0.22	0.35	0.32	0.93	2.02	2.76
10	**Gondpipri**	61922	50546	0.00	0.00	0.05	0.03	7.06	8.79	12.18	0.34	4.65	14.71	23.93	23.88
11	**Rajura**	59816	52451	0.04	0.07	0.00	0.00	6.33	6.14	3.43	0.74	11.26	1.49	21.06	8.44
12	**Koropna**	62847	46027	0.03	0.19	0.00	0.00	9.73	0.01	1.23	1.03	1.80	19.17	12.79	20.40
TOTAL		**590703**	**511918**	**0.04**	**0.06**	**0.04**	**0.02**	**6.75**	**5.61**	**3.44**	**0.36**	**8.89**	**7.15**	**19.16**	**13.20**

Source: Zila Samajik and Arthic Samalochan 1999-2000.

Peanut, Kardai and Til

The area under peanut, til and kardai in the district is almost negligible in the district. The highest area is in Sindewahi, Brahmapuri and Koropna, which is more than the district average. Kardai is largely grown in Nagbhir, Bhadravati and Gondpipri. Til is largely grown in Koropna (1.0 percent) and Rajura and Mul, which is above the district ratio while in other tehsils, these crops are sparsely grown. There was slight increase in the area under peanut with large decline under til (around 2 percent) and almost negligible under kardai in the district. The area under peanuts rose sharply in Sindewahi and Koropna but declined steeply in Brahmapuri and Nagbhir, under kardai, this area declined in Nagbhir but remained almost static in others. There was steep decline under til in Gondpipri (11.74 percent), which is very high followed by Warora and Bhadravati tehsils where it declined by almost six percent, which is far worse than the district average. There was slight rise in Mul, Sawli and Nagbhir.

Sun Flower

More than five percent area is under this crop in the district. It was highest in Bhadravati (10.76 percent), Chimur (9.95 percent) and Gondpipri (8.79 percent). Thus excluding eight tehsils, its area is higher than the district ratio. The lowest area was in Sindewahi (0.54 percent), Koropna (0.91 percent) and Sawli (1.47 percent). There was marginal decline in this area in the district. Its decline was quite prominent in Bhadravati (3.5 percent) and Koropna (9.7 percent) and it rose slightly in Warora, Gondpipri and Chimur.

Other oilseeds

Around 7 percent area of the district was under other oilseeds. This was highest in Bhadravati (23 percent) and Koropna (19 percent) tehsils. Thus including Chandrapur and Gondpipri there were only four tehsils where the area was above the district average. It was least in Sindewahi, Brahmapuri and Warora. Slight downward trend is noticed in the district from 1995-96 to 1998-99 where it declined by more than 1.5 percent. A very steep decline was noticed in Chimur where it declined by more than 20 percent, followed by Rajura (10 percent) and Warora (16 percent). But it increased sharply in Bhadravati (9 percent), Koropna

(17 percent), Gondpipri (10 percent) and Chandrapur (7.1 percent), which is far better than the district ratio.

5.1.4.5 Fibre Crops

Out of the gross cropped area of 5,11,918 ha, 10 percent is under fiber crops in the district and it includes cotton, and other fibers. The maximum area is in Koropna (27.60 percent) followed by more than 25 percent in both Rajura and Warora tehsils, which is more than two and half times better than the district average. In Nagbhir, Sindewahi and Sawli, the area under these crops is almost insignificant whereas in Bhadravati, Chandrapur, Gondpipri and Chimur, between 1.5 to 8.5 percent area is under it. There has been slight decline (1.3 percent) in the total area from 1995-96 to 1998-99 in the district. This area declined steeply in Koropna from 46.86 percent to 27.60 percent (more than 19 percent) and rose slightly in Rajura, Bhadravati, Gondpipri and Chandrapur. (Table 5.13)

Table 5.13 Percentage of area under fibre crops – 1991

SL No.	Tehsils	Total Area under crop(gross)		Cotton		Other Fibre Crops		Total Fibre Crops	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8	9	10
1	**Chandrapur**	31420	29458	6.06	6.99	0.23	0.24	6.29	7.22
2	**Bhadravati**	48379	44094	6.24	8.33	0.06	0.08	6.30	8.41
3	**Warora**	77839	73554	24.91	25.27	0.03	0.04	24.94	25.31
4	**Chimur**	75504	65013	1.16	1.84	0.02	0.00	1.18	1.84
5	**Nagbhir**	33148	29265	0.00	0.00	0.00	0.01	0.00	0.01
6	**Brahmapuri**	45082	43225	0.00	0.00	0.16	0.14	0.16	0.14
7	**Sindewahi**	26482	23338	0.00	0.00	0.05	0.03	0.05	0.03
8	**Mul**	27553	25579	0.01	0.01	0.16	0.19	0.17	0.20
9	**Sawli**	40711	29368	0.00	0.00	0.06	0.09	0.06	0.09
10	**Gondpipri**	61922	50546	1.12	1.57	0.31	0.43	1.43	2.01
11	**Rajura**	59816	52451	22.03	25.20	0.44	0.65	22.47	25.85
12	**Koropna**	62847	46027	46.34	27.00	0.51	0.60	46.86	27.60
	TOTAL	**590703**	**511918**	**11.54**	**10.15**	**0.18**	**0.22**	**11.72**	**10.37**

Source: Zila Samajik and Arthic Samalochan 1999-2000.

Cotton

Out of total cultivable area, around 10 percent is under cotton in the district. It is chiefly grown in the western part of Koropna, Rajura and Chandrapur tehsils. This can be due to the presence of black loamy soils, good irrigation system along the river Painganga. Cotton along with Jowar is grown in both Rajura and Koropna in around 24 percent area. It was highest in Koropna (27 percent) and 25 percent each in Warora and Rajura tehsils, which is more than two and half times better than the district average. This may be due to the presence of black soil, good drainage, irrigation facility etc. In Bhadravati and Chandrapur between 7-8 percent of the area is under cotton and in Chimur and Gondpipri it is between 1-2 percent. Thus excluding Nagbhir, where it is not at all cultivated, it is almost negligible in other tehsils. This area declined slightly (around 1.4 percent) from 1995-96 to 1998-99. There was marginal increase in Rajura (around 3 percent), Bhadravati (2 percent) which was almost similar to the trend noticed in the district. It was very little in Warora, Chimur, Chandrapur and Gondpipri tehsils, In Koropna, this area declined by more than 19 percent which is very sharp and is similar to the decline under total fibre crops. This may be due to decline in net sown area due to high population growth, infertile soil, increase in cultivable wasteland and

fallow land etc. Thus Bhadravati, Warora and Rajura are the only tehsils where cotton is largely grown.

Other Fiber Crops

They occupy a very little area in the district, which is almost negligible. Similar trend is observed in other tehsils excluding Rajura, Koropna and Gondpipri where it is grown to some extent and is far above the district average. There was slight increase in the area from 1995-96 to 1998-99 in the district. Same trend is noticed in Rajura, Gondpipri and Koropna tehsils whereas it declined in Chimur, Brahmapuri and Sindewahi tehsils.

Non-Food Crops

The area under all non-food crops was around 23 percent in the district. It was highest in Koropna (48 percent) followed by Bhadravati (42 percent) and Rajura (34 percent). In Sindewahi only 1.2 percent of the area was under this crop, followed by Sawli (2.8 percent) and Nagbhir (3 percent). In other tehsils, viz. Gondpipri, Chandrapur, Warora, Chimur between 17 to 34 percent of the area was devoted to non-food crops, whereas in others it was less than 6 percent. There was a decline in this area by about 7 percent on the district. Similar trend was observed in Rajura (9 percent), Warora (24 percent) and Chimur (18 percent) which was better than the district average. The area increased by about 4 percent in Bhadravati, Chandrapur (7 percent).

Other non-food Crops

Other non-food crops account for around 13 percent of area, which is highest in Bhadravati (33.85 percent), Gondpipri (23.88 percent) and around 20 percent in Rajura and Chandrapur (table 5.17). In Sindewahi only 1.13 percent of area is under this crop followed by more than 2.5 percent in Nagbhir and Sawli. Thus five tehsils, more than 8 percent area is under these crops in other tehsils. There has been a decline of about 6 percent in this area in the district. It has similarly declined in Rajura by 12.6 percent, Warora (25 percent) and Chimur (18 percent) and has risen significantly in Chandrapur, Koropna and Bhadravati from 7.5 to 2.3 percent.

Major findings

- Food grains and food crops cover a larger percentage of gross cropped area in the district. More than 50 percent of the area is under cereals and around 13 percent is under oilseeds.
- Rice is largely grown in Mul, Sawli and Sindewahi since in these tehsils the irrigation facilities are well developed, soil is fertile, net sown area is between 50-30 percent, and well drained by Wainganga river.
- Wheat is grown in Bhadravati, Warora and Chimur where soils are of alluvial type, higher percentage of net sown area and good network of perennial rivers.
- Jowar is largely cultivated in the Bhadravati, Chandrapur and Rajura tehsils where soil is fertile and has good irrigation facilities.
- Pulses are gown largely in Rajura, Chimur and Sawli where the terrain is undulating, net irrigated area is less, high percentage of forest in south western part of Rajura and good system of rivers.
- In Warora, Rajura and Koropna, cotton is grown on the black cotton soils, good drainage of rivers and presence of industries related to cotton.
- Oilseeds are mostly grown in Bhadravati, Gondpipri, Chandrapur etc which occupy less than 20 percent of net sown area. In these tehsils due to presence of high percentage of forest cover, oilseeds are largely grown in the flat terrain where the soil is fertile and some irrigation facilities exists.
- Non-food crops occupy around 23 percent of the area, which is significantly low. It grown in Chandrapur, Bhadravati, Warora, Rajura etc. where land is fertile, have high

percentage of net sown area, irrigation facility while food crops occupy more than 70 per of the gross cropped area. It is largely grown in Sindewahi, Nagbhir, Sawli, Brahmapuri etc. where the terrain is hilly has moderate irrigation facility and large percentage of forest cover.

- Agriculture is very well developed along the Wardha and Wainganga river in the district where soil is fertile due to alluvial deposits, black regur soil, good drainage network, whereas it is less developed in the tehsils with higher elevation since they are thickly forested and have low percentage of cultivable land.
- The kali soils (black regur loams and clay loams) found along Wardha-Wainganga valleys are very productive and suitable for rabi crops like wheat due to high moisture retention capacity. But water logging is very common in this soil during monsoon and therefore, they are not suitable for kharif crops.
- Due to predominance of small holdings in the district farmers have very low purchasing power and are hardly left with any finance for adopting modern methods of farming.
- The district is very deficient in agricultural marketing facilities.
- Inadequate irrigation facilities in some parts of the district, have often lead to severe fluctuations in agricultural production.
- The storage facility for the farmers in the villages as well in the markets is inadequate.

5.1.5 Irrigation:

The district is very rich in terms of water resources due to its location, physiographic condition and presence of well spread network of natural drainage system. It has three major perennial rivers – Wardha, Wainganga and Penganga flowing on the east, west and southern parts of the district. Average rainfall of 1150 1450 mm is ensured every year. In spite of all these, the district lacks proper irrigation facilities which have direct bearing on the cropping pattern and production. The agricultural development potentialities still remain untapped and present levels of agricultural development is at subsistence level. According to the estimate of District Agriculture Department, only 1,10,289 ha of the total 5,81,300 ha of cultivable land is irrigated which accounts for only 18.97 percent and far below the estimated potential of 5,20357 ha (89.51 percent). However within district there is wide variation in the distribution of irrigated area.

5.1.5.1: Net Area Irrigated

Tehsil wise distribution of net area irrigated according to the District Statistical Abstract – 1999 as shown in table 5.14 and figure 5.4, it is observed that out of total net sown area of 4,75,300 ha, only 87431 ha was irrigated which accounts for 18.39 percent. Among the tehsils, the net irrigated area was highest in Sawli (57.94 percent) followed by Nagbhir (50.49 percent), Mul (44.46 percent) respectively. Thus it exceed the district average in five tehsils only viz. Sawli, Nagbhir, Mul, Sindewahi, Brahmapuri and Chimur. This may be due to availability of irrigation facilities either from tanks or wells. In Koropna only 4.79 percent of the area had irrigation facilities, followed by Warora (5.18 percent) and Rajura (7.54 percent) which was far below the district average. It can be attributed to the physiographic structure and soil condition.

The trend during 1995-96 and 1998-99 shows that the net irrigated area of the district declined by 9.59 percent which may be due to change in the availability of water and change in cropping pattern. There was steep decline in Sindewahi (56.65 percent) which was highest among all the tehsils. Chimur and Mul has experienced a decline of around 18.00 percent where as in Gondpipri it declined by 8.96 percent and Nagbhir 2.31 percent. In rest of the tehsils it increased highest being in Koropna tehsil where it increased by 72.89 percent followed by Rajura 69.16 percent, Bhadravati (16.08 percent), Warora (12.51 percent).

Brahmapuri and Sawli tehsils experienced a marginal increase of 1.28 and 5.66 percent respectively while in Chandrapur it was almost negligible (table 5.14) (Figure 5.5).

Table 5.14 Distribution of net area irrigated – 1991

Sl. No.	Tehsils	Net Sown Area	Net Irrigated				Difference during 95-96 & 98-99	Tank				Well			
			1995-96		1998-99			1995-96		1998-99		1995-96		1998-99	
			Area	P.C.	Area	P.C.		Area	PC	Area	PC	Area	PC	Area	PC
1	**Chandrapur**	30600	3942	12.88	3944	12.89	0.05	2954	74.94	3397	86.13	988	25.06	547	13.87
2	**Bhadravati**	42700	3979	9.32	4619	10.82	16.08	3686	92.64	484	10.48	293	7.36	4135	89.52
3	**Warora**	66200	3045	4.60	3426	5.18	12.51	1644	53.99	484	14.13	1401	46.01	2942	85.87
4	**Chimur**	59800	12611	21.09	10275	17.18	-18.52	11021	87.39	8865	86.28	1590	12.61	1410	13.72
5	**Nagbhir**	26500	13696	51.68	13379	50.49	-2.31	13676	99.85	12661	94.63	20	0.15	718	5.37
6	**Brahmapuri**	32500	7488	23.04	7584	23.34	1.28	6199	82.79	6336	83.54	1289	17.21	1248	16.46
7	**Sindewahi**	17900	14138	78.98	6128	34.23	-56.66	14072	99.53	5073	82.78	66	0.47	1055	17.22
8	**Mul**	24800	13473	54.33	11027	44.46	-18.15	13106	97.28	10510	95.31	367	2.72	517	4.69
9	**Sawli**	26400	14476	54.83	15296	57.94	5.66	14403	99.50	15172	99.19	73	0.50	124	0.81
10	**Gondpipri**	51800	6361	12.28	5791	11.18	-8.96	4923	77.39	4708	81.30	1438	22.61	1083	18.70
11	**Rajura**	49500	2205	4.45	3730	7.54	69.16	1508	68.39	2871	76.97	697	31.61	859	23.03
12	**Koropna**	46600	1291	2.77	2232	4.79	72.89	700	54.22	1789	80.15	591	45.78	443	19.85
TOTAL		**475300**	**96705**	**20.35**	**87431**	**18.39**	**-9.59**	**87892**	**90.89**	**72350**	**82.75**	**8813**	**9.11**	**15081**	**17.25**

Source: Zila Samajik and Arthic Samalochan 1999-2000

5.1.5.2: Gross Area Irrigated

So far as gross irrigated area is concerned, more than 30 percent area of the gross cropped area of the district was irrigated in 1998-99. Sindewahi and Nagbhir tehsils had the highest percentage of gross irrigated area of 64 percent followed by Sawli (55 percent), Mul (47 percent), Chimur (46.78 percent), Chandrapur (39.71 percent) and Rajura (34 percent) which was far better than the district average. The tehsils of Brahmapuri, Koropna, Gondpipri, Bhadravati had less than district the average and the least was in Warora (7.3 percent). In case of Chandrapur, Chimur and Rajura tehsils the net area irrigated was below the district average of 18.39 percent, while the gross irrigated area was above the district average of 30.97 percent. The trend during 1995-96 and 1998-99 shows that in the district the percentage of gross irrigated area has increased from 18.41 percent to 30.97 percent which is about an increase of 46 percent. In case of Chimur and Rajura it increased drastically during this period. In case of Chimur it increased from 19.04 percent to 46.78 percent whereas in Rajura it increased from 4.91 percent to 34 percent and in Chandrapur it increased from 15.58 percent to 39.71 percent. In almost all the tehsils the percentage of gross irrigated area has increased. In Sindewahi although the net irrigated area has decreased by 56.66 percent, the gross irrigated area has increased from 56.32 to 65 percent. Therefore, it shows that the area under irrigation in all the tehsils is increasing although the net irrigated area in some of the tehsils such as Chimur, Sindewahi, Mul and Gondpipri has decreased (Figure 5.6).

Table 5.15 Percentage of gross irrigated area to gross cropped area – 1991

Sl.No.	Tehsils	Total Area under crop(gross)		Gross Irrigated Area		P.C. to total Gross Cropped area	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8
1	**Chandrapur**	31420	29458	4895	11697	15.58	39.71
2	**Bhadravati**	48379	44094	4488	4619	9.28	10.48
3	**Warora**	77839	73554	6046	5353	7.77	7.28
4	**Chimur**	75504	65013	14377	30415	19.04	46.78
5	**Nagbhir**	33148	29265	15268	18682	46.06	63.84
6	**Brahmapuri**	45082	43225	8746	11913	19.40	27.56
7	**Sindewahi**	26482	23338	14915	15166	56.32	64.98
8	**Mul**	27553	25579	13819	12027	50.15	47.02
9	**Sawli**	40711	29368	14855	16284	36.49	55.45
10	**Gondpipri**	61922	50546	6606	6791	10.67	13.44
11	**Rajura**	59816	52451	2936	17836	4.91	34.01
12	**Koropna**	62847	46027	1791	7745	2.85	16.83
	TOTAL	**590703**	**511918**	**108742**	**158528**	**18.41**	**30.97**

Source: Zila Samajik wa Arthik Samalochal 1999-2000

5.1.5.3: Sources of Irrigation

The district has no major irrigation project at present. However, there is a proposal to develop 3 major projects to irrigate 2,30,198 ha of land. There are 700 medium irrigation projects irrigating about 26,763 ha of land and 37 more have been proposed to irrigate 154833 ha of land. At present 20% of the land is irrigated and there is potential to bring 89.52% of arable under irrigation. There are 51 tanks controlled by the state government and 1,901 tanks are under Zila Parishad. Out of which 50% tanks irrigates only 0 -20 ha of land each, 375 tanks irrigate 20-50 ha of land each and 109 tanks irrigates 50 to 100 ha catchments area each. Besides, there are 51 tanks under the state govt. which irrigates over 100 ha of agriculture land each. The 1901 tanks under Zila Parishad irrigate a total area of 32784 ha of land and the 51 state govt. tanks irrigates about 10,323 ha of land. The area irrigated by each type of irrigation scheme is given below:

Table 5.16: Area wise type of irrigation

Area	Type
Above 10,000 ha	Major irrigation
2000 - 10,000	Medium irrigation
Less than 2000	Minor irrigation
600 - 2000	Large minor
200 to 600	Minor irrigation
Upto 250	Local sector
below 100	Zila Parishad
100 to 250	State local sector

Source: Irrigation Department, Distt. Chandrapur, 2001.

The district has following minor irrigation:

1. Tank
2. Kolhapur type wire
3. Ex Malguzari
4. Lift
5. Percolation

Tanks:

It can be observed from the table (5.14) that tanks constitute major source of irrigation since more than 82 percent of the area is irrigated through them in the district. This trend can be observed in nine tehsils where more than 80 percent area is irrigated by tanks. In Sawli it is 99.19 percent, which is the highest among all the tehsils followed by Mul (95.13 percent) and Nagbhir (94.63 percent). In other tehsils, excluding Koropna, Rajura, Bhadravati and Warora, the area irrigated by tanks is above district average. More than 90 percent area is irrigated by tanks in Sawli, Mul and Nagbhir which may be due to large scale cultivation of rice as it occupied a higher percentage of area and more than 50 percent has good irrigation facilities and fertile soil. Tank Irrigation is least in Bhadravati (10.48 percent) and Warora (14.13 percent), which may be attributed to the predominance of wells for irrigation.

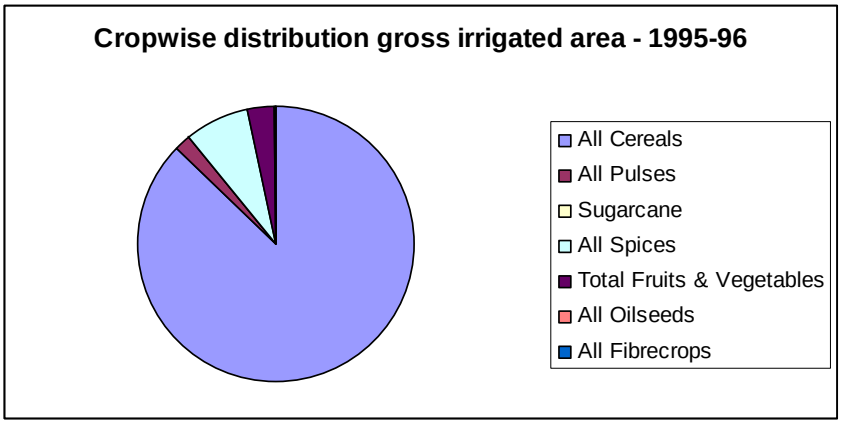
There has been decline of around eight percent in the area irrigated by tanks from 1995-96 to 1998-99. Similar trend is noticed in Bhadravati where it declined very steeply (more than 80 percent) followed by Warora (less than 10 percent) tehsils. Slight decline was also observed in Mul, Sindewahi and Nagbhir tehsils. But it rose drastically in Koropna (26 percent), Rajura (8.5 percent) and Chandrapur (11.0 percent) tehsils respectively, which was more than the district average.

Wells

Around 17.2 percent of the area was irrigated by wells in the district. It was highest in Bhadravati and Warora tehsils where more than 86 percent of the area was irrigated by wells which was five times more than the district average. This may be due to good drainage network, fertile alluvial soil and level land. It was more than the district average in Rajura (23 percent), Koropna (19.8 percent) and Gondpipri (18.7 percent) tehsils. It was far below the average in Sawli (0.81 percent), Mul (4.69 percent) and Nagbhir (5.37 percent) since more than 90 percent area is irrigated by tanks due to construction of large and medium irrigation projects and hilly topography.

5.1.5.4: Crop wise distribution of Gross Irrigated Area

Out of total gross irrigated area of 1,58,528 ha in 1998-99, in the district, 67.72 percent of irrigated area was under cereals, 16.19 percent under pulses, 84.38 percent under all food grains, 89.58 percent under all food crops and 10.42 percent under non-food crops. A very small percentage of the area was under oilseeds (4.23 percent), spices (3.04 percent), fruits and vegetable (2.11) and less than one percent under fibre crops. The gross irrigated area increased by more than thirty percent from 1995-96 to 1998-99, which may be due to change in cropping pattern, increase in the area under irrigation and also rise in cultivable land. There was steep decline in the area under cereals from 86.71 percent to 67.72 percent which may be due to shift in the cropping pattern (increase in the irrigated area under pulses). There was more than fifteen percent increase in the area under pulses from less than two percent to 16.2 percent which again may be due to the tendency of farmers to devote more area for pulses unlike cereals for profitability, good market price, excessive demand etc. The area under all



food grains remained almost constant, whereas those under sugarcane, fruits and vegetables and fibre crops showed a very slight increase in this period. The area under all food crops declined by more than 10 percent whereas those under non food crops increased drastically from 0.75 percent to 10.42 percent which clearly states that farmers paid more attention for cultivating crops unlike before. Thus the irrigated area under food crops went down in 1998-99. Similarly, irrigated area under oilseeds rose by more than three percent from 1995-96 to 1998-99 whereas under spices it declined by more than four percent. This clearly indicates that change in cropping pattern adversely affects the percentage of gross irrigated area under different crops, which can be due to price variation in specific crops depending on their demand in the market, profitability, govt. programmes / subsidy related to the individual crops, geographical conditions, financial requirement for cultivating the specific crop etc. Tehsilwise distribution of gross irrigated area among the different crops is shown in table 5.17. The tehsils of Sindewahi, Mul and Sawli has the maximum gross irrigated area under cereals during 1995-96. Rajura tehsil has the higher percentage of irrigated area under pulses followed by spices in 1998-99. In rest of the crops, the percentage of gross irrigated area is more or less negligible in all the tehsils.

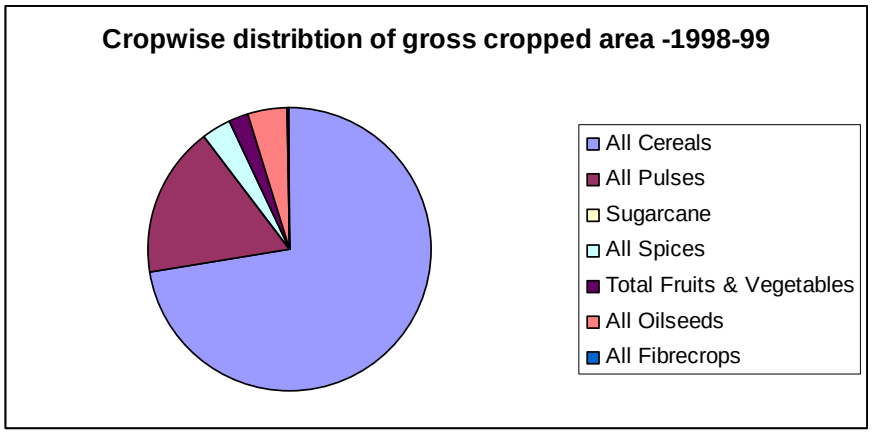


Table 5.17: Crop wise distribution of gross irrigated area – 1991

Sl. No.	Tehsil	Gross Irrigated Area		All Cereals		All Pulses		All Food grains		Sugarcane		All Spices	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96 (5+7)	1998-99 (6+8)	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Chandrapur	4895	11697	65.99	81.19	2.59	1.03	68.58	82.22	0.00	0.00	21.92	5.13
2	Bhadravati	4488	4619	83.96	90.99	4.68	0.37	88.64	91.36	0.00	0.00	5.75	2.42
3	Warora	6046	5353	61.88	71.31	11.96	8.07	73.83	79.38	0.10	1.29	11.31	6.05
4	Chimur	14377	30415	77.32	32.31	0.93	23.53	78.25	55.84	0.00	0.00	19.29	1.80
5	Nagbhir	15268	18682	97.50	97.58	0.38	0.00	97.88	97.95	0.01	0.01	0.51	0.49
6	Brahmapuri	8746	11913	88.58	92.13	1.41	0.00	89.98	92.13	0.06	0.03	2.97	2.22
7	Sindewahi	14915	15166	97.75	98.88	0.05	0.09	97.80	98.97	0.04	0.03	0.70	0.73
8	Mul	13819	12027	96.25	95.15	0.80	0.00	97.05	95.15	0.01	0.02	0.98	1.36
9	Sawli	14855	16284	97.25	71.67	0.88	23.18	98.12	94.85	0.00	0.00	0.91	1.66
10	Gondpipri	6606	6791	75.87	86.16	4.06	0.00	79.93	86.16	0.00	0.00	16.02	9.60
11	Rajura	2936	17836	60.83	18.03	2.69	69.95	63.52	91.74	0.00	0.00	29.56	6.80
12	Koropna	1791	7745	38.02	46.86	6.20	21.72	44.22	68.57	0.00	0.00	42.77	6.03
TOTAL		108742	158528	86.71	67.72	1.91	16.19	88.63	84.38	0.02	0.05	7.53	3.04

Source: Zila Samajik wa Arthik Samalochal 1999-2000(Table 3.5)

Sl. No.	Tehsil	Total Fruits & Vegetables		All Oilseeds		All Food crops		All Fibre crops		All Nonfood crops	
		1995-96	1998-99	1995-96	1998-99	1995-96 (9+11+13+15+17)	1998-99 (10+12+14+16+18)	1995-96	1998-99	1995-96	1998-99
1	2	15	16	17	18	19	20	21	22	23	24
1	Chandrapur	9.44	7.95	0.00	0.03	99.94	95.30	0.00	0.00	0.06	4.70
2	Bhadravati	4.34	4.72	0.00	0.00	98.69	98.51	0.00	0.00	1.31	1.49
3	Warora	8.90	7.88	2.60	0.80	95.80	94.60	0.35	0.60	4.20	5.40
4	Chimur	2.43	0.38	0.03	21.32	99.97	58.02	0.00	0.00	0.03	41.98
5	Nagbhir	1.14	1.17	0.46	0.36	99.53	99.62	0.00	0.02	0.47	0.38
6	Brahmapuri	5.81	3.43	0.97	0.68	98.82	97.81	0.00	0.50	1.18	2.19
7	Sindewahi	1.30	0.18	0.15	0.09	99.85	99.91	0.00	0.00	0.15	0.09
8	Mul	1.95	3.47	0.00	0.00	99.99	99.99	0.00	0.00	0.01	0.01
9	Sawli	0.88	0.98	0.02	0.01	99.91	97.50	0.00	0.17	0.09	2.50
10	Gondpipri	4.06	4.14	0.00	0.00	100.00	99.90	0.00	0.00	0.00	0.10
11	Rajura	2.93	0.58	0.00	0.00	96.05	99.12	0.00	0.00	3.95	0.88
12	Koropna	3.57	0.49	0.17	0.26	90.56	75.09	0.00	3.83	9.44	24.91
TOTAL		2.98	2.11	0.32	4.23	99.25	89.58	0.02	0.26	0.75	10.42

Source: Zila Samajik wa Arthik Samalochana 1999-2000.

5.1.5.5: Major Crops under irrigation:

Among all the crops, cereals has the highest percentage (40 percent) of area under irrigation. Pulses has 24.65 percent area under irrigation. In case of other crops percentage of area irrigated is very negligible. The irrigated area under different crops fluctuates from one year to another. In case of pulses, the irrigated area increased from 2.56 percent during 1995-96 to 24.65 percent in 1998-99. Similarly, percentage of area irrigated for cereals increased from 30.76 percent to 40.22 percent during the same period. Tehsil wise distribution of major crops under irrigation shows that 77.51 percent area under cereals were irrigated in Nagbhir during 1998-99 and Warora had the lowest percentage of 14.13 percent irrigated area under cereals. In Rajura tehsil, 95 percent area was irrigated under pulses during 1998-99. The fluctuating figures of irrigated area under different crops in different tehsils shows that the farmers have the tendency to switch over from one crop to another in different years. At the same time the irrigated area under different crops also fluctuates from year to year. However, on an average 30 to 40 percent of the area under cereals are irrigated in the district which is higher than any other crops. The tehsilwise distribution of crops under irrigation during 1995-96 and 1998-99 is given in table 5.18.

The distribution of irrigated area under different crops during 1995-96 and 1998-99 shows that the irrigated area in the district decreased from 51.42 percent to 48.72 percent during the same period. This has been considerable increase in irrigated area in Sawli (32 percent), Chandrapur (47 percent) and Nagbhir (15 percent). It also rose marginally in other tehsils. However, there has been decline in Koropna, Chimur and Sindewahi. Similar trend was noticed in Warora, Brahmapuri and Gondpipri where it remained almost constant. (Table 5.18 & 5.19).

Table 5.18 Tehsil wise crops under Irrigation

Sl. No.	Tehsil	Cereals		Pulses		Total Food grains		All food crops		All fibre crops		All non food crops	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	**Chandrapur**	17.28	58.19	3.42	3.88	14.98	49.53	19.52	52.16	0.00	0.00	0.05	6.80
2	**Bhadravati**	16.12	21.88	4.23	0.37	14.04	17.70	14.74	17.87	0.00	0.00	0.32	0.37
3	**Warora**	17.20	14.13	8.91	2.27	14.94	9.23	18.04	10.41	0.11	0.17	0.56	1.16
4	**Chimur**	30.88	33.05	1.52	36.09	25.11	34.27	29.47	32.82	0.00	0.00	0.01	100.00
5	**Nagbhir**	57.53	77.51	1.13	0.00	48.17	65.14	48.51	65.55	0.00	100.00	3.90	8.13
6	**Brahmapuri**	25.94	38.31	1.02	0.00	18.78	27.28	19.97	27.84	0.00	100.00	5.71	18.98
7	**Sindewahi**	64.87	65.71	0.21	73.68	56.67	65.72	57.06	65.69	0.00	0.00	6.01	4.80
8	**Mul**	59.85	58.06	3.19	0.00	52.17	49.13	52.51	49.74	0.00	0.00	0.16	0.07
9	**Sawli**	41.79	51.47	2.73	66.73	37.05	54.52	37.23	55.65	0.00	100.00	1.66	48.51
10	**Gondpipri**	14.08	23.06	3.12	0.00	11.96	16.82	14.29	18.11	0.00	0.00	0.00	0.05
11	**Rajura**	8.53	16.83	0.74	94.90	5.89	51.81	8.35	51.29	0.00	0.00	0.45	0.87
12	**Koropna**	4.23	28.31	1.44	17.54	3.32	23.70	6.40	24.30	0.00	2.34	0.45	8.73
	TOTAL	**30.67**	**40.22**	**2.56**	**24.65**	**24.79**	**36.11**	**26.44**	**36.31**	**0.03**	**0.79**	**0.45**	**13.68**

Source: Zila Samajik wa Arthik Samalochal 1999-2000.

Rice:

In the district an area of 1,32,662 ha was under rice cultivation in 1998-99. Out of this 86,985 ha of area was irrigated which accounted for 65.57 percent which is highest among all the crops. In Nagbhir, Sindewahi and Koropna 100 percent area under this crop is irrigated whereas in Chimur and Mul 60 – 80 percent area is irrigated. The percentage of irrigated area under rice is very low in Rajura (33.65 percent), Gondpipri (45.29 percent) and Brahmapuri (42.05 percent). In the district the average percentage of irrigated area under rice has increased marginally from 62 percent to 65.57 percent during 1995-96 and 1998-99. This may be due to change in the cropping pattern and emphasis to cultivate other crops like pulses which require less irrigation, low financial requirement, good market price and less time for maturity. Among the tehsils, large scale increase was noticed in Koropna where it rose from 5.65 percent to 100 percent from 1995-96 to 1998-99 which was highest among all the tehsils. This was followed by Nagbhir where it rose by 33.5 percent and less than ten percent in Sindewahi. Similar increase in lesser proportion was noticed in other tehsils also in except Mul, Sawli and Bhadravati. In Bhadravati, the decline in this area was almost negligible but it was 25 percent in Sawli and 13 percent in Mul which is very high in comparison to the district.

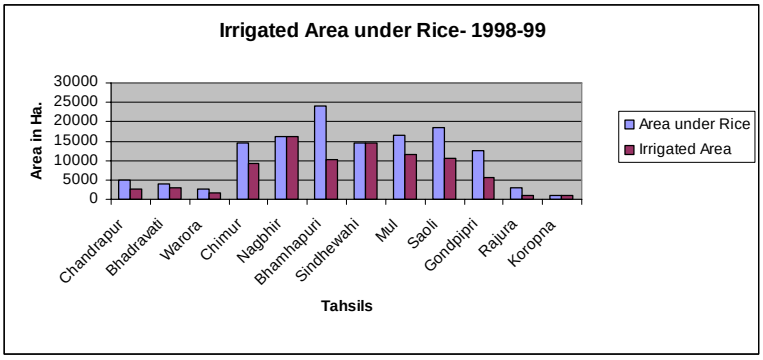


Table 5.19: Major crops under irrigation – 1991

Sl.No	Tehsil	Rice Cultivation					
		Area in Ha.		Area under Irrigation		% Area under Irrigation	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8
1	**Chandrapur**	5139	5070	2650	2770	51.57	54.64
2	**Bhadravati**	3940	3884	2846	2844	72.23	73.22
3	**Warora**	2672	2549	1546	1556	57.86	61.04
4	**Chimur**	17495	14428	10501	9183	60.02	63.65
5	**Nagbhir**	22135	16120	14723	16120	66.51	100.00
6	**Brahmapuri**	22644	24157	7317	10157	32.31	42.05
7	**Sindewahi**	15800	14652	14258	14652	90.24	100.00
8	**Mul**	16209	16490	13273	11382	81.89	69.02
9	**Sawli**	17699	18491	14440	10491	81.59	56.74
10	**Gondpipri**	12740	12641	4936	5725	38.74	45.29
11	**Rajura**	3409	3129	994	1053	29.16	33.65
12	**Koropna**	1203	1052	68	1052	5.65	100.00
TOTAL		**141085**	**132662**	**87552**	**86985**	**62.06**	**65.57**

Source: Zila Samajik wa Arthik Samalochal 1999-2000.

Table 5.19(A): Major crops under irrigation – 1991

Pulses

Sl.No	Tehsil	Area in Ha.		Area under Irrigation		% Area under Irrigation	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8
1	**Chandrapur**	3717	3095	127.00	120.00	3.42	3.88
2	**Bhadravati**	4959	4629	210.00	17.00	4.23	0.37
3	**Warora**	8119	19031	723.00	432.00	8.91	2.27
4	**Chimur**	8803	19829	134.00	7157.00	1.52	36.09
5	**Nagbhir**	5149	4573	58.00	0.00	1.13	0.00
6	**Brahmapuri**	12047	11579	123.00	0.00	1.02	0.00
7	**Sindewahi**	3266	19	7.00	14.00	0.21	73.68
8	**Mul**	3485	3580	111.00	0.00	3.19	0.00
9	**Sawli**	4766	5657	130.00	3775.00	2.73	66.73
10	**Gondpipri**	8578	9405	268.00	0.00	3.12	0.00
11	**Rajura**	10716	13147.00	79.00	12476.00	0.74	94.90
12	**Koropna**	7725	9589	111.00	1682.00	1.44	17.54
TOTAL		**81330**	**104133**	**2081.00**	**25673.00**	**2.56**	**24.65**

Source: Zila Samajik wa Arthik Samalochal 1999-2000.

Pulses:

Out of gross cropped area of 104133 ha under pulses, an area of 25,673 ha was irrigated in 1998-99 which accounted for 24.65 percent. Rajura tehsil had the highest percentage of irrigated area under pulses (94.90 percent) followed by Sindewahi (73.68 percent) and Sawli (66.73 percent) which was far better than the district average. It was least in Bhadravati (0.37 percent), Koropna (2.27 percent) and Koropna (17.54 percent) whereas Nagbhir, Brahmapuri, Mul and Gondpipri had no irrigation facility in 1998-99. However the district experienced large scale increase of irrigated area under these crops from 2.56 percent to 22 percent during 1995-96 and 1998-99, which may be due to the shift in the crops grown

by the farmers from rice to pulses. Similar increase was noticed in Rajura, Sawli and Sindewahi where large percentage of irrigated area was devoted to pulses unlike in 1995-96. This increase varied between 64 to 94.2 percent. In Warora and Bhadravati, it declined slightly whereas it declined to zero in Mul and Gondpipri from 3 percent. In other tehsils including Koropna and Chimur large scale increase of 16 to 34 percent was noticed under pulses.

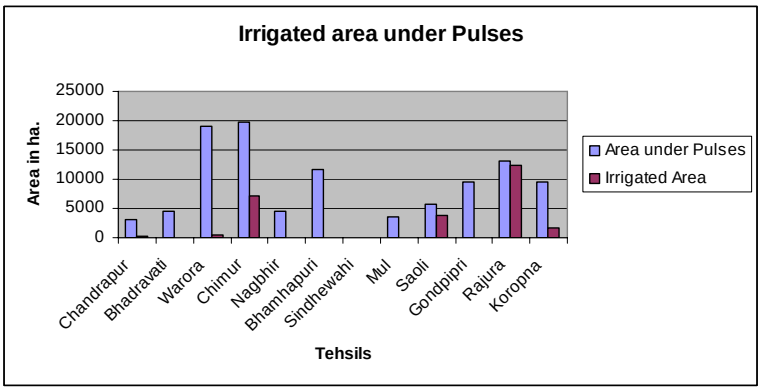


Table 5.19(B): Major crops under irrigation – 1991

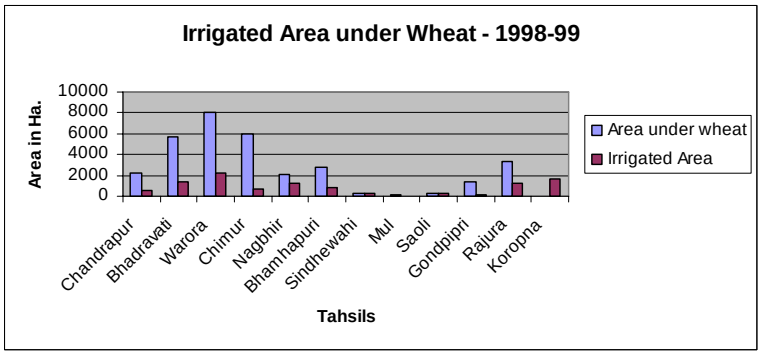
Wheat

Sl.No	Tehsil	Area in Ha.		Area under Irrigation		% Area under Irrigation	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8
1	**Chandrapur**	1928	2197	580	588	30.08	26.76
2	**Bhadravati**	5828	5762	922	1359	15.82	23.59
3	**Warora**	7089	8076	2195	2252	30.96	27.89
4	**Chimur**	5497	5938	615	644	11.19	10.85
5	**Nagbhir**	2511	2018	163	1306	6.49	64.72
6	**Brahmapuri**	2593	2818	430	818	16.58	29.03
7	**Sindewahi**	902	344	319	343	35.37	99.71
8	**Mul**	185	182	26	62	14.05	34.07
9	**Sawli**	370	257	6	257	1.62	100.00
10	**Gondpipri**	887	1323	52	126	5.86	9.52
11	**Rajura**	2637	3267	792	1182	30.03	36.18
12	**Koropna**	1399	0	613	1637	43.82	0.00
TOTAL		**31826**	**32182**	**6713**	**10574**	**21.09**	**32.86**

Source: Zila Samajik wa Arthik Samalochal 1999-2000.

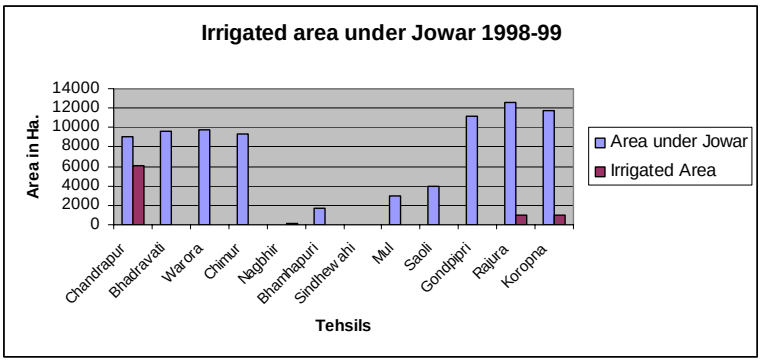
Wheat:

Unlike rice only 10,574 ha of area was irrigated under wheat in the district which accounted for 32.86 percent of area under irrigation. This is quite less in comparison to rice where more than 60 percent area is under it. In Sawli, 100 percent area under this crop is irrigated, followed by Sindewahi (99.71 percent) and Nagbhir (64.72 percent) which is more than district average. Koropna had no irrigated area under wheat. It was also very low in Gondpipri (9.52 percent) and Chimur (10.85 percent). In rest of the tehsils it varied between zero to 29 percent. There was an increase from 21 percent to 32.86 percent during 1995-96 and 1998-99 which is far better than rice indicating that there is some shift in the cropping pattern in the district. Large scale increase was observed in Sawli where it rose from 1.62 percent to 100 percent ,



Sindewahi from 35.37 percent to 99.71 percent and Nagbhir 6.49 percent to 64.72 percent which is very high in comparison to the district average. The declining trend was noticed in Koropna from 43.82 percent to zero, Chandrapur 30 percent to 26.76 percent and Warora 30.96 percent to 27.89 percent. Chimur experienced a very marginal decline. In rest of tehsils there was marginal increase of irrigated area under wheat.

Jowar:



Out of gross cropped area of 81,843 ha the area under irrigation for jowar was 8,234 ha, which accounted for 10 percent of the area which is comparatively very less unlike rice and wheat. More than 68 percent of the irrigated area under this crop is in Chandrapur which is six times more than the district average and is highest among all the tehsils. Less than 10 percent of area is covered by jowar in Koropna and Rajura which is very much below the district. It was very low in Chimur (0.01 percent), Sawli (0.05 percent) and Warora (0.09 percent). Thus the irrigated area under jowar is limited to only three tehsils viz. Chandrapur, Koropna and Rajura which may be due to lack of irrigation, infertile soil, less cultivable land and presence of more fallow land and wasteland.

A very interesting trend has been observed in the district whereby there has been 10 percent increase in the irrigated area in 1998-99 from zero in 1995-96. This indicates that earlier there was no prominence given for cultivating jowar. Later on its importance increased due to low nancial investment, less irrigation requirement, good market value and govt. schemes / subsidies given for growing it. This trend was reflected in Chandrapur where it increased at a faster rate from zero to 68 percent in 1998-99 and similar but marginal rise was also noticed in Koropna and Rajura. Sindewahi is the only tehsil where less than one percent area was under jowar in 1995-96 but which decline to zero in 1998-99.

Table 5.19(C): Major crops under irrigation – 1991

Jower

Sl.No	Tehsil	Area in Ha.		Area under Irrigation		% Area under Irrigation	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8
1	**Chandrapur**	1046	9039	0.00	6139.00	0.00	67.92
2	**Bhadravati**	13612	9561	0.00	0.00	0.00	0.00
3	**Warora**	11990	9731	0.00	9.00	0.00	0.09
4	**Chimur**	13010	9368	0.00	1.00	0.00	0.01
5	**Nagbhir**	1229	0	0.00	161.00	0.00	0.00
6	**Brahmapuri**	4620	1667	0.00	0.00	0.00	0.00
7	**Sindewahi**	774	0	3.00	1.00	0.39	0.00
8	**Mul**	5824	3035	0.00	0.00	0.00	0.00
9	**Sawli**	16502	3927	0.00	2.00	0.00	0.05
10	**Gondpipri**	21683	11161	0.00	0.00	0.00	0.00
11	**Rajura**	14864	12637	0.00	981.00	0.00	7.76
12	**Koropna**	13457	11717	0.00	940.00	0.00	8.02
TOTAL		**118611**	**81843**	**3.00**	**8234.00**	**0.00**	**10.06**

Source: Zila Samajik wa Arthik Samalochal 1999-2000.

Fruits and vegetables:

A very negligible area of only 6,858 ha is under fruits and vegetables of which 3,238 ha is irrigated which accounted for 48.72 percent of the total area. The maximum irrigated area is in Chandrapur (97.79 percent) followed by Nagbhir (97.78 percent) and Sawli (81.22 percent). There are only five tehsils viz Chandrapur, Nagbhir, Sawli, Rajura and Mul where more than 50 percent of the area is under fruits and vegetables, which are far better than the district average. It was very low in Chimur (13.05 percent), Sindewahi (25.23 percent) and Bhadravati (27.05 percent). Lack of demand and absence of marketing facility may be the main reason for not increasing the irrigated area under these crops.

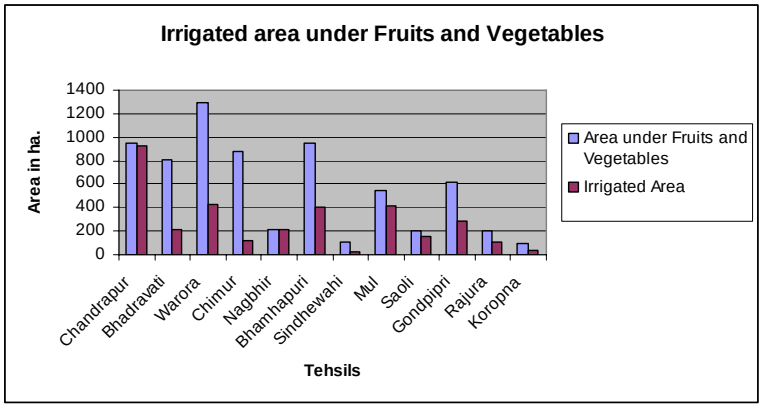


Table 5.19(D): Major crops under irrigation – 1991

Fruits and Vegetables

Sl.No	Tehsil	Area in Ha.		Area under Irrigation		% Area under Irrigation	
		1995-96	1998-99	1995-96	1998-99	1995-96	1998-99
1	2	3	4	5	6	7	8
1	**Chandrapur**	910	951	462.00	930.00	50.77	97.79
2	**Bhadravati**	841	806	195.00	218.00	23.19	27.05
3	**Warora**	1091	1296	538.00	422.00	49.31	32.56
4	**Chimur**	736	881	350.00	115.00	47.55	13.05
5	**Nagbhir**	205	208	174.00	219.00	84.88	105.29
6	**Brahmapuri**	846	954	508.00	409.00	60.05	42.87
7	**Sindewahi**	221	111	194.00	28.00	87.78	25.23
8	**Mul**	367	545	269.00	417.00	73.30	76.51
9	**Sawli**	263	197	130.00	160.00	49.43	81.22
10	**Gondpipri**	551	618	268.00	281.00	48.64	45.47
11	**Rajura**	198	198	86.00	104.00	43.43	52.53
12	**Koropna**	68	93	64.00	38.00	94.12	40.86
TOTAL		**6297**	**6858**	**3238.00**	**3341.00**	**51.42**	**48.72**

Source: Zila Samajik wa Arthik Samalochal 1999-2000.

Major Findings

- Irrigation in the district is increasing. Although net irrigated area showed a slight decline of about 2 percent the gross irrigated area increased from 18.41 percent to 30.97 percent during 1995-96 and 1998-98. .
- The tehsils of Sawli, Nagbhir and Sindewahi have very good irrigation facility both in terms of net and gross area irrigated. In Mul Chimur, Chandrapur and Rajura net area irrigated is relatively low but gross irrigated area is quite high. In rest of the tehsils such as Koropna, Gondpipri, Pombhurna, Bhadravati, Brahmapuri and Warora irrigation facility is lacking.
- The irrigated area under pulses, non-food crops and oilseeds has increased sharply to gross cropped area especially in Chimur tehsil.

- Thus excluding four tehsils, the area under cereals has increased significantly in the district.
- More than 94 percent of the area was irrigated by tanks in Sawli, Mul and Nagbhir which was far better than the district average (82.75 percent).
- In Bhadravati and Warora only 10-14 percent of the area was irrigated by tanks which was least among all the tehsils.
- More than 85 percent of the area was irrigated by wells in Bhadravati and Warora which was five times better than the district average (17.25 percent).
- The area irrigated by wells was least in Sindewahi (0.81 percent) followed by Nagbhir (5.3 percent) and Chimur (13.72 percent).
- The area irrigated by tanks showed a downward trend from 1995-96 to 1998-99 since it declined by 7 percent and inversely area under tanks rose by eight percent.

5.1.5.6: Irrigation Projects

There has been significant progress in respect of irrigation facilities in the district. The district irrigation department has drawn various plans and schemes to bring more areas under different irrigation schemes with greater emphasis on adivasi villages of the district. Besides the state irrigation department, Zila Parishad also intends to bring more areas under irrigation in different schemes. (Table 5.20).

Table 5.20: Tehsilwise irrigation potential (additional) likely to be achieved

Tehsil	Irrigation Potential to be achieved by different Schemes (Hectares)		
	State Level	Zilla Parishad	Total
Chandrapur	2941	1375	4316
Ballarpur	1940	1588	3528
Gondpipri	2126	2880	5006
Poubhurna	1778	1986	3764
Mul	8139	4662	12801
Sawli	7933	6335	14268
Warora	4209	2119	6328
Bhadrawati	5248	3084	8332
Chimur	2934	7096	10030
Brahmapuri	2117	5540	7657
Nagbhir	5465	7741	13206
Sindewahi	7521	6769	14290
Rajura	5242	2911	8153
Korpana	5091	1578	6669
Total	62684	55664	118348

Source: Irrigation Department, District Chandrapur, 2001.

It can be observed from the table (5.20) that 1, 18, 348 hectares of cultivable land is likely to be brought under irrigation, which implies that nearly 25.45 % of the cultivable area will have access to irrigation facility. However, the district irrigation department has drawn an ambitious Master Plan for upgrading the irrigation facilities. The Master Plan lists various projects (large, medium and small) and construction of irrigation tanks both by the state irrigation department and by Zila Parishad.

The Irrigation department during 2000-01 has completed seven medium projects and 634 minor irrigation projects to bring an area of 67,289 ha under irrigation. Of this Seven Medium irrigation projects alone has brought 26,763 ha under irrigation and the balance 40,526 ha have been brought under 634 different minor irrigation projects. Presently the

district has completed no major irrigation projects. Apart from these, an area of 2,11,541 ha being brought under different irrigation schemes are under implementation. These include two major projects, Goshikhurd and Human which will irrigate an area of 2,01,448 ha in Chandrapur, Chimur, Nagbhir, Brahmapuri, Sindewahi, Mul and Gondpipri and seven medium projects which will bring 32,422 ha under irrigation in Warora, Sawli, Gondpipri, Rajura and Koropna. Tehsil wise details of these projects and distribution of area benefited by different irrigation projects completed and ongoing are shown in table 5.21, 5.22 & 5.23. (Figure 5.7).

Table 5.21: MAJOR AND MEDIUM IRRIGATION PROJECTS

A	**MAJOR IRRIGATION PROJECTS**				
1	**Major Projects Completed = NIL**				
2	**Major Irrigation Projects Ongoing 2001-02**				
	Sl.No.	**Name of Project**	**Sl.No.**	**Blocks Benefited**	**Area (Ha)**
	1	Goshikurd	1	Mul	50934
			2	Gondpipri	16179
			3	Chimur	4015
			4	Brahmapuri	26005
			5	Nagbhir	17283
			6	Sindewahi	27047
				Total	**141463**
		Human	1	Mul	20234
			2	Sindewahi	12340
			3	Gondpipri	24079
			4	Chandrapur	3332
				Total	**59985**
	2			**Total**	**201448**
3	**Administratively approved Major Irrigation Projects.**				
	1	Lower Penganga	1	Koropna	**28750**
4	**Major irrigation projects at planning stage= Nil**				
5	**Major irrigation projects in future plan = Nil**				
B	**MEDIUM IRRIGATION PROJECTS**				
1	**Medium Irrigation Projects Completed**				
	Sl.No.	**Name of Project**	**Sl.No.**	**Blocks Benefited**	**Area in Ha**
	1	Ghorajhari	1	Nagbhir	2096
			2	Sindewahi	1750
				Sub Total	**3846**
	2	Naleshwar	1	Mul	600
			2	Sindewahi	1088
				Sub Total	**1688**
	3	Ashola Medha	1	Mul	3959
			2	Sindewahi	5460
			3	Gondpipri	500
				Sub Total	**9919**
	4	Chargaon	1	Warora	450
			2	Bhadrawati	1670
				Sub Total	**2120**
	5	Chandai	1	Warora	400
			2	Bhadrawati	2890
				Sub Total	**3290**
	6	Amal Nullah	1	Rajura	2519
			2	Korpana	1381
				Sub Total	**3900**
	7	Labansarad	1	Warora	2000

				Total	**26763**
2	**Medium Irrigation Projects Ongoing (2001-2002)**				
	Sl.No.	**Name of Project**		**Blocks Benefited**	**Area in Ha**
	1	Baghalibuti		Sawli	4542
	2	Saonapur Tomta		Gondpipri	2648
	3	Dongargaon		Rajura	3942
	4	Pakdiguddam		Koropna	3710
	5	Pothra (Lal Nullah)		Warora	10317
	6	Haranghat		Sawli	4820
	7	Kirmiri Darur		Gondpipri	2443
				TOTAL	**32422**
3	**Administratively approved Medium Irrigation Projects.**				
	Sl.No.	**Name of Project**		**Blocks Benefited**	**Area in Ha**
	1	Garadi		Brahmapuri	2700
	2	Butinullah		Brahmapuri	11450
	3	Hatiguta		Chandrapur	6088
	4	Bendara		Rajura	4876
	5	Borghat		Sawli	7013
	6	Numbughat		Brahmapuri	2397
				Total	**34524**
4	**Medium irrigation projects at planning stage.**				
	Sl.No.	**Name of Project**		**Blocks Benefited**	**Area in Ha**
	1	Bendli		Chandrapur	1295
	2	Burghat		Sawli	4900
	3	Kawthi		Sawli	3032
	4	Junasurla		Mul	5015
	5	Halda		Brahmapuri	4050
	6	Tapal		Brahmapuri	6600
	7	Palsgaon		Chandrapur	2890
	8	Lathi		Gondpipri	2163
	9	Chunala		Rajura	2506
	10	Aher Nawargaon Sawalgaon		Brahmapuri	2098
	11	Mangli		Brahmapuri	3113
	12	Bharosa Bhoygaon		Chandrapur	4500
	13	Wada		Chandrapur	6761
	14	Jevra Mandwa		Koropna	4603
	15	Yenbothli		Gondpipri	3873
	16	Adegaon		Gondpipri	5950
				Total	**63349**
4	**Medium irrigation projects in future plan**				
	1	Dorli	1	Brahmapuri	2265
	2	Niphanda	2	Sawli	4651
				Total	**6916**

Source: Irrigation Department, District Chandrapur, 2001.

Table 5.22 Irrigation projects completed as on June 2001(Area in ha.)

Sl.No.	Tehsils	Medium	Minor Irrigation (Ha.)							
			250+		101-250		Upto100		Total	
		Area in Ha.	No. of Schemes	Area Irrigated	No. of Schemes	Area Irrigated	No. of Schemes	Area Irrigated	No. of Schemes (Minor)	Total Area Irrigated
1	**Chandrapur**	0	4	2326	3	453	22	916	29	3695
2	**Ballarpur**	0	3	1618	2	322	23	938	28	2878
3	**Bhadravati**	4560	2	688			32	1319	34	6567
4	**Warora**	2850	2	666	2	426	38	1542	42	5484
5	**Chimur**	0	3	1282			92	3830	95	5112
6	**Nagbhir**	2096	1	486	2	291	41	1470	44	4343
7	**Bhamhapuri**	0	4	1620	1	172	21	562	26	2354
8	**Sindhewahi**	8298	3	1465	3	487	33	1222	39	11472
9	**Mul**	4559	0	0	2	378	30	1376	32	6313
10	**Sawli**	0	4	1429	2	392	53	2563	59	4384
11	**Gondpipri**	500	4	1778	1	178	46	1875	51	4331
12	**Rajura**	2519	1	538			77	2577	78	5634
13	**Koropna**	1381	1	364			43	1488	44	3233
14	**Parbhuna**	0	1	275	2	30	30	1184	33	1489
15	**Jiwati**	0							0	0
TOTAL		**26763**	**33**	**14535**	**20**	**3129**	**581**	**22862**	**634**	**67289**

Note: No major irrigation undertaken till 2001

Source: Irrigation Department, District Chandrapur, 2001

Table 5.23: Irrigation projects ongoing as on June 2001(Area in ha.)

Sl.No.	Tehsils	MAJOR	MEDIUM	Minor Irrigation (Ha.)						Total	
				+ 250 Ha		101-250 Ha		Upto 100 Ha.			
		Area in Ha.	Area in Ha.	No. of Schemes	Area irrigated	No. of Schemes	Area irrigated	No. of Schemes	Area irrigated	No. of Schemes (Minor)	Total Area Irrigated
1	**Chandrapur**	3332		1	567	1	149	4	279	6	4327
2	**Ballarpur**					1	111	3	118	4	229
3	**Bhadravati**							4	174	4	174
4	**Warora**		10317					5	244	5	244
5	**Chimur**	4015		3	2424	3	716	20	991	26	8146
6	**Nagbhir**	17283						5	288	5	17571
7	**Brahmapuri**	26005		1	289			4	178	5	26472
8	**Sindewahi**	39387						2	92	2	39479
9	**Mul**	71168		2	1107			6	359	8	72634
10	**Sawli**		9362					2	118	2	118
11	**Gondpipri**	40258	5091			2	331	7	255	9	40844
12	**Rajura**		3942					4	201	4	201
13	**Koropna**		3710					8	254	8	254
14	**Pombhurna**			1	653	1	143	1	52	3	848
15	**Jiwati**									0	0
TOTAL		**201448**	**32422**	**8**	**5040**	**8**	**1450**	**75**	**3603**	**91**	**211541**

Source: Irrigation Department, District Chandrapur, 2001

It is hoped that after the completion of these projects there will be a quantum jump in the irrigation potential in the district. The plan envisages that irrigated cultivable area will become 89.52 per cent after successful completion of the schemes as planned in the Master Plan for irrigation. The area irrigated by each type of irrigation project is given in table 5.24.

Table 5.24: Details of the area (capacity) irrigated by each type of irrigation project completed as on date

Scheme/Project	No.	Potential of the project (ha)	Potential achieved (ha)
Major schemes	-	-	-
Minor schemes	7	26763	26763
Minor irrigation tank (state) grater than 250 ha	23	9542	9542
Minor irrigation tank (local) 101 to 250 ha	11	1824	1824
Minor irrigation tank upto 100 ha	74	4509	4509
Lift irrigation (state) greater than 250 ha	10	4993	4993
Lift irrigation (local) 101-250 ha	7	1275	1275
Lift Irrigation (Local) Upto 100 Ha	7	596	596
K.T.Ware (Local) 101-250 Ha.	518	17680	17680
Malgujari Tank (State)	51	10323	10323
Malgujari Tank (Local)	1901	32784	32784
Total	2609	110289	110289

Source: Irrigation Department, District Chandrapur, 2001.

It is obvious from above the table that Malgujari tanks constitute the major source for irrigation in the district. The state and local level tanks together have a potential to irrigate 42,107 ha of land in the district, viz., 38.17 per cent of the irrigated land under different schemes.

Problems and Constraints:

The district is very rich in water resources. The monsoon rain is generally heavy in the district. The water potential available in the region is being tapped by undertaking various irrigation projects, which are classified as (i) flow irrigation and (ii) lift irrigation schemes.

The flow irrigation schemes are further classified as a) major b) medium and c) minor irrigation . It has been reported that the maintenance and upkeep of equipment installed to lift water from rural lift irrigation schemes is not carried out regularly and hence farmers experience difficulty in irrigating their fields. This problem is particularly felt in those fields where the level of field is higher than the canal water level. In the district, number of such lift irrigation schemes is under operation. Such schemes need external energy for lifting water and provision of electricity is essential. MSEB should see that electricity is supplied to farm sector on regular and priority basis.

Due to the bottlenecks in getting water from lift irrigation schemes, the farmers are generally disinclined to irrigate their fields from their sources. Efforts should therefore, be

made to popularise the scheme among the local farmers so that the utilisation level of these irrigation schemes may go up.

The main constraint for developing irrigation projects in the district is the Forest Conservation Act, 1980 and it is estimated, however, that only 1.5 % of the forestland will be affected comprising an area of 6,976 ha.

Development Perspectives

As the two rivers Wainganga, Penganga and their tributaries flow through the district and form natural boundaries, there is enough potential for bringing more areas under irrigation. Though the climate of the district is hot and sultry it gets sufficient rainfall during rainy season. Rainwater harvesting can be profitably experimented in the district at suitable locations in the district and the water so stored can be utilised in dry spells.

5.1.6 Production of major crops

Table 5.25: Productivity of major crops in Kg/ha (2001-2002)

Jowar	800
Rice	1443
Wheat	789
Tur	792
Soyabin	1331
Cotton	420 Bales/hectares

Source: Zila Samajik Wo Arthik Samalochana 2001.

From the above table it can be observed that rice has the highest production in the district in comparison to other crops since it is the staple diet of the people and occupies more 50 percent of the gross cropped area. Moreover, the geographical conditions are suitable for its growth. Its production was 1501 kg/ha followed by tur 772 kg/ha) which is another important crop grown in the district on a large scale. The production of wheat is 708 kg/ha.

Production of Important crops:

Table 5.26: Estimated production of important crops 1998-99

Area in Ha And Production in Tonnes / '000' Bales

Sl. No.	Tehsils	Gross Cropped Area	Rice		Wheat		Jowar		Tur		Cotton	
			Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
1	2	3	4	5	6	7	8	9	10	11	12	13
1	**Chandrapur**	29458	5070	7630	2197	1555	9039	5812	829	640	2058	393
2	**Bhadravati**	44094	3884	5845	5762	4079	9561	6148	1762	1360	3671	701
3	**Warora**	73554	2549	3836	8076	5718	9731	6257	4687	3618	18590	3551
4	**Chimur**	65013	14428	21714	5938	4204	9368	6024	1773	1369	1193	228
5	**Nagbhir**	29265	16120	24261	2018	1429	0	0	387	299	0	0
6	**Brahmapuri**	43225	24157	36356	2818	1995	1667	1072	981	757	0	0
7	**Sindewahi**	23338	14651	22050	344	244	0	0	0	0	0	0
8	**Mul**	25579	16490	24817	182	129	3035	1952	388	300	3	1
9	**Sawli**	29368	18491	27829	257	182	3927	2525	481	371	0	0
10	**Gondpipri**	50546	12641	19025	1323	937	11161	7177	3610	2787	795	152
11	**Rajura**	52451	3129	4709	3267	2313	12637	8126	3449	2663	13218	2525
12	**Koropna**	46027	1052	1583	0	0	11717	7534	3094	2389	12429	2374
	TOTAL	**511918**	**132662**	**199656**	**32182**	**22785**	**81843**	**52625**	**21441**	**16552**	**51957**	**9924**

Foot note: *Production has been estimated based on production of major crops in Kg/ha (1998-99).*
Source: Zila Samajik wo Arthik Samalochna, 2001

Out of the gross cropped area of 5,11,918 ha, 1,32,662 ha area is under rice, which is highest among all the crops in the district. After rice, the maximum area is under jowar (81,843 ha) followed by cotton (51,957 ha). The other crops such as wheat and tur cover less than 31,000 ha area which is very less in comparison to rice. The highest production was observed under rice (1,99,656 tonnes) in the district, which is very high in proportion to other crops viz. jowar (52,625 tonnes) and wheat (22,785 tonnes). About 16,552 tonnes of tur was produced in the district whereas the production of cotton is only 9,924 bales which was proportionately very low in comparison to other crops (table 5.26).

Rice:

The block wise picture indicates that rice is grown in more than seven tehsils on areas ranging from 12600 ha to 25000 ha, which is higher than the district average. Similarly, the production is highest in the tehsils as large percentage of area is under it. In Brahmapuri, highest production (35,356 tonnes) was recorded followed by Sawli (27,829 tonnes) and Nagbhir (2,42,611 tonnes) which is two and half times better than the district average. The other tehsils are Sindewahi, Chimur and Gondpipri where the production ranges from 19,025 tonnes to 22,050 tonnes. While in other tehsils it is significantly less viz. Koropna (1,583 tonnes), Warora (3,836 tonnes) and Rajura (4,709 tonnes).

Wheat:

Maximum area under wheat is in Warora (8,076 ha), followed by Chimur (5,938 ha) and Bhadravati (5,762 ha). Thus excluding four tehsils viz. Mul, Sawli, Sindewahi and Koropna more than 1,300 ha area is under wheat. Similar trend is observed in terms of production whereby crop is produced on large scale in those tehsils where large percentage of area is under tt. In Warora, it was 5,718 tonnes, 4,204 tonnes in Chimur and 4,079 tonnes in Bhadravati and was minimum in Mul (129 tonnes), Sawli (182 tonnes) and Sindewahi (244 tonnes).

Jowar:

The area under jowar is highest in Rajura, Koropna and Gondpipri where between 11,000 to 1,26,500 ha is under it. It can be observed more than 1600 ha area is devoted for jowar cultivation in all the tehsils except Nagbhir and Sindewahi where it is not cultivated. This indicates that alongwith rice, jowar is another important crop in the district which is cultivated on large scale by farmers. The lowest area is in Brahmapuri tehsil (1,667 ha), Mul (3,035 ha) and 3927 ha in Sawli. In terms of production, it can be noticed that it is highest in Rajura (8,126 tonnes) and Koropna and Gondpipri tehsils (7,534 tonnes and 7,177 tonnes) clearly indicating that large scale production is inversely related to the maximum area covered by the crop.

Tur:

Out of 21,441 ha area under tur in the district, 4687 ha is in Warora and between 3,000 ha to 3,610 ha in Koropna, Rajura and Gondpipri. It was very low in Nagbhir (387 ha), Mul (388 ha) and Sawli (481 ha) whereas it is not grown in Sindewahi. Similar trend can be noticed in terms of production, whereby it is highest in Warora (3,618 ha), followed by Gondpipri (2,787 ha) and Rajura (2,663 ha). Its production was significantly less in those tehsils where low proportion of area is under it viz. Nagbhir (299 tonnes), Mul (300 tonnes) and Sawli (371 tonnes). Thus its production was largely in six tehsils where between 1700 ha to 4700 ha area is devoted for its cultivation.

Cotton:

The largest area under cotton is in Warora (18,590 ha) followed by Rajura (13,218 ha) and Koropna (12,429 ha). It is least in Mul (3 ha) and Gondpipri (795 ha) whereas it is not grown in Sawli, Sindewahi, Brahmapuri and Nagbhir tehsils. But is grown to some extent in

other tehsils also. Its production is highest in only those tehsils where large percentage of area is devoted for its cultivation viz. Warora (3,551 tonnes), Rajura (2,525 tonnes) and Koropna (2,374 tonnes). It is very low in Mul (1 ton), Chimur (228 tonnes) and Gondpipri (152 tonnes) tehsils.

5.1.7 Marketing Infrastructure

The table (5.25) shows the location of APMC main yards and sub-yards alongwith items dealt by them. These yards deal with certain selected items only like vegetables, paddy, cotton, rice etc. and not with all the types of crops grown in the neighbourhood villages. For the sale of these crops, the farmers have to depend on other sources.

Vegetables, paddy, cotton and sale of animals like bullocks, buffalos are the major items traded in Chandrapur, Bhadrawati, Warora and other tehsils where these items are available both in main yard and the sub yard. Warora is the only tehsil where large varieties of items are dealt in both the yards such as vegetables, paddy, cotton, firewood, buffalos, sheep and goats. Maximum number of sub yards (5 each) are found in Chandrapur and Warora, followed by Bhadrawati 4 and 3 each in Mul and Gondpipri tehsils. There is no sub-yard in Rajura and items like paddy, cotton and buffalo market are dealt in the main yard (table 5.27) (Figure 5.8).

Table 5.27: Location of APMC Main Yards & Sub Yards

Main Yard	Items dealt	Sub Yard	Items dealt
Chandrapur	Vegetables, Paddy, cotton and Sale of Bullocks	1.Kothari 2.Chinchpalli 3.Pondharkawada 4.Ganjwad 5Chandrapur	Paddy, Animal Market
Bhadrawati	Vegitables,Paddy,cotton and Sale of Buffalows	1.Nandori 2.Patala 3Chandankhand 4.Kiloni	Vegitables,Paddy Cotton
Warora	Vegitables,Paddy,cotton and Fire wood	1.Madhali 2.Khambala 3.Shegaon 4.Chargaon Khurd	Vegitables,Paddy ,cotton and Sale of Buffalos, Sheeps & Goats
Chimur	Rice,Cillies,Cotton Fire wood.Bamboo Animal market	1.Neri 2.Bhisi	Paddy Bullocks market
Nagbhid	Paddy,Buffalow market	1 Talodhi	Paddy,Buffalow market
Brahamapuri	Paddy,Buffalow market,vegetables	1.Gangalvadi	Paddy
Sindewahi	Paddy,Buffalow market	1Nambargaon 2.Palasgaon	Paddy,Buffalow market
Mul	Paddy,Buffalow market	1Rajoli 2.Susi 3.Bebaal	Paddy only
Sawli	Paddy,Buffalow market	1Pathri 2 Vyahad Khurd	Paddy only
Rajura	Paddy,cotton and Buffalow market	Nil	Nil
Korpana	Paddy,Buffalow market	1 Gadhchandur	Paddy,Buffalow market
Gondpipri	Paddy,cotton and Buffalow market	1 Pobhurna 2. Bhutlodhi 3 Ghatkul	Paddy, Buffalow market

Source: Zila Samajik wo Arthik Samalochna, 2001

5.1.8 Annual Turn over of APMC Markets:

Table 5.28 apmc market (primary) wise turnover of different crops (qty.in tonnes, value in '000'rs.)

Sl. No.	APMC Market	Tehsil	No. of Sub-yards	Rice		Jowar		Wheat		Tur		Harbhara		Mung		Urad		Kultha		Til		Javas		Cotton		Total	
				Quan-tity	Value	Quan-tity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Qua-ntity	Value	Qua-ntity	Value	Qua-ntity	Value	Qua-ntity	Value	Qua-ntity	Value	Qua-ntity	Value	Quan-tity	Value
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	Warora	Warora	4	736	4639	20	852	73	480	1865	16077	248	3110	4	771	0	0	0	0	0	0	38	6241	17169	323867	20153	356037
2	Chimur	Chimur	2	5608	39259	0	0	104	676	34	442	11	132	0	0	0	0	0	0	0	0	24	434	2434	36252	8215	77195
3	Nagbhir	Nagbhir	1	42998	294426	0	0	2517	10409	27	313	17	248	80	1220	28	425	2	10	0	0	0	0	0	0	45669	307051
4	Brahmapuri	Brahmapuri	1	96	492	0	0	12	46	1	18	1	29	1	23	0	0	0	0	0	0	0	0	0	0	111	608
5	Sawli	Sawli	2	15532	102429	0	0	0	0	38	451	0	0	49	942	9	152	2	88	0	0	1	12	0	0	15631	104074
6	Sindewahi	Sindewahi	2	16319	111709	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16319	111709
7	Bhadravati	Bhadravati	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Chandrapur	Chandrapur	4	51	337	4	16	7	56	183	2175	2	30	8	101	28	494	1	37	0	0	4	33	3872	72023	4160	75302
9	Mul	Mul	3	30156	206627	0	0	0	0	31	467	0	0	9	155	9	188	5	40	0	0	2	25	0	0	30212	207502
10	Pombhurna	Pombhurna	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Ballarpur	Ballarpur	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Koropna	Koropna	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Rajura	Rajura	2	0	0	0	0	0	0	251	2300	0	0	0	0	0	0	0	0	0	0	0	0	3558	47500	3809	49800
14	Gondpipri	Gondpipri	2	5456	29910	53	522	19	138	974	11002	23	338	31	488	26	536	45	269	0	0	81	1456	590	12980	7298	57639
Total			25	11695	789828	77	1390	2732	11805	3404	33245	302	3887	182	3700	100	1795	55	444	0	0	150	8201	27623	492622	151577	1346917

Source: Zila Samajik wa Arthik Samalochal 2001.

The district earned revenue of Rs.134.69 crores in 1998-99 from the sale of agricultural commodities in APMC markets. The maximum turnover of Rs.78.98 crores was accrued from rice, followed by cotton (Rs.49.26 crores) and about Rs.3.32 crores is earned from tur crop. The least turnover is under jowar where only Rs.13.90 lakhs was received from its sale and Rs.37.00 lakhs under moong and under urad it is Rs.17.95 lakhs. The profit under other crops such as Javas (Rs.82.01 lakhs), Harbara (Rs.38.87 lakhs) and Kulith (Rs.4.44 lakhs) was quite substantial. The quantity of commodities traded was 1,51,577 tonnes, which was quite enormous under rice (1,16,952 tonnes), tur (33,245 tonnes) and for cotton it is 27,623 tonnes. It is very low in the case of urad (100 tonnes), jowar (77 tonnes) and kulith (55 tonnes). This clearly indicates that rice is the most important commodity traded in the market since turnover both in terms of quantity for sale and profit earned from its sale was highest in the district.

The block wise distribution indicates that maximum revenue was generated by Warora (Rs.35.60 crores), Nagbhir (Rs.30.70 crores) and Mul (Rs.20.75 crores) tehsils, out of a total of Rs.134.69 crores. It was least in Brahmapuri (Rs.6.08 crores), Gondpipri (Rs.5.76 crores) and Rajura (Rs.4.98 crores) tehsils. Sawli and Sindewahi also contribute significantly in terms of annual turnover, which is between Rs.11.17 crores to Rs.10.40 crores.

The quantity traded was highest in Nagbhir (45,669 tonnes), Mul (30,212 tonnes) and Warora (20,153 tonnes). Thus despite generating less turnover than Warora, goods are traded in bulk quantity in these tehsils. It was least in Brahmapuri (111 tonnes), Chandrapur (2,160 tonnes) and Rajura (3,809 tonnes). Thus the annual turnover is generally high in those tehsils where goods are traded in large quantity. But some exceptions also exist in this regard.

Rice:

The block wise distribution states that out of approximately Rs.78.98 crores of turnover earned by the district, maximum revenue comes from Nagbhir, Mul, Sindewahi and Sawli which varies between Rs.29.44 crores to Rs.10.24 crores. Similarly, the total quantity was also highest in theoe tehsils which varies between 42,998 tonnes in Nagbhir 30,156 tonnes to 16000 tonnes in Sindewahi and Sawli. Chimur and Gondpipri also accounts for substantial amount of profits and quantity for sale under rice. Between Rs.29.91 to Rs.39.25 lakhs of revenue was generated by these tehsils by selling approximately 5400-5600 tonnes of rice. The tehsils where rice was traded in very low quantity was Warora (736 tonnes), Brahmapuri (96 tonnes) and Chandrapur (51 tonnes). Similarly, the revenue earned was very less viz. in Brahmapuri it was Rs.4.92 lakhs and Chandrapur Rs.3.37 lakhs.

Wheat:

The tehsilwise trend indicates that maximum profit was generated from Nagbhir Rs.1.04 crores followed by Chimur (Rs.6.76 lakhs) and Rs.4.80 lakhs in Warora. Similarly the quantity was maximum in these tehsils which varied from 2517 tonnes in Nagbhir to 104 tonnes in Chimur and 73 tonnes in Warora. It was least in Chandrapur (7 tonnes), Brahmapuri (12 tonnes) and 19 tonnes in Rajura. Thus the profit generated was also least in these tehsils viz. Brahmapuri (Rs.46,000/-), Rs.1.38 lakhs in Gondpipri and Rs.56,000/- in Chandrapur.

Cotton:

Out of Rs.49.26 crores of revenue generated from cotton, maximum contribution comes from Warora (Rs.32.38 croes), Chandrapur (Rs.7.20 crores) and Koropna (Rs.4.75 crores). Chimur and Gondpipri also contribute some profit that varies from Rs.3.62 cvroes to Rs.1.29 crores. The quantity for sale in the markets was maximum in those tehsils where

turnover was highest and less in those tehsils where turnover was very less. Out of 27,623 tonnes of cotton produced in the district, Warora contributes the maximum (17,169 tonnes) followed by 3,872 tonnes in Chandrapur and 3,558 tonnes in Rajura. Very low quantity is produced in Gondpipri (590 tonnes) and Chimur (2434 tonnes).

Tur:

The tehsilwise trend shows that Warora has the highest turnover of Rs.1.60 cores followed by Gondpipri (Rs.1.10 crores) and Rs.23.00 lakhs in Rajura, which is related to the volume of crop traded in the market. Thus turnover was highest in those tehsils where commodities are traded in bulk quantity. It was least in Brahmapuri (Rs.18,000/-), Chimur (Rs.4.42 lakhs) and Sawli (Rs.4.51 lakhs). Chandrapur also contribute some profit for cotton (Rs.21.75 lakhs). Maximum quantity was produced in Warora (1865 tonnes), Rajura (257 tonnes) and Chandrapur (183 tonnes).

Jowar:

Under this crop, profit was earned from only three tehsils viz. Warora (Rs.8.52 lakhs), Gondpipri (Rs.5.22 lakhs) and Chandrapur (Rs.16,000/-). The volume of goods traded varied between 53 tonnes to 4 tonnes in these tehsils out of total quantity of 77 tonnes.

Javas:

Maximum turnover under this crop was from Warora (Rs.62.41 lakhs) followed by Rs.14.56 lakhs in Gondpipri and Rs.4.34 lakhs in Chimur. It was very low in Chandrapur (Rs.33,000/-), Mul (Rs.25,000/-) and Sawli (Rs.12,000/-). The quantity of goods traded was highest in Gondpipri (81 tonnes) followed by 38 tonnes in Warora and 24 tonnes in Chimur. Though the maximum revenue was generated in Warora, but the goods for sale were found in large quantity in Gondpipri. It was least in Sawli, Mul and Chandrapur (1 to 4 tonnes).

The profits earned under other crops such as harbara, moong, urad and kulith was less significantly in comparison to other crops. It varied between Rs.31.10 lakhs under harbara in Warora to Rs.12.20 lakhs under moong in Nagbhir to Rs.5.36 lakhs under urad in Gondpipri and Rs.2.69 lakhs under kulith in Gondpipri. Thus harbara, mung and urad are traded in substantial quantity in some tehsils unlike kulith that was traded in very few tehsils and very little revenue was earned from it.

5.1.9 Problems and Prospects

Although APMC is trying to fill gaps by establishing main yards and sub yards at suitable locations, yet farmers have to travel long distances to get remunerative prices for their produce. The APMC markets at present specialise and insist on procuring only a particular type of crop (say rice or soyabean) instead of all types of crops. This affects the cropping pattern in the district. Farmers have to travel sometimes to distant APMC yard to sell the crop which they wish to sell at the nearest APMC yard, since the officials are not be interested in purchasing the same. Govt. should discourage the practice of conversion of agricultural land for other non-agricultural uses like industries, mining etc by farmers to get one time revenue. It should encourage small farmers to diversify their cropping pattern and concentrate on growing commercial crops like soyabean which will ensure higher returns. Farmers should be provided protection against import of crops from neighbouring states or districts unless there is a shortage in the district of a particular crop. The govt. should encourage export of crops which are in demand including cash crops instead of importing it from outside. This will provide incentive for farmers to grow crops which are in great demand. The govt. should provide higher support prices in view of higher input costs of seeds and fertilizers.

The predominance of small holdings leaves farmers with low purchasing power and thus they are unable to adopt modern methods of farming practices and trends. The supply and distribution of high yielding varieties of seeds and fertilizers through APMC yards and sub yards needs to be strengthened. The distribution network for the input requirements of the farmers needs to be extended and strengthened so that it is within easy access of small farmers.

5.1.9 Proposed Development Strategy

As the soil conditions are favourable and with increased irrigation facilities over time, there is ample scope for advancement of agricultural sector in the district. There is scope for expansion of cultivated area since fallow lands which currently account for 5.8% percent of the total area can atleast partly be bought under cultivation.

More emphasis needs to be given to market the forest based agricultural products and herbs with medicinal value. Area sown more than once needs to be enhanced. Priority should be given for sowing of crops with good returns like soyabean, cashew and horticulture crops. Modernisation of farm practises also needs to be encouraged which can be utilised by farmers for their benefit.

The problem of soil erosion is also quite rampant. 634 villages have been identified, where this problem is acute. Under the watershed development programme, it is proposed to cover 2.95 lakh hectares, but so far only 1.91 lakh hectares has been covered. The department needs to concentrate on other techniques of soil conservation like, building of check dams on non-arable lands, paddy bunding, loose bolder structure, nullah bunding etc. and other similar measures which are not very expensive to adopt.

5.11 Horticulture Crops

Horticulture crops play an important role in supplementing the income of farmers since they get benefit from its export potential. These crops help in raising the nutritional standards of the population in general. Due to the scope of vast irrigation potential in the district there is going to be a boost in the production of horticulture crops. Cultivable area will be brought under perennial irrigation. The probable fruit crops are mango, k-lime, citrus, mosambi, banana, papaya, other fruits, cashew etc. Citrus and mosambi cannot be grown in the western part and cashew is not possible in the eastern part of the district.

The total land used for horticulture in 1995-96 was 73 ha which rose to 105 ha in 1998-99. Thus only 0.96 percent of the gross cropped area is devoted to the cultivation of these crops. The major area under these crops is found in Koropna, Rajura, Bhadravati, Nagbhir and Mul tehsils. During this period there was drastic increase in area by 90.74 percent in Rajura followed by Nagbhir and Warora tehsils.

Among the fruits, mango is largely cultivated as 65 percent of gross area is under horticulture crops. The percentage of area under mango ranges 39 to 94 percent as far as different tehsils are concerned the highest (94 percent) is recorded in Sawli followed by Sindewahi, Chandrapur, Nagbhir and Gondpipri where it is around 80 percent. The minimum area under mango recorded in Warora (39 percent) followed by Chimur and Koropna where it is around 50 percent. Orange is the next important fruit. In fact in Warora there is more area under orange than mango. Chimur, Rajura and Koropna also have large area under orange. The other fruits occupy a very small area. There is no activity worth mentioning in the field of nurseries and growing of flowers etc.

5.11.1 Problems and Constraints

It has been noticed that presently most of the farmers grow these crops in their present farms only. This practice needs to be stopped as the production of agricultural crops decline. They need to be encouraged to grow such crops in fallow land only. There is shortage of markets for selling these crops. Therefore, farmers are less inclined to grow them.

5.11.2 Proposed Development Strategy

There is scope for increasing the area under orange in the district, particularly in the tehsils of Warora, Chimur, Korpana. Some of these areas can grow Chiku crops. Government should provide cheaper inputs and encourage farmers to start the cultivation of these crops. Financial assistance, cheaper loans and other incentives, better marketing facilities etc. will certainly go a long way in developing these crops. It is important to increase the awareness of farmers regarding profitability of growing these crops. Agricultural institutes should be established which can do research regularly and develop new seeds.

5.12 Animal Husbandry

Animal husbandry is an integral part of agricultural economy. It provides milk, eggs, meat hides and skin, dungs as manures and animals for meeting transportation needs of villagers. According to 1992 Livestock Census, livestock population in the district was 10,79,000 livestock which included cows, buffalos, sheep, goats and other livestock. This further rose to 10,90,697 animals in 1997 registering very little increase of one percent. This included cross-bred and desi cows, buffaloes, sheep, goats etc. There was an increase of 10 percent in the poultry livestock during the same period. Among the tehsils the maximum number of animals were found in Chandrapur, Koropna, Rajura and Chimur having more than one lakh each. In these tehsils, there are large number of poultry animals also. This indicates that animal rearing is an important activity in those tehsils where the people carry on livestock rearing and poultry activities simultaneously. This can be observed from the table given below :

Table 5.29: Category wise number of animals in Chandrapur district – 1997

Name Of Panchayat Samiti	Category Wise		Number of Animals				Total Livestock
	Cross Breed	Cow Desi	Buffalo	Sheep	Goat	Pig	
Chandrapur	1619	51215	18606	25156	483	15688	112767
Mul	101	36750	7391	7627	6220	621	58710
Sawli	292	48804	6366	11983	4468	184	72097
Sindewahi	473	40295	6571	8936	1405	420	58100
Nagbhir	2432	43377	7014	16301	906	339	70369
Brahmapuri	1012	42773	8915	25547	32	115	78394
Bhadrawati	1588	45053	8834	20291	866	156	76788
Warora	2639	65752	8405	32452	140	403	109791
Chimur	984	72250	10964	31170	3169	886	119423
Rajura	168	66921	14524	34603	2273	198	118687
Korpana	374	69101	13812	35804	582	519	120192
Gondpipri	277	68224	7195	18668	411	604	95379
District	**11959**	**650515**	**118597**	**268538**	**20955**	**20133**	**1090697**

Name Of Panchayat Samiti	Hen	Duck	Horse/ Ass	Pig	Total Poultry	Other Livestk	Grand Total
Chandrapur	109874	1021	11	15688	110895	15699	239361
Mul	47154	50	0	621	47204	621	106535
Sawli	76010	0	0	184	76010	184	148291
Sindewahi	48837	61	0	420	48898	420	107418
Nagbhir	63039	89	3	339	63128	342	133839
Brahmapuri	65637	97	0	115	65734	115	144243
Bhadrawati	63588	81	36	156	63669	192	140649
Warora	61461	612	58	403	62073	461	172325
Chimur	108875	57	0	886	108932	886	229241
Rajura	130850	0	0	198	130850	198	249735
Korpana	97600	0	33	519	97600	552	218344
Gondpipri	76554	0	14	604	76554	618	172551
District	**949479**	**2068**	**155**	**20133**	**951547**	**20288**	**2062532**

Source: District Animal Husbandry Office, Zila Parishad Chandrapur.

The total animal population was least in Mul (1,06,535), Sindewahi (1,07,418), Nagbhir (1,33,839) and Bhadrawati (1,40,649) tehsils. Thus the livestock and poultry population was very less in these tehsils because this activity is not well developed. Among the various types of animals reared domestically, desi cows (6,50,515) are largest in number followed by sheep (2,68,538) whereas the proportion of horses, pigs and goats was very less, which states that they are reared largely for home consumption such as milk and meat. Poultry breeding was also well developed and the poultry population was around 9.50 lakh birds.

5.12.1 Veterinary Infrastructure

There was one veterinary hospital, 50 veterinary dispensaries, 98 veterinary primary health centre 140 artificial breeding centres and 1 mobile dispensary. There were 148 dispensaries in proportion to the total livestock population in 1997. There were 38 Grade I dispensary, 108 Grade II Dispensaries and only two state govt. dispensary. This indicates that in proportion to the total livestock population, the number of veterinary facilities is in short supply to serve the needs of existing livestock population. There are large number of dispensaries in Warora, Gondpipri, and Sawli tehsils. In fact there are more dispensaries then the required norm of 1 dispensary for 5000 livestock in these tehsils. But in other tehsils such as Koropna this situation was bad where six dispensaries are required additionally. Similarly in Rajura, Chandrapur and Chimur tehsils there was a shortage of 3 to 4 dispensaries. These requirements have been determined according to a norm that a veterinary dispensary is required for 5000 animals and preferably within 5 kms from the village. A Live stock unit takes into account different stocks of small animals in certain proportion to large animals. According to the standards prescribed by the veterinary department, Grade I dispensary is supposed to be highest in hierarchy Grade I dispensaries are posted with one Livestock Development Officer, who is supposed to be full- fledged Veterinary Doctor while Grade II dispensary is required to have a livestock supervisor and other supporting staff. (Figure 5.8).

The Grade I and Grade II Dispensary are found in almost all the tehsils in some proportion though Grade I dispensary are more in Mul, Sawli and Warora tehsils. The Grade II dispensary are mostly found in Gondpipri, Chimur, Warora and Sindewahi tehsils only. They are poorly distributed in Koropna, Bhadravati, Chandrapur and Rajura tehsils but Grade II dispensary are available in plenty in these tehsils. There is deficiency of State Govt

Dispensary since it is located only in Chandrapur and Warora tehsils which may not be easily accessible to all the villagers due to distance and poor transportation network.

5.12.2 Problems and prospects

The main constraints are inadequate supply of fodder due to lack of irrigation. There is shortage of veterinary services such as dispensaries and other facilities and primary trained veterinary personnel also in the district. There is need for rational allocation or relocation of the existing veterinary facilities/dispensaries within the district so that they can cater to the needs of the people in far-flung corners of the district. At the district level there is an overall shortage of three dispensaries. There is a state level veterinary polyclinic at Chandrapur, which needs to be relocated at a central place in the district so as to be within easy reach of the villagers from other tehsils. There is necessity of extending the facility of cattle markets to other villages in the future in addition to existing seven cattle markets.

5.13 Dairy Industry

Dairy and manufacturing of dairy products like ghee, butter etc. is an important activity in the agricultural economy. It provides gainful employment particularly to small/marginal farmers, women and landless agricultural labourers etc. and also provides them extra income. According to information available there were 1,83,033 desi cows, 4887 cross bread cows and 62,588 buffalos in the district. The milk is distributed through 82 centres. On an average govt. agency distributes about 29,000 litres of milk every day where it collects about 8,500 litres of milk every day from within the district. The quantity of milk and dairy products produced are in short supply in relation to the demand. Milk is collected both through registered and unregistered cooperatives of milkman. There are 228 registered cooperatives and 43 unregistered cooperatives in the district.

Table 5.30: Collection and distribution of milk

Year	Distribution (Litres per day)	Collection (Litres per day)
1998-99	27196	11198
1999-2000	27459	7763
2000-2001	22133	5925
2001-2002	24726	6541

Source: District Animal Husbandry Office, Zila Parishad Chandrapur.

These collection distribution figures refer only to the govt. agency. The supply and distribution by private operators is not included in these figures. It can be seen that collection of milk was not kept pace with the distribution or demand of milk in the district. The collection of milk is declining rapidly while distribution has remained almost static. To meet the excess demand, the milk is imported from neighbouring districts like Gadchiroli which sends on an average 3500 litres of milk per day to Chandrapur for consumption. In view of the installed capacity of Chandrapur dairy plant being 50,000 litres per day, there is an imperative need for arrangement of collection of milk through milkmen cooperatives at remunerative prices.

5.13.1 Problems and prospects

The dairy sector in the district is presently grossly neglected so much so that even the existing infrastructure of the present dairy plant in Chandrapur is under utilised. The plant hardly gets 50 percent of its capacity for processing. The milkmen do not like to sell their milk to Govt agency, as they do not find the price offered by Govt agency as remunerative. They prefer to sell their milk to private operators as they get more price and instant cash. Moreover private operators make arrangements to collect milk from the village itself and thus the milkmen is not required to travel or transport his milk to a collection depot of a milkmen Co-operative or Govt. Agency.

The district is quite rich in abundant cattle wealth. At present dairying is not adequately developed and its proper development will help in the growth of industries and consequent urbanisation. Thus a demand for dairy products will be created. Efforts therefore, need to be made in developing this activity in predominantly dry farming areas. This activity also needs good and quick transportation facilities. Similarly, sheep rearing and poultry farming are supplementary activities for those who are practising dairy farming.

Considering the number of milch cattle in the district, it is obvious that more incentives and better facilities need to be provided to milkmen cooperatives to collect milk from individual milkmen. Given a right mix of incentives and facilities, there is no doubt that the collection of milk can be greatly increased for consumption requirements within the district.

5.14 Fisheries

Fisheries is an important source of employment for local fishermen and also meets the food requirements of the local population. The development of fisheries as an economic activity depends upon the availability of water sources like rivers tanks, lakes etc. along with the demand of fish for local consumption.

Chandrapur district is endowed with a number of perennial and seasonal tanks with a water spread of around 20,000 hectare. At present, 15000 hectares has been brought directly/indirectly under pisciculture. These tanks or reservoirs are owned by various agencies. Irrigation department controls 94 tanks, whereas Zilla Parishad owns nearly 1000 tanks. These tanks are usually leased to fisherman cooperative societies for a period of three to five years. There are 137 registered cooperative societies but only 73 are functional. Traditional fishermen form many of these societies. It is estimated that nearly 20000 fishermen associated directly or indirectly with these societies are engaged in production and marketing of fish. Most of these fishermen live below poverty line.

5.14.1 Fish Production

The estimated fish production from the tanks is 6,500 tonnes over a water spread of 15,000 hectares. The average fish production is around 360 kg./ha. The fish catch from major rivers is very less despite the fact that their length is 688 Km It is estimated that the total potential of fish production is around 13,500 tonnes annually. Chandrapur district has large demand for fish consumption due to the presence of large number of industries. Nearly 30 % of Fish production, which goes to the urban areas in the district, falls short of the demand there.

5.14.2 Infrastructure available for fish production

The number of perennial tanks and other tanks available in the district are as follows:

1. Perennial Tanks 411 (14273 ha)
2. Seasonal Tanks 1513 (5825 ha)

There are two govt. fish farms having hatcheries with capacity to produce 600 lakh spawn and to rear 150 lakh fish seed. Another fish tank with capacity to produce 200 lakh spawn is under construction. There is only one ice plant whose capacity is sufficient for the preservation and conservation of present volume of fish catch.

5.14.3 Programme and Schemes

Several schemes are in operation for the welfare of fishermen particularly those below the poverty line:

1. State Govt. sponsored schemes

2. The department of fisheries of the State Govt. provides a grant of Rs.50,000 to the dependents, if an active member of a fisheries cooperative dies while carrying out fisheries operation.
3. Central Govt. sponsored Schemes

Fish Farmers Development Agency provides subsidy on construction of new ponds, renovation of existing tanks. The component of subsidy is Rs.40,000 per/ ha for new ponds and Rs. 16,000 per/ha for renovation of existing ponds and tanks.

Subsidy on inputs like fish seed, fish food and manures is available to the culturists to the extent of Rs.600 per/ha This scheme is in operation since 1978-79. A training programme of 10 days duration is also arranged for the benefit of the members of fishermen cooperatives, where the participants are paid some daily allowance for attending the programme. Under National Welfare of Fishermen Scheme an amount of Rs.40,000/- is granted to construct a house on a 35 sq.m to active members of fishermen cooperatives. An integrated reservoir development programme of Rs. 239 lakh is sanctioned under NCDC. Under this programme 67 tanks of 54 fisheries Cooperative Societies have been selected and an amount of Rs 155 lakh has been distributed through District Fisheries Federation:

a Fish production units
b. Renovation of tanks
c. Office building construction

The criterion to get benefit under these schemes, is that more than 50 percent of fishermen members of the cooperative should be below poverty line.

5.14.4 Fisheries development

Besides poultry products, fishery activity is an important source of food and livelihood for the population engaged in agricultural activities. In Chandrapur district 19,498 hectare area is suitable for fishery activities.

Table 5.31 : Tehsilwise fish production - 1991

Sl.No.	Tehsil	River length (Kms)	Pesicultable land (Hectares)	Actually used land (Hectares)	Production (Metic towns)	Revenue generated (Rs.in lakhs)
1.	Chandrapur	39	3182	2895	461	92.20
2.	Bhadrawati	76	1156	759	312	62.40
3.	Warora	91	1420	1226	270	54.00
4.	Chimur	20	1324	1090	620	124.00
5.	Nagbhir	8	1408	1259	1065	213.00
6.	Brahmapuri	58	1130	910	670	134.00
7.	Sindewahi	48	3010	2710	904	181.58
8.	Mul	74	2605	1900	786	157.20
9.	Sawli	25	600	540	520	104.00
10.	Gondpipri	50	307	190	215	43.00
11.	Rajura	10	554	496	278	55.00
12.	Korpana	20	320	230	185	37.00
13.	Ballarpur	40	2205	1997	398	79.00
14.	Paubhura	49	277	250	150	10.00
District Total		**698**	**19498**	**16452**	**6734**	**1346.50**

Source: Zila Samajik wa Arthik Samalochal 2001.

It is observed from the above table that 19,498 ha of land is meant for pesiculture, of which only 16,452 ha is actually being utilised for the purpose. This implies that the capacity is under-utilised to the extent of 16 percent. The total river length is 698 km The total production is 6734 metric tons from which Rs. 1346.50 lakhs revenue is generated. Though

Nagbhir tehsil has least river length but the fish production and the revenue generated is largest in the district (Rs. 213.00 lakhs). The reverse is observed in the case of Chandrapur tehsil where largest area (2895 ha) is devoted to fishing activity but still the production of fish and revenue is pretty less. This indicates that there is vast variation in fish yield, its quality and extent of utilisation from tehsil to tehsil. In fact, both Warora and Bhadravati tehsils have the largest length of river bed in the district but the fish production and the income generated is very much on the lower side in the district. In Sindewahi tehsil, fish production and revenue generated is second highest in the district. The land used for fishing, fish production and revenue earned is the least in Paubhura tehsil in the district. In some tehsils like Bhadravati, Warora, Chimur, Sindewahi, Mul and Ballarpur, there is tremendous scope to increase the total production of fishes, the land actually used for pisciculture is comparatively less in proportion to the land available for further use. This can also be done by adopting new techniques and measures for utilising this extra land which will result in an increase in the revenue earned and thereby improve their quality of life.

5.14.5 Problems and constraints

As per the policy of govt, tanks are leased out to fishermen cooperative societies. The financial health of many of these societies is not good. They do not have enough resources to invest in modern methods resulting in low production and poor quality fish. Many tanks have the problem of siltation, while in others, there tree trunks which act as a hindrance in netting operations. This results in not getting optimum fish catch and even the catch is not assured. Besides silting problem, these tanks are also used by farmers for irrigating their crops.

5.14.6 Development perspectives

There is good scope for developing fishing activity in the district, as there is great demand for it for local consumption. There exists great potential for generating employment as there are large number of seasonal ponds and other water bodies with average area between 0.30 to 0.50 ha If these can be repaired properly and deepening is carried out, they will add to the existing stock of ponds and will increase the fish production. Though ponds are small in size, they are suitable for rearing fish seed from July to January. These seeds can be made available to local unemployed youth who can rear them and market it to fish producers. Many large seasonal ponds, which have become unusable can be brought under use by carrying out desilting operations.

There is a large potential for development of fisheries due to presence of large number of lakes and ponds and some more are likely to come after completion of various irrigation projects. At present the production is merely 8 percent and still a large part of potential remains to be exploited.

The scope for development of fisheries is immense in those tehsils where there is abundance of unutilised water. These unutilised water areas (particularly in the tehsils of Sawli, Gondpipri, Rajura, Koropna and Pombhurna) can be brought under systematic culture and fish production can be increased.

The state govt. has several schemes aimed at giving assistance to fishermen in the form of loans and subsidy for purchase of equipment like mechanised boats and mats. In order to create necessary manpower for manning the mechanised vessels, training courses for the fishermen needs to be organised and they need to be trained in modern techniques of fishing.

The state govt. has spent Rs.32.15 lakhs for the development of fisheries sector out of which Rs.22.60 lakhs (70.3%) alone were spent for development of fisheries in tribal area

only. For the advancement of this sector, there is need to develop better marketing facilities, good storage facilities, transportation of fishes by refrigerated vans in shortest time since non-availability of preservation facility leads to fluctuation in prices and low returns due to deterioration in fish quality. More areas should be brought under fisheries and active participation of fishermen in the cooperatives is important for further development of this sector.

5.15 Forestry

From the land utilisation tehsilwise from 1995-96 and 1998-99 it is observed that in 1998-99, Sindewahi tehsil had the largest proportion of land (66.02%) under forests, followed by Nagbhir (47.1%) and Brahmapuri tehsils (42.9%). Mul tehsil had the least (16.5%) area under forests. According to Census 1991, the forest area is distributed among 855 villages accounting for 58.04 per cent of the villages in the district. In so far as the net sown area is concerned it is observed that there seems to be an inverse relationship between net sown area and area under forests. Sindewahi had higher proportion of land under forest and lower proportion of land under net sown area and the reverse is true for Mul tehsil where forest land is low and net sown area is high. (Figure 5.9).

Forests are natural assets and provide a variety of benefits to the economy of Chandrapur district. As per the state of Forest Report, 1999, the total forest cover of Chandrapur district is 5004 sq.km; ie., 53.56 % of total geographical area (11443 sq.km). Of this total forest area, 76.56% has been categorized as dense forest (10632 sq.km) and the remaining 23.43 % as open forest.

For the purpose of administration and management convenience, the forest area of Maharashtra State is classified into 3 regions viz.i) Rest of Maharashtra region ii) Marathwada region and iii) Vidarbha region. The regions are again divided into five divisions. Chandrapur district comes under the Nagpur Division. The divisions are further subdivided in to Circles. The forest areas of Chandrapur district falls under the North Chandrapur and South Chandrapur circles.

The management of the State Forest is mainly under the control of State Forest Department and Revenue Department. The private forests are brought under the possession of Forest Department and some forest areas have been assigned to FDCM Ltd. The classification by type of forests in Chandrapur district is given in the tables 5.32 & 5.33.

Table 5.32: Distribution of forests by type in Chandrapur district

(Area in Sq.Km)

Sl. No.	Forest area in charge	Type of Forest			Total
		Reserved	Protected	Unclassed	
1	Forest Department	3101	830	32	3963
2	Revenue Department	--	--	102	102
3	Private forests brought under the possession of Forest Department	--	--	--	--
4	Forest area transferred to FDCM Ltd.	--	--	939	939
Total		3101	830	1073	5004
Percentage		61.97	16.59	21.44	100

Source: State Forest Report, 1999

Table 5.33: Distribution of forests in North and South Chandrapur Circle

(Area in Sq.Km)

Sl. No.	Forest area in Charge of	North Chandrapur Circle			South Chandrapur Circle	Total
		Chandrapur Forest area	Brahmapuri Forest area	Tadoba National park Forest area	Central Chanda Forest area	
1	Forest Department	1090.54	1133.90	612.24	1125.66	3962.34
2	Revenue Department	--	--	13.16	88.41	101.57
3	Private forests brought under the possession of Forest Department	--	--	--	--	--
4	Forest area transferred to FDCM Ltd.	292.63	394.72		251.98	939.33
Total		1383.17	1528.62	625.4	1466.05	5003.24

Source: State Forest Report, 1999

5.15.1 Revenue from Forests

The forests, because of their location, intensity and abundance are able to meet substantial part of the state's demand for timber, firewood and other forests produces. The region has also vast potentials of Non timber forest produces (NTFP) such as Moha flowers, gum, medicinal plants, dikemali, tendoo, thorn etc. The yields of these NTFP can be increased substantially by systematic and scientific exploitation and also by bringing more areas under plantation with appropriate selection of species.

Keeping the production, protection and recreational potential in view, any strategy for development of forests should have following objectives

1. To increase the productivity of forests so as to meet the needs of modern society.
2. To link up forest development with forest based industries so as to generate employment opportunities.
3. To develop forests so as to complement and supplement the tribal economy of the region.

The different sources of revenue from the forest of this region are earned by govt. agencies, by consumer purchase, by FLCS, fines, recoveries of over payment, environmental forestry and wild life etc. Of these, the major share of revenue come from the trade of timber, firewood and bamboo. The net revenue from the forest products has been fluctuating from year to year. It is revealed that the net revenue from the Central Chandrapur forest Division for the year 1991 was Rs.8.7 million but the same increased to Rs.3.99 million in the year 2001. Some of the NTFP are not marketed because of the non-availability and that these produces were marketed in plenty in earlier times. Gum, oil seed, mine minerals etc. are some of the items, which are not being marketing in recent times.

5.15.3 Problems and Prospects

The constraints in forestry development in this area include lack of awareness about multiple roles and benefits of forests, especially its role in drought proofing and prevention of soil erosion and water run-off, no linkage between management livelihood security of the people, low level of technology, inadequate research and extension, weak planning capability, wastage in harvesting and processing, market imperfections, over emphasis on

government involvement and control, low level of people's participation, unwanted restrictions of felling, transport and marketing of forest produce grown by the people.

In order to avoid the problems and constraints and for better prospects, the existing policy, laws, rules, regulation orders should be reviewed.

Some of the suggestions are

- Classification of bamboo as NTFP thereby providing rights to the tribal population and other forest dwellers over this resource.
- Measures to encourage joint forest management (JFM)
- Protecting women's traditional right to collect and marketing NTFPs which has been proved to be a viable and cost effective strategy not only for women empowerment but also for renewal of forests.
- Continuing subsidies on government auctions of wood and bamboo to industries, which acts as a disincentive to industry to pay a remunerative price to the farmers.
- Conservation and development of medicinal plants should be given priority to meet the local crude drugs requirement and for export.
- Research and technological development must increase productivity, production of new products, value addition, improving marketing, productive employment generation
- Forest fire prevention and control should be given top priority to reduce losses and emission of green house gases.

5.15.4 Plan Outlay 2001-02

The plan outlay is Rs 40.22 lakhs for various forest development schemes but there is no allocation for plantation of useful species for general use like medicinal herbs and forestation on govt. lands and forest protection schemes. No allocation exists for promotion of minor forest produce as well.

More emphasis needs also be given to market the forest based agricultural products and herbs with medicinal value as nearly one third of the geographical area (36.43%) is covered by forests. According to District Statistical Office, it is imperative that a forest resource development strategy should be adopted placing emphasis on developing alternative sources for meeting the fuel needs of the villagers and should also create suitable and significant employment opportunities throughout the year particularly during the lean season in agricultural activities. Further the areas in the catchment zones of the ongoing irrigation schemes should be considered for aforestation purposes. The degraded forest land should be regenerated. For the purposes of developing grazing lands for animals, suitable grasses and fodder plants should be planted at suitable locations with the co-operation and consultation of animal husbandry department.

5.16 Minerals

The district is very rich in minerals. It has large resources of high grade iron ore and coal. Other important minerals are chromite, limestone, copper, quartz and clay. Bulk of the iron ore is found in Sindewahi tehsil. High grade iron is also available in the areas to the west of Wainganga river. In Warora tehsil it is found in Popalgaon and Bhisi villages. Chandrapur district accounts for 77.07 percent of total iron resources in the state. According to the district mining office, the royalty and other payments including sales tax and excise is highest from coal mining industry followed by limestone. This royalty amounted to Rs. 126 crores and Rs. 18 crores in respect of coal and lime stone respectively in the year 2000-2001. In comparison the royalty from iron ore mines was considerably less (Rs. 1.63 lakhs only).

Table 5.34: Estimated reserves of important mines

Sl.No.	Mineral	Million Tonnes
1.	Coal	633
2.	Limestone	156.58
3.	Floride	0.1
4.	Copper	48
5.	Byrate	62.4

Source: Zila Samajik wa Arthik Samalochal 2001.

Important coalfields in the district are:

1. Magura Telwasa Coal Fields.
2. Ghugas Niljai Coal Fields.
3. Sashi Rajua Coal Fields.
4. Chandra Coal Fields.
5. Ballarpur Coal Fields.
6. Virua Chincholi Coal Fields.
7. Virua Coal Fields.

The estimated resources of coal are 1606 million tonnes. The State Thermal Power Project, cement factories, paper mills and limestone quarrying industries consume majority of the coal produced in the district. It can be seen from the table given below that Chandrapur – Ballarpur region coal mines together produce the largest quantum of coal.

Table 5.35: Production of coal (in lakh tonnes) in Maharashtra

Area	1998-99	1999-2000	2000-2001
1. Umred	28.00	29.2.0	30.01
2. Nagpur	33.02	37.19	37.86
3. Chandrapur	46.03	51.63	53.14
4. Ballarpur	33.48	39.26	41.87
5. Vani	51.26	51.33	55.59
6. Majri	34.64	37.04	34.93
7. Vani (North)	26.36	31.33	34.14
8. Painch	26.96	18.08	19.72
9. Kanhan	16.65	15.29	16.31
10. Pathkhera	27.05	28.25	28.43
Total	317.45	338.60	352.00

Source: Zila Samajik wa Arthik Samalochal 2001.

It can be also be observed that out of the 10 important sites where coal is mined or extracted in the state, Chandrapur and Ballarpur together contribute significantly to the total production in the state. Chandrapur district has thus the distinction of being the largest coal producing district in the state since nearly one-fourth of coal production comes from it. The State Thermal Power Project, Cement factories, Paper mills and Limestone quarrying industrial units consume majority of the coal produced. Copper mines are located in Brahmapuri and Chandrapur tehsils.

5.16.1 Problems and constraints

The quantity of minerals exported to other districts and states is not very significant. As such the number of ancillary units required for finishing and processing of the minerals have not come up in large number. This adds to the cost of finished products and thus the

market for these minerals has not developed at the desired level outside the district and the state.

5.17 Existing Industrial Scenario

Owing to the location of Chandrapur town on the main trunk rail route to Hyderabad and other south bound trains, abundance of forest and mineral wealth in the district and adequate waste resources, a number of units have come up dealing with mining and forest land industries. The prominent among them are Ballarpur Paper and straw board mills, Ballarpur Swastik Glass Works, Chandrapur, Dodabliog patterns Ballarpur, Bashir Oil Mills, Warora etc. In 1999, there were 393 registered factories which rose from 262 in 1988. It employed 10,118 workers in 1982 which increased to 14,355 in 1999. Of these factories 296 employed less than 10 workers and in 9 factories number of workers varied from 100 to 499 workers.

The district is regarded as industrially backward. The general pattern of non-agricultural employment leans heavily on small-scale units. There are various types of medium industries scattered all over the district comprising oil mills, saw mills, paddy processing mills, cotton ginning mills, tile and basket weaving, cotton weaving, pottery and rope making, silk weaving etc. Coal mines, paper mills, saw mills, food and forest products, medicinal plants and forest based industries are also established in the district..

The District Industries Centre at Chandrapur registers all the small scale units in the district. There were 3045 units employing over 10,000 persons as on March, 2002. Though agro based units were highest in number (604), the highest employment was provided by mineral based units (309); which provided employment to 6014 persons. Besides agro and mineral based units, forest based units (259) also provided employment opportunities to 1937 persons. Metal & engineering based units also provided employment to a large number of people i.e. (3283 persons) (table 5.36).

Table 5.36: Classification of small scale units (March 2002)

Sl.No.	Industry	Units	Employees
1	Agro based	604	3489
2.	Forest based	259	1937
3.	Minral Based	309	6014
4.	Food & Bever	148	810
5.	Textiles	12	75
6.	Leather	12	166
7.	Rubber	22	120
8.	Chemical	88	774
9.	Plastic	30	163
10.	Metal & Engg.	525	3283
11.	Electric	18	68
12.	Electronic	88	239
13.	Non-metal	9	165
14.	Other	921	6043
	Total	3045	23346

Source: Zila Samajik wa Arthik Samalochal 2001.

Maharashtra State Industrial Development Corporation is trying to promote industrialization in the district by developing 12 industrial estates, broadly one in each tehsil

of the district at a suitable location. Entrepreneurs are encouraged to locate their units in these areas with better infrastructural facilities like water, power and transportation, communication. Incentives in the form of easy loans are also available for their benefits. The district has four large scale cement manufacturing plants at Acharpur, Hari ganga, Manjkgarh and Ghughus. The total land of Chandrapur industrial area is 214.57 ha, in which there are 223 plots, of which 196 have been allotted, the details of which are given below.

Table 5.37: Details of industrial estates in Chandrapur District

Industrial Area	Total Land (Ha)	No. of Plots	Allotted Plots
1. Chandrapur Indl. Area	214.57	223	196
2. Addl area (Chanderpur)	78.64	---.	---
3. Warora Growth Centre	191.37	126	Nil
4. Mul Growth Centre	194.26	25	3
5. Ghuggas	40.9	3	3
Total Chandrapur Growth Centre	723.49	-	-
6. Rajura Mini Indl. Area	24.40	11	2
7. Sindewahi Mini Area	12.36	24	3
8. Nagbhir Mini Area	13.04	10	-
9. Gondpipri Mini	14.01	-	-
10. Bhadrawati Mini Area	16.49	41	2
11. Chimur Mini Area	23.70	25	4
12.Bhadrawati Major Indl.Area	1194.47	N.A	N.A

Source: Zila Samajik wa Arthik Samalochal 2001.

At present, majority of industrial activity is concentrated around Chandrapur, Warora and Brahmapuri tehsils. There is no even distribution of industries in the western and eastern parts of the district. The eastern part has less share of industries.

5.17.1 Problems and prospects

With the establishment of Chandrapur Super Thermal Power Station adequate power facilities are now available in the district, the growth of industries is expected to pick up in future. There is lack of skilled and professionally trained manpower due to non-availability of higher educational colleges in professional and technical fields. Another factor, which is responsible for slow growth of industries in the district, is the lack of local entrepreneurship. There is scope to establish plants dealing with medicinal herbs etc. There is also sufficient scope to promote the traditional handicrafts of tribal people. Khadi & Village Industries Commission can play a larger role in promoting these crafts by providing marketing and training support to tribal populace.

5.18 Tourism

5.18.1 Tourist Centres

There are some historical forts, old temples and picnic spots in the district. The only tourist attraction of some significance is Tadoba-Audhari Tiger Reserve (TATR) that represents a unique habitat for wildlife in Central India. Tadoba Audhari Tiger Reserve comprises of Tadoba National Park and Andhari Wildlife Sanctuary. The national park derives its name from local tribal God “Taru” whereas the Audhari river flowing through the forests gives the sanctuary its name. The forests mainly consist of teak and bamboo interspersed with grassy meadows while tadoba is rugged hilly terrain. The area has a wide

and rich range of flora and fauna. Teak and bamboo trees dominate southern deciduous forests. There is vast diversity in fauna and various types of species are found here.

The major attraction in this place is the presence of tigers. The large herds of Chital and the stately Sambar are often seen in the forest. Other attractions include the elusive barking Deer, the fleet footed Chausinga.the majestic Gaur,the robust Nilgai, the shy Sloth Bear, the whistling wild dogs, the omnipresent wild Boar and the stealthy Leopard etc. As the night falls the small Indian Civet, the Palm Civet , the Ratel, the flying squirrel make their presence felt. In the backdrop of the famous Ram degi Temple , the nature is at its best at Tadoba.

Table 5.38: Number of tourists visiting TATR

Year	1995	1996	1997	1998	1999	2000	2001
Tourists	72009	73112	76330	44029	41044	35917	39452

Source: Zila Samajik wa Arthik Samalochal 2001.

The number of tourists visiting TATR has been fluctuating. From a record 76,330 visitors in 1997, it has declined 35,917 in 2000 and recorded a marginal increase at 39,452 in 2001. The decline can be attributed to the fact that tourist accommodation in the form of hotels/lodges is grossly inadequate. The nearest railway station Chandrapur and Kolsa are 45 km away from TATR. Buses and taxies are very less in number. There is need to upgrade these facilities.

Other tourist spots have been identified by the state department of tourism. It has identified various ancient temples, monuments and forts, water bodies etc for developing as tourist attractions. It plans to develop boating facilities in identified water bodies, develop parks and play grounds and improve landscape in these places.

Ghora Jhari Development Scheme:

This lake is situated in Nagbhir district. It is 6 km from the main Nagpur-Chandrapur highway, 106 km from Chandrapur town and 97 km from Nagpur. The capacity of the reservoir is 45 cusecs of water.

Junona development Scheme:

This spot is 15 km from Chandrapur Town.The facilities for boating , reasturants.,parks and gardens are well developed.

Fossil Park at Dongargaon Kheri enroute to Warora

Bhadrawati. There is a plan to develop a Fossil Park at Dongargaon Kheri which is at a distance of 8 km from Bhadrawati. It will be of particular interest to historians and anthropologists. The total area under the park will be 35 hectares.

Tourist Spot at Warora Town

Worora town has come into prominence due to the location of “Anandvan Ashram “ of Baba Amte. whose services and efforts for the rehabilitation and care of leprosy patients have earned him worldwide recognition. Foreign tourists in large numbers often visit the place.

Tourist Places in Bhadrawati.

This town is situated on the main Delhi-Chennai Railway line and also along the Nagpur-Hyderabad highway. This is an important industrial town. Several places nearby have vast tourist potential, which need proper development.

Bhadrawati Temple

This ancient temple is situated in the heart of city. Devotees throng the temple throughout the year.

Jain Temple

This temple in the town is very popular with the community. It has very beautiful sculptures.

Ganesh Temple

This is also an ancient temple and is visited by large number of devotees throughout the year. The temple architecture and sculptures are major tourist attraction.

Vijasan Hills

There are several Buddha temples here, which are very attractive. The atmosphere here is very serene and calm.

Manikgarh Forest Park Development

Manekgarh fort in the vicinity of Manikgarh hills presents a very picturesque spot and has potential for developing as a major tourist attraction. An area of 1058.2 hectares is proposed to be developed as a park with playground facilities for children. This place also has historical importance since earliest Chinese traveller Huen Sang, who has described it in his travelogue, has visited it. There is an ancient temple of Lord Vishnu in the complex. Another temple is devoted to a local deity known as Manekdevi. The site has potential for being promoted as a site for eco-tourism.

5.18.2 Perspective for Development.

The district has good potential for attracting domestic tourists as there are number of historical Temples and monuments including forts. There is need to develop proper tourist infrastructure such as rest houses and lodges with modern amenities like communication, Cable TV and other entertainment facility in the vicinity. There is need to grow awareness among the tourists about these places and the facilities available Some of the services like sanitation and entertainment, parking etc. can be privatised. The govt. can levy suitable entry fees to various places and thus generate revenue for their proper upkeep and maintenance. More emphasis needs to be given to develop good motorable roads to nearest railway station or bus terminus.

Chapter -6
Social Infrastructure

The availability of infrastructure facilities is an indicator of the level of development in any region. The lack of these facilities and their accessibility to the residing population has adverse impact on the quality of life of people and also affects economic development.

6.1 Education

Education is a basic requirement for every human being. The government should utilize all its resources in a rational manner to encourage people to become literate to some extent since educated persons are assets who can help in proper development of the country.

In Chandrapur district a large variety of educational facilities exist to cater to the needs of 17.71 lakh population. In 2001, there were 2246 primary schools, 422 middle schools, 212 secondary schools, 37 higher secondary/PUC/intermediate schools, 29 colleges, 77 adult literacy centres and 49 vocational training institutions. They are distributed all over the district while higher order facilities like colleges, vocational training institutions etc, are mostly found in towns and primary schools, middle schools, adult literacy centres etc predominate in the villages (Table 6.1) (Figure 6.1).

Table 6.1: Distribution of educational facilities in the district- 2001

SL. No	Tehsil	Primary	Middle	Secondary	Higher Sec /PUC/Inter	Colleges	Adult literacy centres	Vocational trg. Inst.
1.	Chandrapur	265	59	42	10	10	1	32
2.	Bhadravati	183	52	15	3	2	0	2
3.	Warora	322	34	22	5	4	1	4
4.	Chimur	317	57	25	6	2	64	0
5.	Nagbhir	218	35	23	3	3	0	0
6.	Brahmapuri	254	33	12	3	3	1	6
7.	Sindewahi	126	34	20	3	2	6	0
8.	Mul	134	35	18	2	2	0	2
9.	Gondpipri	129	13	12	0	0	0	0
10.	Rajura	301	70	23	2	1	4	3
Total		2246	422	212	37	29	77	49

- Data of new tehsils is not included.

Source: District Statistical Handbook Chandrapur, 1991 census & District Education Department 2002

The distribution of educational facilities in the urban areas (table 6.2) indicates that there were 141 primary schools, 52 middle schools, 48 secondary schools, 20 senior secondary schools, 49 vocational training institutions and 2 polytechnics in various urban settlements. Chandrapur tehsil has largest proportion of educational facilities viz. schools, colleges, vocational training institutions etc. Though there are 5 towns in this tehsil, Chandrapur town has maximum number of schools viz. primary (54), middle (22), secondary (22), senior secondary (9) and vocational training institutions (24) followed by Ballarpur town. It is observed that in four towns namely Chandrapur, Ballarpur, Rajura and Warora, there are large numbers of primary schools but it is deficient in other types of educational facilities. Excluding four towns namely Ghungus, Nakoda, Visapur and Sasti, all other towns have varieties of educational facilities excluding polytechnics. The polytechnics are located only in Brahmapuri and Chandrapur tehsils. (Figure 6.1).

Table 6.2: Distribution of educational facilities - 1991

Sl. No.	Town	Primary	Middle	Secondary	Senior second -dary	Vocati-onal trg institutes	Polyte chnics
1.	Chandrapur	54	22	22	9	24	1
2.	Bhadravati	12	4	4	1	1	-
3.	Warora	12	5	5	2	4	-
4.	Shivajinagar	4	2	1	1	1	-
5.	Brahmapuri	9	3	3	3	6	1
6.	Ballarpur	23	5	5	1	6	-
7.	Ghugus	3	1	1	-	2	-
8.	Mul	5	5	2	2	2	-
9.	Nakoda	2	2	-	-	-	-
10.	Visapur	4	1	1	-	-	-
11.	Rajura	10	1	3	1	3	-
12.	Sasti	3	1	1	-	-	-
Total		141	52	48	20	49	2

Source : Source: District Statistical Handbook Chandrapur, 1991 census

Out of 1473 villages, very few (9.16 percent) do not have any educational facilities. Such villages are largely concentrated in Rajura (31), Chimur (20) and Gondpipri (17) tehsils. In Warora and Nagbhir tehsils there are very few villages without educational facilities. In Chandrapur district 91 percent of the villages have educational facilities.

Table 6.3: Tehsilwise distribution of educational facilities – 2001

Sl. No.	Tehsil	Primary	Middle	Seco-ndary	Senior second -dary	Vocati-onal trg institute	Colle -ges	Adult Literacy Centre
1.	Chandrapur	179	28	13	0	0	0	0
2.	Bhadravati	167	46	10	1	0	0	0
3.	Warora	310	29	17	3	0	2	0
4.	Chimur	317	57	25	6	0	2	64
5.	Nagbhir	218	35	23	3	0	3	0
6.	Brahmapuri	245	30	9	0	0	0	0
7.	Sindewahi	126	34	20	3	0	2	0
8.	Mul	129	30	16	0	0	0	0
9.	Gondpipri	129	13	12	0	0	0	0
10.	Rajura	288	68	19	1	0	0	0
Total		2105	370	164	17	0	9	64

Source : District Census Handbook, Chandrapur, 1991 census

Table 6.4: Distribution of schools in the district – 1981

Type of school	No. of schools	No. of students	Student/teacher ratio
Pre-primary	1981	26621	14
Primary	1740	261230	35
Middle	243	95174	36
Sr. Secondary	75	88437	38
Others (technical Schools)	36	24567	36
District	4075	496024	33

Source: Table 8.2 Zila Samalochna 1999-2000.

It is clearly observed from the above table that there was a huge dropout of students from middle school onwards, which indicates that the proportion of students studying beyond primary schools has been declining steadily. Due to these dropouts, the number of students is maximum at primary level declining to 1/3rd at middle school, which is a very steep decline. Similarly the number of students at primary level is about ten times higher then at pre-primary level. This shows utter disinterest of people in pre-primary education and less inclination to send their children to such schools. The student teacher ratio at secondary level is 1:38, while it is better at pre-primary level where it is 1:14, which is far better than the district ratio. (1:33).

6.1.1 Primary Schools

1338 villages (90.84 percent) had 2105 primary schools fulfilling the educational requirements of 12.75 lakh rural population. More than 98 percent of the rural population had direct access to primary schools, which shows an excellent distribution. In comparison there are only 141 primary schools in 12 urban settlements serving a population of 4.96 lakhs. There were 17 primary schools serving every 10,000 population in the rural areas, which is a good distribution, whereby primary schools are accessible to a large percentage of population, whereas there are only 3 schools to serve the needs of same 10,000 population in urban areas. More than 90 percent of the villages in Warora, Nagbhir, Sindewahi and Bhadravati tehsils have access to primary schools, which are utilized by the residing population on a large scale. This indicates that the schools are fairly well distributed. In Rajura tehsil, which has maximum number of villages, more than 85 percent of villages have primary schools (288) to serve the needs of 2.03-lakh population.

Warora tehsil has largest number of schools (28) for every 10,000 population which is far better than the district average (17), followed by Chimur (22) and Brahmapuri (22) tehsils. This ratio is lowest in Mul where there are only 9 schools for every 10,000 population, which is very less and far below even the district rural average (17). Similarly it is also less in Sindewahi (10) and Gondpipri (12) tehsils. In the urban areas, this ratio is best in Bhadravati and Rajura towns where there are 5 schools for every 10,000 population and it is least in Chandrapur town (2) lesser than the district urban average (3). Similarly, Chimur and Warora have maximum 22 and 21 primary schools per 10,000 population as against the district average of 13. (table 6.5).

Table 6.5: Distribution of primary schools - 1991

Sl. No.	Tehsil	Rural pop	%age to Rural pop served	No. of schools	No. of schools /10000 popul-ation	Urban pop served	No. of scho-ols	No of schools/ 10000 popul-ation
1.	Chandrapur	119101	94.44	179	15	350676	86	2
2.	Bhadravati	99895	99.59	167	17	32426	16	5
3.	Warora	111873	99.79	310	28	43721	12	3
4.	Chimur	142062	99.46	317	22	0	0	0
5.	Nagbhir	112728	99.80	218	19	0	0	0
6.	Brahmapuri	110005	98.68	245	22	26631	9	3
7.	Sindewahi	130536	99.44	126	10	0	0	0
8.	Mul	136916	98.60	129	9	18008	5	3
9.	Gondpipri	108741	96.95	129	12	0	0	0
10.	Rajura	203314	97.76	288	14	25367	13	5
Total		1275171	98.41	2105	17	496823	141	3

Source : District Census Handbook Chandrapur, 1991 Census.

6.1.2 Middle Schools

It is clear from above table that there are 422 schools to meet the needs of 17.71 lakh population out of which 52 schools are in the urban areas in 12 towns to serve the needs of 4.96 lakhs population. Out of 1473 inhabited villages, only 340 villages had middle schools that served the needs of 49 percent of rural population. In Bhadravati tehsil, 42 villages (33.60 percent) had 46 schools to serve the needs of 58.20 percent of rural population that represents better distribution of schools. An interesting trend is observed in Chimur tehsil where 64.07 percent of rural population has access to middle schools (57) located in 51 villages. This is highest among all the tehsils and indicates good accessibility of population to these schools. In Gondpipri tehsil, there were 13 schools in 13 villages to serve the needs of 28.63 percent rural population residing in 144 villages. This shows the worst network of schools among all the tehsils in the district. In the urban areas, largest numbers of schools (31) were in Chandrapur tehsil, followed by Bhadravati (6) and Warora (5). Thus these schools are proportionately less in number unlike in the rural areas.

The average number of schools per 10,000 population is 3 for the district, which is very low for 17.71 lakh population. There is 1 school for every 10000 population in the urban areas and 3 schools for same population in the rural areas. Among all the tehsils, this ratio is more than district average in Bhadravati tehsil (5) followed by Chimur (4) and Rajura tehsils (4) whereas it is lowest in Gondpipri (1) and Mul tehsils (2) as far as rural areas are concerned. In the urban areas it is highest in Mul (3) followed by Bhadravati (2) and least (1) in Rajura, Warora, Chandrapur and Brahmapuri tehsils. (Table 6.6).

6.1.3 Secondary Schools

There were 212 secondary schools to meet the needs of 17.71 lakh population with 1473 villages and 11 towns. There were 164 schools in 141 villages, serving the needs of 12.75 lakh population whereas there were only 48 schools for 4.96 lakh urban population. This depicts a very sparse distribution network since the number of schools is very less to meet the demands of such huge population and they are unevenly distributed in the district. In fact only less than 10 percent of the villages have a secondary school. In Nagbhir tehsil 16.67 percent villages had 23 schools in 19 villages to serve the needs of 1.12 lakh population, which was highest among all the tehsils. The largest numbers of schools were found in Chimur tehsil (25) in 19 villages catering to the needs of 1.42 lakh

Table 6.6: Tehsilwise middle school facilities - 1991

Sl. No.	Tehsil	Total Pop (1991)	Rural Pop (1991)	Urban Pop (1991)	No. of villages	No. of settlements having			Rural Population served		No. of Institutions			No. of Inst/10000 Pop		
						Rural	Perec-entage.	Urban	Popul-ation	Percentage to Total Rural pop.	Rural	Urban	Total	Rural	Urban	Total
1	**2**					**8**		**9**			**10**	**11**	**12**			
1	Chandrapur	469771	119101	350676	113	27	23.89	5	45868	38.51	28	31	59	3	1	1
2	Bhadravati	132321	99895	32426	125	42	33.60	2	58140	58.20	46	6	52	5	2	4
3	Warora	155594	111873	43721	154	23	14.94	1	40680	36.36	29	5	34	3	1	2
4	Chimur	142052	142062	0	178	51	28.65	0	91014	64.07	57	0	57	4	0	4
5	Nagbhir	112728	112728	0	114	32	28.07	0	63346	56.19	35	0	35	3	0	3
6	Brahmapuri	136636	110005	26631	111	29	26.13	1	55139	50.12	30	3	33	3	1	2
7	Sindewahi	130536	130536	0	131	30	22.90	0	70871	54.29	34	0	34	3	0	3
8	Mul	154924	136916	18008	133	28	21.05	1	68933	50.35	30	5	35	2	3	2
9	Gondpipri	108741	108741	0	144	13	9.03	0	31132	28.63	13	0	13	1	0	1
10	Rajura	228681	203314	25367	270	65	24.07	2	99601	48.99	68	2	70	4	1	3
Total		**1771984**	**1275171**	**496823**	**1473**	**340**	**23.08**	**12**	**624724**	**48.99**	**370**	**52**	**422**	**3**	**1**	2

Source: District Census Handbook Chandrapur, 1991 Census

population. In the urban areas, maximum numbers of schools (29) were found in Chandrapur tehsil in 4 towns and it was very less in Mul (2) and Brahmapuri (3) tehsils. In Rajura tehsil, very few villages (6.30 percent) had access to 19 secondary schools followed by Bhadravati where (8.00 percent) villages had 10 schools only and Brahmapuri tehsil where only 9 villages (8.11 percent) had 9 schools. The situation is very bad in these tehsils where there are more than 100 villages.

There were 2 schools for every 20,000 population at an average in the district. This ratio was better in Chimur and Nagbhir tehsils (4) better than district rural ratio (3), where large number of villages had access to secondary schools. The ratio was less in all other tehsils such as Chandrapur, Rajura, Brahmapuri etc. where there were 2 schools for every 20,000 population, in comparison this ratio was good in Bhadravati and Rajura tehsils (3) where there were 3 schools for the same population in the urban areas which was more than the district urban average (table 6.7).

6.1.4 Higher Secondary/PUC/Intermediate/ Junior Colleges

There were 37 such institutions in 15 villages and 8 urban centres catering to the needs of 17.71 lakh population. This is a very sparse distribution indicating excessive shortage since they are found in only 1.02 percent villages in the district. Out of 1473 villages, very few villages had 17 schools to fulfill the needs of 12.75 lakh population whereas there were 20 such schools in urban areas for 4.96 lakh population. This is a very good distribution unlike the rural areas where they are unevenly distributed especially in Chandrapur tehsil. In Chimur tehsil, there were 6 schools in 4 villages, which was highest in the district followed by Nagbhir tehsil where 3 villages had 3 schools. Rajura tehsil is being served by only 1 school, which depicts a very poor development and excessive shortage since this tehsil has largest number of villages (270). Thus it seems to be quite backward in provision of these facilities. In Nagbhir, Chimur and Sindewahi tehsils more than 2 percent villages had access to schools that was highest in the district and far better than the district average (1.02). In Bhadravati and Rajura this situation was very bad since very few villages have this facility that was even less than the district average. In the urban areas, Rajura has one school and the highest was in Chandrapur tehsil where there are 10 schools located in 2 towns.

The number of higher secondary schools for every 30000 population was very low in the district. There was less then one school for this population (0.63) but it is significantly high in urban areas (0.81). It was worst in Rajura and Mul and better only in Chimur (1.27) and Warora (0.96) tehsils in the district. In Chimur tehsil this ratio was highest (1.27) followed by Warora (0.80) but it was very less in Rajura (0.15) and Bhadravati tehsils (0.30) far below the district rural ratio (0.40). Surprisingly Chimur despite being predominantly rural tehsil had highest number of higher secondary schools / junior colleges. This ratio was good in Brahmapuri (2.25) and Mul Tehsil (2.22) and least in Rajura (0.79) and better in Chandrapur tehsil (0.86) in the urban areas (table 6.8).

6.1.5 Colleges

The tehsilwise distribution of colleges is pretty bad since they are largely concentrated in major urban centres with very few located in rural areas. In the urban areas, there was an abundance of towns having access to colleges. There are 20 colleges in 8 towns that are more than sufficient to serve the needs of 4.96 lakh population. In the rural areas very few (1.02 percent) villages had only 9 colleges that are very less for vast rural population. Maximum numbers of colleges (10) were located in Chandrapur

Table 6.7: Tehsilwise secondary school facilities - 1991

Sl. No.	Tehsil	Total Pop (1991)	Rural Pop (1991)	Urban Pop (1991)	No. of villages	No. of settlements having			No. of Institutions			No. of Inst reqd/20000 Pop		
						Rural	Percen-tage of villages	Urban	Rural	Urban	Total	Rural	Urban	Total
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	Chandrapur	469771	119101	350676	113	12	10.62	4	13	29	42	2	2	2
2	Bhadravati	132321	99895	32426	125	10	8.00	2	10	5	15	2	3	2
3	Warora	155594	111873	43721	154	12	7.79	1	17	5	22	3	2	3
4	Chimur	142052	142062	0	178	19	10.67	0	25	0	25	4	0	4
5	Nagbhir	112728	112728	0	114	19	16.67	0	23	0	23	4	0	4
6	Brahmapuri	136636	110005	26631	111	9	8.11	1	9	3	12	2	2	2
7	Sindewahi	130536	130536	0	131	17	12.98	0	20	0	20	3	0	3
8	Mul	154924	136916	18008	133	14	10.53	1	16	2	18	2	2	2
9	Gondpipri	108741	108741	0	144	12	8.33	0	12	0	12	2	0	2
10	Rajura	228681	203314	25367	270	17	6.30	2	19	4	23	2	3	2
Total		**1771984**	**1275171**	**496823**	**1473**	**141**	**9.57**	**11**	**164**	**48**	**212**	3	**2**	**2**

Source: District Census Handbook Chandrapur, 1991 Census

Table 6.8: Tehsilwise higher secondary/PUC/intermediate/junior college - 1991

Sl. No.	Tehsil	Total Pop (1991)	Rural Pop (1991)	Urban Pop (1991)	No. of villages	No. of settlements having			No. of Institutions			No. of Inst/30000 Pop		
						Rural	P.C.of villages	Urban	Rural	Urban	Total	Rural	Urban	Total
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	Chandrapur	469771	119101	350676	113	0	0.00	2	0	10	10	0.00	0.86	0.64
2	Bhadravati	132321	99895	32426	125	1	0.80	2	1	2	3	0.30	1.23	0.68
3	Warora	155594	111873	43721	154	3	1.95	1	3	2	5	0.80	0.91	0.96
4	Chimur	142052	142062	0	178	4	2.25	0	6	0	6	1.27	0.00	1.27
5	Nagbhir	112728	112728	0	114	3	2.63	0	3	0	3	0.80	0.00	0.80
6	Brahmapuri	136636	110005	26631	111	0	0.00	1	0	3	3	0.00	2.25	0.66
7	Sindewahi	130536	130536	0	131	3	2.29	0	3	0	3	0.69	0.00	0.69
8	Mul	154924	136916	18008	133	0	0.00	1	0	2	2	0.00	2.22	0.39
9	Gondpipri	108741	108741	0	144	0	0.00	0	0	0	0	0.00	0.00	0.00
10	Rajura	228681	203314	25367	270	1	0.37	1	1	1	2	0.15	0.79	0.26
Total		**1771984**	**1275171**	**496823**	**1473**	**15**	**1.02**	**8**	**17**	**20**	**37**	**0.40**	**0.81**	**0.63**

Source: District Census Handbook Chandrapur, 1991 Census

Table 6.9: Tehsilwise college (graduate and above) - 1991

Sl. No.	Tehsil	Total Pop (1991)	Rural Pop (1991)	Urban Pop (1991)	No. of villages	No. of settlements having			No. of Institutions			No. of Inst/30000 Pop.		
						Rural	Perce-ntage of villages	Urban	Rural	Urban	Total	Rural	Urban	Total
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	Chandrapur	469771	119101	350676	113	0	0.00	2	0	10	10	0.00	0.86	0.64
2	Bhadravati	132321	99895	32426	125	1	0.80	2	0	2	2	0.00	1.23	0.45
3	Warora	155594	111873	43721	154	3	1.95	1	2	2	4	0.54	0.91	0.77
4	Chimur	142052	142062	0	178	4	2.25	0	2	0	2	0.42	0.00	0.42
5	Nagbhir	112728	112728	0	114	3	2.63	0	3	0	3	0.80	0.00	0.80
6	Brahmapuri	136636	110005	26631	111	0	0.00	1	0	3	3	0.00	2.25	0.66
7	Sindewahi	130536	130536	0	131	3	2.29	0	2	0	2	0.46	0.00	0.46
8	Mul	154924	136916	18008	133	0	0.00	1	0	2	2	0.00	2.22	0.39
9	Gondpipri	108741	108741	0	144	0	0.00	0	0	0	0	0.00	0.00	0.00
10	Rajura	228681	203314	25367	270	1	0.37	1	0	1	1	0.00	0.79	0.13
Total		**1771984**	**1275171**	**496823**	**1473**	**15**	**1.02**	**8**	**9**	**20**	**29**	0.21	**0.81**	0.49

Source: District Census Handbook Chandrapur, 1991 Census Planning Commission Norm for District Planning.

tehsil followed by Warora (4) Nagbhir and Brahmapuri (3) tehsils in the district. There were 3 colleges in Nagbhir tehsil and two each in Chimur and Warora tehsils in the rural areas. The largest number of colleges were found in Chandrapur tehsil followed by Brahmapuri, Warora and least in Mul and Rajura tehsils. Warora was the only tehsil where two colleges are found both in rural and urban areas. This indicates adequate distribution of higher education facilities in the tehsil whose population is 1.11 lakh. On the whole, colleges were largely found in Chandrapur, Warora and Nagbhir tehsils only.

The number of colleges per 30000 population was good in the urban areas (0.81) and less in the rural areas (0.21). This ratio was better in Nagbhir (0.80) and Warora (0.54) tehsils, far better than the district rural ratio and least in Rajura (0.13), Mul (0.39), Chimur (0.42) and Sindewahi (0.46) tehsils. In the urban areas this ratio was good in Brahmapuri (2.25) and Mul (2.22) tehsils and least in Rajura (0.79), Chandrapur (0.86) and Warora (0.91) tehsils. There were no colleges in Gondpipri. On the whole it was highest in Nagbhir and Warora tehsils in the district and lowest in Rajura and Mul tehsils. The college facilities were sufficient in Brahmapuri, Mul and Bhadravati urban areas. (Table 6.9).

6.1.6 Vocational Training Institutes

Vocational training institutions are concentrated only in urban areas. There were 49 institutions in eight urban centres, which were largely found in Chandrapur tehsil alone. Rest was found scattered in Bhadravati, Warora, Brahmapuri, Mul and Rajura tehsils. Apart from Chandrapur town, which had 32 such institutes, the number of institutes in rest of the tehsils varied from six to two in other towns. There were very few polytechnics located in Chandrapur and Brahmapuri tehsils only. (Table 6.10).

6.1.7: Adult Literacy Centres

It is clear from the table 6.11 that there is utter shortage of adult literacy centres in the district, a total of 77 centres was very low and discouraged people to educate themselves. However, there was dominance of adult literacy centres largely in the rural areas, where there were 70 such institutions in 53 villages. These centres were very less in urban areas, only 7 centres were located in 5 towns. In Chimur tehsil 47 villages had 64 adult literacy centres that were highest in the district followed by Sindewahi which had 6 such centres. It is very important to establish such centres in other tehsils also as they are unevenly distributed in the district for 1473 villages. In the urban areas, these centres are sparsely distributed in Chandrapur, Warora and Brahmapuri tehsils. The largest number of these centres was in Rajura tehsil where there were four centres in the urban areas. On the whole, these centres are an important means of creating educational awareness and should be made popular among the villagers who must be made keen to learn and thereby satisfy their hunger for knowledge by operating at time suitable to villagers working schedule. (Table 6.11)

Table 6.10: Number of vocational training institutions –1991

Sl. No.	Tehsil	No. of settlements having		No. of Institutions			No. of Polytechnics	Others		Villages without education facilities
		Rural	Urban	Rural	Urban	Total		Villages	Institutions	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1	Chandrapur	0	3	0	32	32	1	0	0	15
2	Bhadravati	0	1	0	2	2	0	0	0	8
3	Warora	0	1	0	4	4	0	0	0	5
4	Chimur	0	0	0	0	0	0	1	1	20
5	Nagbhir	0	0	0	0	0	0	0	0	5
6	Brahmapuri	0	1	0	6	6	1	0	0	11
7	Sindewahi	0	0	0	0	0	0	2	2	8
8	Mul	0	1	0	2	2	0	0	0	15
9	Gondpipri	0	0	0	0	0	0	0	0	17
10	Rajura	0	1	0	3	3	0	0	0	31
Total		**0**	**8**	**0**	**49**	**49**	**2**	**3**	**3**	**135**

Source: District Census Handbook Chandrapur, 1991 Census

Table 6.11: Adult literacy classes/centres –1991

Sl. No.	Tehsil	No. of settlements having		No. of Institutions		
		Rural	Urban	Rural	Urban	Total
1	**2**	**3**	**4**	**5**	**6**	**7**
1	Chandrapur	0	1	0	1	1
2	Bhadravati	0	0	0	0	0
3	Warora	0	1	0	1	1
4	Chimur	47	0	64	0	64
5	Nagbhir	0	0	0	0	0
6	Brahmapuri	0	1	0	1	1
7	Sindewahi	6	0	6	0	6
8	Mul	0		0	0	0
9	Gondpipri	0	0	0	0	0
10	Rajura	0	2	0	4	4
Total		**53**	**5**	**70**	**7**	**77**

Source: District Census Handbook Chandrapur, 1991 Census

6.1.8 Teacher Student Ratio

The block wise distribution of primary schools indicates that there were more than two teachers each for 2153 schools. It also indicates there was one teacher for every 32 students in the district and is evenly distributed. The ratio was less in Rajura (1:28) and Warora (1:29) tehsils. It was highest in Mul (1:36), Sawli (1:36) and Brahmapuri (1:34) tehsils. The teacher student ratio was best in Rajura and Warora, where there was one teacher for 28 students. The teachers can pay personal attention to the students. This consistency in teacher student ratio among all the tehsils shows that the distribution of teachers was requirement and student based. (Table 6.12).

Table 6.12: Tehsilwise status of primary schools – 2002

Sl.No.	Tehsil	No. of institutions	No. of students	No. of teachers	Teacher-Student Ratio
1	**2**	**3**	**4**	**5**	**6**
1	**Chandrapur**	180	17797	554	32
2	**Bhadravati**	168	14844	489	30
3	**Warora**	310	14831	508	29
4	**Chimur**	313	16215	529	31
5	**Nagbhir**	220	12911	389	33
6	**Brahmapuri**	250	15459	452	34
7	**Sindewahi**	128	11291	365	31
8	**Mul**	155	12251	340	36
9	**Sawli**	N.A.	14156	389	36
10	**Gondpipri**	132	9896	312	32
11	**Rajura**	198	16195	572	28
12	**Koropna**	99	17278	543	32
13	**Pombhurna**	N.A.	5842	189	31
14	**Ballarpur**	N.A.	NA	NA	NA
TOTAL		**2153**	**178966**	**5631**	32

Source: Primary Education Department, Zilla Parishad, Chandrapur

6.1.9 Buildings of Schools

Table 6.13 Type of buildings of primary schools – 2002

Sl. No.	Tehsil	No. of institutions	Type of buildings					
			Pucca	P.C.	Semi-Pucca	Kuchcha	Tent	Total
1	**2**	**3**	**7**	**8**	**9**	**10**	**11**	**12**
1	**Chandrapur**	180	520	98.11	7	3	0	530
2	**Bhadravati**	168	511	93.76	34	0	0	545
3	**Warora**	310	474	88.93	51	8	0	533
4	**Chimur**	313	544	92.52	42	2	0	588
5	**Nagbhir**	220	449	96.35	16	1	0	466
6	**Brahmapuri**	250	434	91.75	39	0	0	473
7	**Sindewahi**	128	362	95.01	16	3	0	381
8	**Mul**	155	304	97.44	7	1	0	312
9	**Sawli**	N.A.	327	92.63	24	2	0	353
10	**Gondpipri**	132	241	88.93	26	4	0	271
11	**Rajura**	198	496	87.32	67	5	0	568
12	**Koropna**	99	439	89.59	49	2	0	490
13	**Pombhurna**	N.A.	162	87.10	21	3	0	186
14	**Ballarpur**	N.A.	NA	NA	NA	NA	0	NA
TOTAL		**2153**	**5263**	**92.40**	**399**	**34**	**0**	**5696**

Source: Primary Education Department, Zilla Parishad, Chandrapur

Note: At district level average population served by each primary school is 653

The primary schools were located in 5696 buildings which was approximately more than twice the number of schools in the district. It was noticed that more than 92 percent of the buildings had pucca structure in all the tehsils with few schools (7.0 percent) located in semi pucca building and only 34 were in kutcha buildings. Thus overall the primary schools had permanent building and were well looked after by the local authorities. Chandrapur and Mul Tehsils had highest number of pucca buildings (more than 97 per cent). In rest of the tehsils more than 87 percent buildings had pucca structure. Rajura had largest number of semi

pucca buildings (67) followed by Warora (51), Koropna (49) and Chimur (42) tehsils. Chandrapur and Mul tehsils had least number of semi pucca buildings. The primary schools were located in kutcha buildings in Warora tehsil (8), followed by Rajura (5), Gondpipri (4) tehsils. Thus the proportion of schools located in kutcha buildings was almost negligible. (Table 6.13).

6.1.10 Major findings

The primary school serves a large proportion of population since there were 17 schools for 10000 population in the rural areas. But this proportion relatively declined in the case of middle schools where there were only 3 schools for 10000 population. This further declined both for secondary schools and higher secondary / intermediate / junior college. There were only 3 institutions catering to the needs of 20,000 population was still very less for higher secondary / junior colleges in the rural areas. There was one higher secondary school for 75,000 persons. The distribution of colleges states there was one college to meet the needs of 1,43,000 population. This clearly indicates that school facilities till secondary level were largely prevalent whereas higher level of educational institutions was mostly non-existent and depicts a very low emphasis given to establishment of such institutes and overall lack of educational facilities especially in the rural areas.

The situation of urban areas was still stranger. The number of educational institutions at different levels were very less, even lesser than their rural counterparts. There were three primary schools for every 10,000 urban population and one middle school for every 10,000 population. As far as secondary schools are concerned, urban areas had two for every 20,000 population. One senior secondary school was available for every 37,000 population and one college for equal population of 37,000 which was much better than rural scenario.

This shows that as a whole, the rural areas were better provided with the primary, middle and secondary schools, whereas senior secondary schools and colleges were better provided in urban areas.

The district as a whole had 13 primary schools and three middle schools for every 10,000 population, and 2 secondary schools for every 20,000 population whereas the district had one higher secondary school for 48,000 population and one college for 61,000 population.

The teacher student ratio ranged between 1:28 to 1:36 among the tehsils with the average for the district being 1:32, which only shows a proper distribution of teachers in tehsils as per the number of students, enrolled. Even the number of primary schools had increased from 1.40 in 1991 to 1.46 in 2001 per villages, which look sufficient at present but need will arise according to the increasing population. As per infrastructure more than 92 percent of primary schools are located in pucca buildings with another 7 percent in semi pucca structures.

6.2 Health

The major thrust of any development programme is on improving the health of the people, especially the downtrodden and underprivileged sections of the society. This can be achieved by improving the access and utilization of health care facilities; nutrition and family care facilities to everyone easily and at minimum costs.

The district had 39 hospitals, 58 dispensaries, 87 primary health centres, 11 maternity and child welfare centres, 317 primary health sub-centres, 11 health centres, 94 community health workers and 316 other amenities which included nursing homes, other medical centres,

registered private practitioners etc. The higher order facilities like hospitals, maternity and child care centres were mostly located in major urban centres while primary health centres and sub-centres, community health workers were largely located in various tehsils of the district (table 6.14) (Figure 6.1).

Table 6.14 Tehsilwise medical facilities –1991

Sl. No.	Tehsil	Hospit-als	Dispen-saries	Maternity and Child Welfare Centre/ Maternity Home/ Child Welfare Centre/Maternity Homes	Primary Health Centre	Primary Health Sub-Centre	Health Centre	Comm-unity Health Workers	Others (O+NH +RP+SMP)
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	Chandrapur	9	5	0	4	26	10	29	20
2	Bhadravati	6	5	0	6	24	0	22	71
3	Warora	1	5	0	4	36	0	12	42
4	Chimur	3	8	1	8	35	0	16	32
5	Nagbhir	1	7	4	13	24	0	0	23
6	Brahmapuri	2	9	0	5	28	0	0	7
7	Sindewahi	8	12	3	9	21	0	5	25
8	Mul	0	0	0	12	34	1	9	55
9	Gondpipri	0	0	0	6	28	0	1	22
10	Rajura	**9**	7	3	20	61	0	0	19
Total		**39**	**58**	**11**	**87**	**317**	**11**	**94**	**316**

Source: District Census Handbook Chandrapur, 1991 Census

There were no medical facilities in 1147 villages out of 1473 villages. These villages constituted about 78 percent of the total stating the utter neglect towards providing health care centres of some magnitude especially in the rural areas. It is seen that generally the higher order facilities are provided in the towns and bigger villages but even the smaller villages or their clusters should be provided with health care facilities.

There were 39 hospitals in the district, the highest (9) being in Chandrapur and Rajura tehsils followed by Sindewahi (8) and Bhadravati (6). Mul and Gondpipri tehsils were worst provided and are currently without a hospital. Similar was the case with dispensaries where Mul and Gondpipri have none of them. Out of 58 dispensaries, Sindewahi tehsils had 12 and were on the top followed by Brahmapuri (9). There were only 11 child and maternity welfare centre in the district and that too were distributed only in 4 tehsils i.e. Nagbhir (4), 3 each in Sindewahi and Rajura and 1 in Chimur.

Out of 317 primary health sub-centres and 87 primary health centres, all the tehsils had some centres, the highest being in Rajura with 20 centres and 61 sub-centres followed by Nagbhir and Mul which had 13 and 12 health centres. Warora, Chimur and Mul tehsils had got 35 sub-centres. In all there were 11 health centres out of which 10 were in Chandrapur. As far as the total facilities are concerned, Rajura was best provided with 100 medical facilities and the total for the district as a whole was 523 (19 percent) followed by Chandrapur, Chimur and Sindewahi tehsils, which had 50 to 55 facilities each. Gondpipri had the least number of facilities (34). The district had 94 community health workers, out of which 29 were in Chandrapur followed by 22 in Bhadravati and 16 in Chimur. Nagbhir, Brahmapuri and Rajura did not have a single community health worker followed by Gondpipri, which had just one health worker.

The district had 77.86 percent villages with no medical facility. The tehsilwise trend indicated that in Chandrapur only 56 percent villages did not have any medical facility followed by Mul (64 percent) and Bhadravati (70 percent). On the other extreme Brahmapuri 95 percent villages had no medical facility followed by Rajura (86 percent), Nagbhir (83 percent) and Chimur (82 percent).

There were 36 medical facilities in urban areas out of which maximum (11) were in Chandrapur followed by Ghungus (94). In all there were 7 hospitals, 7 dispensaries, 7 health centres, 1 family planning centre, 3 nursing homes and 1 other centres, as can be observed from the table given below:.

Table 6.15 Distribution of medical facilities –1991

Sl. No.	Town	Hospital	Dispensaries	Health Centres	Family Plg. Centres	Nursing Homes	Other Medical Institutions
1.	Bhadravati	2	-	-	-	-	-
2.	Shivajinagar	1	-	-	-	-	-
3.	Brahmapuri	2	-	-	-	-	-
4.	Chandrapur	6	-	5	-	-	-
5.	Ballarpur	-	1	1	-	-	1
6.	Gungus	1	4	-	-	-	-
7.	Nakoda	1	-	-	-	-	-
8.	Visapur	1	-	-	-	-	-
9.	Mul	-	-	1	-	-	-
10.	Rajura	1	1	-	2	-	-
11.	Sasti	1	1	-	1	1	1
12.	Warora	1	-	-	-	-	-
Total		17	7	7	1	3	1

Source: District Census Handbook, Chandrapur, 1991 Census.

6.2.1 Tehsilwise villages having medical facilities in 1991.

It is clear from the table 6.16 that few villages (18.81 percent) had medical facility in 1991, which increased, to 29.46 percent in 2002. The large-scale increase was observed in Brahmapuri tehsil where it rose from 5.41 percent to 27.93 percent followed by Chandrapur that rose from 0 to 21.24 percent. In rest of the tehsils, significant increase was visible in Nagbhir, Rajura, Sindewahi and Chimur tehsils. In Mul tehsil more than 63 percent of the rural population had direct access to medical facility and more than half in Bhadravati and Chimur tehsil. In Bhadravati tehsil very few (14.45 percent) population had access that was least in the district, apart from Chandrapur, which had absolutely no access to medical facility. In Rajura tehsil only 33.21 percent had access to medical facility, which may be attributed to large population and large number of villages (270) along with the location and accessibility to these villages. (Table 6.16).

Table 6.16: Tehsilwise villages having medical facilities -1991

Sl. No.	Tehsil	Rural Pop (1991)	No. of villages	No. of Villages having		Percentage to total villages		Rural Population have direct access	
				1991	2002	1991	2002	Population	Percen-tage to Total Rural pop.
1	2	4	6	6	7	8	9	10	11
1	Chandrapur	119101	113	0	24	0.00	21.24	0	0.00
2	Bhadravati	99895	125	37	45	29.60	36.00	53078	53.13
3	Warora	111873	154	37	45	24.03	29.22	49350	44.11
4	Chimur	142062	178	32	45	17.98	25.28	72755	51.21
5	Nagbhir	112728	114	19	41	16.67	35.96	50889	45.14
6	Brahmapuri	110005	111	6	31	5.41	27.93	15891	14.45
7	Sindewahi	130536	131	25	36	19.08	27.48	58803	45.05
8	Mul	136916	133	48	57	36.09	42.86	86788	63.39
9	Gondpipri	108741	144	34	37	23.61	25.69	51857	47.69
10	Rajura	203314	270	39	73	14.44	27.04	67511	33.21
Total		**1275171**	**1473**	**277**	**434**	**18.81**	**29.46**	**506922**	**39.75**

Source: District Census Handbook Chandrapur, 1991 Census

6.2.2 Tehsilwise villages not having medical facilities in 1991

In Nagbhir and Mul tehsils the number of villages with no medical facility was least. This indicates that depending upon the population, level of development, accessibility, location etc., the type of medical facilities had been located in specific tehsils. In the district 1039 (70.54 percent) villages did not have medical facilities but it was available within a distance from the villages. Out of those, for 183 villages data was not available. 589 villages (56.69 percent) had this facility within the range of 5 km, 211 villages (20.31) between 5 km and 10 km range and 156 villages (15.01 percent) had it beyond 10 km distance. 95 percent of villages in Gondpipri tehsil had medical facility within 5 km followed by Mul (71 percent), Rajura (67 percent) and Warora (64 percent) and more than 32 percent villages had this facility in Chandrapur and Nagbhir tehsils which was very low. It was found that 15.01 percent of the villages in the district were not served by a hospital/dispensary within the range of 10 km. In Rajura tehsil, 32 percent villages possessed health facility beyond 10 km range followed by Sindewahi (28.42 percent) and Nagbhir (27.40 percent). There were very few villages in Warora, Chimur and Mul, which did not have medical facility within 10 km distance. Thus they were easily available in Gondpipri, Mul, Warora and Chimur tehsils where more than 90 percent villages had access to a medical facility within 10 Kms (table 6.17).

Table 6.17: Tehsilwise villages not having medical facilities but available within a distance -1991

Sl. No.	Tehsil	Rural Pop (1991)	No. of villages not having	No. of Villages having within				Percentage to total villages		
				0 - 5 Km	5 - 10 Km	Above 10 km	Total	0 - 5 Km	5 - 10 Km	Above 10 km
1	**2**	**4**	**6**	**6**	**7**	**8**		**9**	**10**	**11**
1	Chandrapur	119101	89	0	0	0	0	0.00	0.00	0.00
2	Bhadravati	99895	80	26	39	15	80	32.50	48.75	18.75
3	Warora	111873	109	70	37	2	109	64.22	33.94	1.83
4	Chimur	142062	133	82	48	5	135	61.65	36.09	3.76
5	Nagbhir	112728	73	29	27	20	76	39.73	36.99	27.40
6	Brahmapuri	110005	80	39	24	18	81	48.75	30.00	22.50
7	Sindewahi	130536	95	55	13	27	95	57.89	13.68	28.42
8	Mul	136916	76	54	16	6	76	71.05	21.05	7.89
9	Gondpipri	108741	107	102	5	0	107	95.33	4.67	0.00
10	Rajura	203314	197	132	2	63	197	67.01	1.02	31.98
Total		**1275171**	**1039**	**589**	**211**	**156**	**956**	**56.69**	**20.31**	**15.01**

Source: District Census Handbook Chandrapur, 1991 Census

Note: 1039 villages (70.54%) do not have any medical facilities

For 83 villages distance data not available.

6.2.3 Primary Health Centres and Sub-Health Centres

In the rural areas primary health centres and sub centres play a very crucial role in taking care of medical needs of the poor people. In 1991, there were 68 primary health centres in 1473 villages to meet the needs of 12.75 lakh rural population which increased to 87 in 2002. This indicates that very few villages (4.62 percent) had access to primary health centres in 1991, which increased to 5.91 percent in 2002. The primary health centres were very less in proportion to the total number of villages. In Nagbhir tehsil there was 4 percent increase in the number of villages having PHC as against the district figure of 4.62 to 5.91 followed by Rajura (from 5.93 to 7.41 percent) and Bhadravati (from 1.60 to 4.80 percent)). Chandrapur did not have medical facility in 1991 but it reached to 3.54 percent in 2002. This rose from 7.02 percent in 1991 to 11.4 percent in 2002. The average number of institute per 30,000 population) at district level was 1.60 in 1991, which increased to 1.86 in 2002. Bhadravati recorded the highest rise with a smaller figure for 1991 (0.60 to 2.11 for 30,000 population. There were 2.13 PHC for 30,000 population which rose to 3.14 in 2002 which indicates that situation had improved considerably in Nagbhir tehsil which was good rise followed by Chandrapur (table 6.18).

In 1991, 56 villages had similar number of primary sub-health centres that rose to 317 in 2002 for 311 villages. The percentage of villages having such centres increased from 3.80 percent in 1991 to 21.11 percent in 2002. The average number of health centres per 5000 population was 0.22 percent that rose to 1.13 percent in 2002. In 1991 there was one sub-centre for 22771 population which further improved to 4433 in 2002. Therefore there was improvement in the proportion of population served by one sub-centre. Similar changes had been noticed in Brahmapuri, Sindewahi tehsils that was very good since there was tremendous decline in the population served by one centre from 1,10,005 to 4,354 in Brahmapuri and from 65,268 in 1991 to 7,551 in 2002 in Sindewahi. In other tehsils, similarly number of such centres had risen sharply especially in Rajura Bhadravati and Chimur. In Mul, Nagbhir and Chandrapur, earlier there were no centres in the villages in 1991, which have showed marked increase in these centers in 2002 where

Table 6.18: Tehsilwise primary health centre -1991 & 2002

Sl. No.	Tehsil	Rural Pop (1991)	Rural Pop (2001)*	No. of villages	No. of Villages having		Percentage of villages		No. of Inst/30000 Pop	
					1991	2002	1991	2002	1991	2002
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1	Chandrapur	119101	129723	113	0	4	0.00	3.54	0.00	0.93
2	Bhadravati	99895	85248	125	2	6	1.60	4.80	0.60	2.11
3	Warora	111873	123911	154	4	4	2.60	2.60	1.07	0.97
4	Chimur	142062	157828	178	8	8	4.49	4.49	1.69	1.52
5	Nagbhir	112728	124358	114	8	13	7.02	11.40	2.13	3.14
6	Brahmapuri	110005	121912	111	4	5	3.60	4.50	1.09	1.23
7	Sindewahi	130536	158578	131	9	9	6.87	6.87	2.07	1.70
8	Mul	136916	139983	133	12	12	9.02	9.02	2.63	2.57
9	Gondpipri	108741	122205	144	5	6	3.47	4.17	1.38	1.47
10	Rajura	203314	241488	270	16	20	5.93	7.41	2.36	2.48
Total		**1275171**	**1405233**	**1473**	**68**	**87**	**4.62**	**5.91**	**1.60**	**1.86**

Source: District Census Handbook Chandrapur, 1991 Census

** Estimated Population of 2001*

there was one centre for 4117 and 5182 population. This can be the major reason for fewer death rates in the district (4.8), which is far better than state average (7.4). Similarly, infant mortality for every 1000 population was only 12 in comparison to state average of 48. This ratio was least in Koropna (2.7) and Chimur (3.4) tehsils and more in Sawli (7.7) and Brahmapuri (6.8) (table 6.19).

Table 6.19 Tehsilwise primary health sub-centre -1991 & 2002

Sl. No.	Tehsil	Rural Pop (1991)	Rural Pop (2001)*	No. of villages	No. of Villages having		No. of Institutions		Percentage of villages having		No. of Inst/5000 Pop	
					1991	2002	1991	2002	1991	2002	1991	2002
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
1	Chandrapur	119101	129723	113	0	24	0	26	0.00	21.24	0.00	1.00
2	Bhadravati	99895	85248	125	2	24	2	24	1.60	19.20	0.10	1.41
3	Warora	111873	123911	154	22	36	22	36	14.29	23.38	0.98	1.45
4	Chimur	142062	157828	178	3	34	3	35	1.69	19.10	0.11	1.11
5	Nagbhir	112728	124358	114	0	23	0	24	0.00	20.18	0.00	0.96
6	Brahmapuri	110005	121912	111	1	28	1	28	0.90	25.23	0.05	1.15
7	Sindewahi	130536	158578	131	2	21	2	21	1.53	16.03	0.08	0.66
8	Mul	136916	139983	133	0	33	0	34	0.00	24.81	0.00	1.21
9	Gondpipri	108741	122205	144	20	28	20	28	13.89	19.44	0.92	1.15
10	Rajura	203314	241488	270	6	60	6	61	2.22	22.22	0.15	1.26
Total		**1275171**	**1405233**	**1473**	**56**	**311**	**56**	**317**	**3.80**	**21.11**	**0.22**	**1.13**

Source: District Census Handbook Chandrapur, 1991 Census

** Estimated Population of 2001*

6.2.2 Dispensaries

The tehsil wise distribution of dispensaries indicates that in 1991, number of dispensaries was more in rural areas than urban areas. There were 51 dispensaries in 44 villages, which indicated that dispensaries were quite less in proportion to the total number of villages in the district. Every 28981 persons in rural had one dispensary as against 70,975 persons in the towns. In Rajura and Chimur tehsils where there were large numbers of villages, very few dispensaries, which showed that the medical facilities were poorly distributed and were not easily accessible to all villages. The number of dispensaries per 20,000 population was less than the state average (0.80) in Rajura (0.49). It is better in Sindewahi (1.84) and Brahmapuri tehsils where there is more than one dispensary to cater to the needs of 20,000 population. In Rajura urban area there were 2 dispensaries in two towns and number of dispensaries for every 20,000 population (1.58) was far better than the district urban average (0.28). Dispensaries were generally scattered with Sindewahi being the only exception to have 12 dispensaries but Mul, Gondpipri and Chandrapur tehsils did not have any dispensary at all (table 6.20).

Table 6.20 Tehsilwise dispensary facilities -1991

Sl. No.	Tehsil	Total Pop (1991)	Rural Pop (1991)	Urban Pop (1991)	No. of vill-ages	No. of settlements having		No. of Institutions			Rural Population served		No. of Inst/20000 Pop		
						Rural	Urban	Rural	Urban	Total	Popu-lation	P.C. to Total Rural pop.	Rural	Urban	Total
1	2	3	4	5	6	7	8	9	10	11	10	11	12	13	14
1	Chandrapur	469771	119101	350676	113	0	2	0	5	5	0	0.00	0.00	0.29	0.21
2	Bhadravati	132321	99895	32426	125	5	0	5	0	5	8980	8.99	1.00	0.00	0.76
3	Warora	155594	111873	43721	154	5	0	5	0	5	13932	12.45	0.89	0.00	0.64
4	Chimur	142052	142062	0	178	7	0	8	0	8	41229	29.02	1.13	0.00	1.13
5	Nagbhir	112728	112728	0	114	7	0	7	0	7	31579	28.01	1.24	0.00	1.24
6	Brahmapuri	136636	110005	26631	111	3	0	9	0	9	9739	8.85	1.64	0.00	1.32
7	Sindewahi	130536	130536	0	131	12	0	12	0	12	34426	26.37	1.84	0.00	1.84
8	Mul	154924	136916	18008	133	0	0	0	0	0	0	0.00	0.00	0.00	0.00
9	Gondpipri	108741	108741	0	144	0	0	0	0	0	0	0.00	0.00	0.00	0.00
10	Rajura	228681	203314	25367	270	5	2	5	2	7	8613	4.24	0.49	1.58	0.61
Total		**1771984**	**1275171**	**496823**	**1473**	**44**	**4**	**51**	**7**	**58**	**148498**	**11.65**	**0.80**	**0.28**	**0.65**

Source: District Census Handbook Chandrapur, 1991 Census

The district as a whole had an average of one dispensary per 28,981 population in rural areas and 70,975 persons in urban areas with an overall average of about 30,000 population. In rural areas Sindewahi had one dispensary for about 10,000 population followed by Nagbhir, Bhadravati, Chimur and Warora. They all had one dispensary for 16,000 to 22,000 population. The worst was in Rajura and Brahmapuri, which had one dispensary for nearly 40,000 population. As far as urban areas were concerned Rajura tehsil had one dispensary for 12,684 population which was far better than district urban average (70,975). In comparison for 70,135 population, there was one institute in Chandrapur tehsil. It can be concluded that overall distribution was best in Sindewahi, Brahmapuri and Nagbhir tehsils as it was far below district average (30,551) but was worst in Chandrapur (93,954) followed by Rajura (32,669) and Warora (31,119) tehsils.

6.2.3 Hospitals

Hospital/dispensary is one of the important indicators for evaluating the medical facilities. Easy accessibility to these facilities helps in providing proper care to the needy. It is always good if average distance for acquiring these facilities is less so that people can reach it faster and services will be better.

On the whole there were 39 hospitals serving the needs of 17.71 lakh population in 1991 which was pretty less. On an average there was one hospital for every 45000 population. However the distribution of hospital facilities in the district was very uneven. The hospital facilities were exceptionally good in Sindewahi tehsil where there are 8 hospitals and each hospital caters to the needs of 16000 population. The ratio was also very good in Bhadravati and Rajura where each hospital served average 22,000 and 25,000 population. Mul and Gondpipri had no hospital in the tehsils whereas Warora and Nagbhir had one hospital each in the tehsils serving 155000 and 112000 population. Chandrapur tehsil had the maximum number of 9 hospitals i.e. one hospital for every 52000 population. The number of hospitals serving 1, 00,000 population was best (6.13) in Sindewahi tehsil which indicated that there were sufficient hospitals to meet the needs of the rural people. It was far better than the district rural average (1.73). In the urban areas, the number of hospitals per 1,00,000 population was best in Bhadravati tehsil (9.25) which is better than district average (3.42). In Chandrapur tehsil this proportion was lowest (2.57). Bhadravati and Sindewahi tehsils had sufficient hospitals unlike Mul and Gondpipri where there was no hospital (table 6.21).

Table 6.21: Tehsilwise hospital facilities -1991

Sl. No.	Tehsils	No. of villages	No. of settlements having		No. of Institutions			No. of Inst/100000 Pop			Hospital/Population ratio
			Rural	Urban	Rural	Urban	Total	Rural	Urban	Total	
1	2	3	4	5	6	7	8	9	10	11	12
1	Chandrapur	113	0	9	0	9	9	0.00	2.57	1.92	52197
2	Bhadravati	125	3	3	3	3	6	3.00	9.25	4.53	22054
3	Warora	154	0	1	0	1	1	0.00	2.29	0.64	155594
4	Chimur	178	3	0	3	0	3	2.11	0.00	2.11	47351
5	Nagbhir	114	1	0	1	0	1	0.89	0.00	0.89	112728
6	Brahmapuri	111	0	2	0	2	2	0.00	7.51	1.46	68318
7	Sindewahi	131	8	0	8	0	8	6.13	0.00	6.13	16317
8	Mul	133	0	0	0	0	0	0.00	0.00	0.00	NA
9	Gondpipri	144	0	0	0	0	0	0.00	0.00	0.00	NA
10	Rajura	270	7	2	7	2	9	3.44	7.88	3.94	25409
Total		**1473**	**22**	**17**	**22**	**17**	**39**	**1.73**	**3.42**	**2.20**	**45435**

Source: District Census Handbook Chandrapur, 1991 Census

6.2.4 Hospital beds

Hospital beds per 1,00,000 population is an important indicator to asses the availability of medical facilities in a particular district. The higher ratio indicates good availability of medical facilities.

It can be noticed that there were 1035 beds in 1991, which rose to 1149 in 2002 (11 percent increase). The number of beds was largest in Chandrapur tehsil (466) and the lowest in Gondpipri (36) in 2002. In rural areas the number of beds had increased by 28 percent when number of beds increased from 408 in 1991 to 522 in 2002. The maximum rise was recorded in Bhadravati, Nagbhir and Rajura tehsils, which vary from phenomenal 200 percent to 62 percent and 25 percent. Warora, Chimur and Mul remained static as number of beds did

not rise during the period. The number of beds slightly declined per 1, 00,000 population in Chimur, Mul, Sindewahi and Warora tehsils. In overall number of beds large-scale increase was noticed in Nagbhir (from 48 to 78) and Rajura tehsil from 110 in 1991 to 134 in 2001 followed by Chandrapur (442 to 466) and Bhadravati (72 to 96). The number of beds per lakh population was high (134) in Rajura and Mul (97) and very low in Gondpipri and Chimur tehsils. (Table 6.22).

The average number of beds per lakh population was 55 in the district in 2002 that declined from 58 in 1991. This ratio was highest in Chandrapur tehsil with 94 in 1991, which declined to 80 in 2002. Similar trend was observed in all the tehsils except Nagbhir where the number of beds had increased from 43 in 1991 to 63 in 2002, which was pretty good. This indicates that in other tehsils, the rise in number of beds have not kept pace with the increase in population. The ratio was least in Gondpipri tehsil (29 beds per lakh population) in 2002, which had lowest population in the district. This may be due to location of the hospitals, distance, terrain and lack of transport facilities. It is interesting to note that the average number of beds per lakh population was very less in comparison to the state average of 143 beds per lakh population in 1996 which indicates that the district was very backward in the provision of medical facilities of higher orders especially indoor facilities.

Table 6.22: Tehsilwise distribution of hospital beds - 1991, 2002

Sl.No.	Tehsil	No. of Beds					No. of beds / 100000 Pop	
		Rural		Urban	Total			
		1991	2002	1991	1991	2002	1991	2002
1	**2**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1	Chandrapur	0	24	442	442	466	94	80
2	Bhadravati	12	36	60	72	96	54	61
3	Warora	24	24	56	80	80	51	48
4	Chimur	48	48	0	48	48	34	30
5	Nagbhir	48	78	0	48	78	43	63
6	Brahmapuri	24	30	30	54	60	40	39
7	Sindewahi	54	54	0	54	54	41	34
8	Mul	72	72	25	97	97	63	60
9	Gondpipri	30	36	0	30	36	28	29
10	Rajura	96	120	14	110	134	48	46
Total		**408**	**522**	**627**	**1035**	**1149**	**58**	**55**

Source: District Census Handbook 1991, Zila Parishad Health Department.

6.2.5 Doctors

There were 159 doctors in 1991 in Primary Health Centres and Sub Centres in rural areas to serve the needs of 12.75 lakh rural population of the district which was very less. Maximum numbers of doctors (46) were found only in Chandrapur tehsil followed by Mul (16) and (15 each) in Sindewahi and Rajura. There was only one doctor for every 2820 persons. This can be attributed to the fast growth of population (26 percent) from 1991 to 2001 which is unable to keep pace with number of doctors. The lowest number of doctors (8) was found in Gondpipri tehsil. In Warora there were 10 doctors followed by Bhadravati (11) which was very less. The population doctor ratio was best in Chandrapur (2820) and Bhadravati (7750) in comparison to the district average of one doctor for every 8838 rural population. It was worst in Rajura where 1 doctor served 16099 people. Similar trend was observed in Gondpipri, where there was 1 doctor for 15276 people followed by Warora where one doctor served 12391 people indicating that there is deficiency of doctors in the district (table 6.23).

Table 6.23: Doctor population ratio – 1999

Sl.No.	Tehsil	Rural Pop (2001)*	No. of Doctors in PHC/PHS	Population/ Doctor Ratio
1	**2**	**3**	**4**	**5**
1	Chandrapur	129723	46	2820
2	Bhadravati	85248	11	7750
3	Warora	123911	10	12391
4	Chimur	157828	13	12141
5	Nagbhir	124358	11	11305
6	Brahmapuri	121912	13	9378
7	Sindewahi	158578	15	10572
8	Mul	139983	16	8749
9	Gondpipri	122205	8	15276
10	Rajura	241488	15	16099
Total		**1405233**	**159**	**8838**

Source: Rural Health Department, Zila Parishad

6.3 Transport and Communication

Transport & Communication system is essential for integrated and balanced development of the district. Thus it is essential to strengthen it by linking the smallest unit of settlement with large cities and towns. This system has to serve the purpose of accessibility and mobility. The facilities like marketing, storage, processing, medical and education etc should be easily accessible through this network to all the settlements.

6.3.1 Transport

The transport facilities in the district are well-developed and wide spread. State or national highways link most of the urban areas. In 2001 total length of the railway network was 381 km, of which 121 km was double track. All tehsils except Sawli, Gondpipri and Koropna have railway connections.

There were 26 Railway Stations / Halts in the district on the Railway Network passing through the district. The important railway stations are Chandrapur, Ghugus, Tadalis, Ballarpur, Bhandak, Majri, Manikgarh, Vihirgaon and Virur. The districts also had several bus routes operating in the district and also several inter state bus routes pass through the district as the Chandrapur town lies on National Highway connecting Delhi and Chennai (table 6.24).

Table 6.24: Tehsilwise railway stations as on 31.3.2001

Sl. No.	Tehsil	Railway Station	Gauze Type	Railway Division
1.	Chandrapur	1. Chandrapur 2. Ghuggus 3. Tadali 4. Babupeth 5. Ballarsa	Broad Gauze -do- -do- -do- -do-	Central Railway -do- -do- -do- -do-
2.	Bhadravati	1. Bhandak 2. Majri 3. Majri Khadan	-do- -do- -do-	-do- -do- -do-
3.	Warora	1. Warora 2. Nagri 3. Chikni Road	-do- -do- -do-	-do- -do- -do-
4.	Chmimur	-	-	-
5.	Nagbhir	1. Nagbhir 2. Talodhi 3. Mangli 4. Tempa	-do- -do- -do- -do-	SouthEastern Rly. -do- -do- -do-
6.	Brahmapuri	1. Brahmapuri 2. Chicholi	-do- -do-	-do- -do-
7.	Sindewahi	1. Sindewahi 2. Alewahi 3. Tolewahi 4. Rajoli	-do- -do- -do- -do-	-do- -do- -do- -do-
8.	Mul	1. Mul 2. Keljhar	-do- -do-	-do- -do-
9.	Sawli	-	-	-
10.	Gondpipri	-	-	-
11.	Rajura	1. Manikgarh 2. Vihirgaon 3. Viruru	-do- -do- -do-	Central Railway -do- -do-
12.	Korpana	-	-	-

Source: District Census Handbook 1991

The road network of the district is very well developed. The length of state's major highway passing through the district is 277 km, out of the total length of 561 km. Major district roads are 1547 in length and length of municipal roads is 624 km. The length of unmetalled roads is 1503 km. The number of revenue villages connected by pucca road in 2003 is reported to be 681. There has been slight increase in the number of villages served by pucca roads from 602 (40.87 percent) in 1991 to 681 (46.23 percent) in 2003. It is estimated that 67 percent of the population of the district is served by pucca roads. The tehsil wise distribution of villages served by pucca road (table 6.25) shows that Mul tehsil has the highest percentage of 64 percent villages served by pucca road followed by Bhadravati (55.20 percent), Gondpipri (53.47 percent) and Chandrapur (49.00 percent). The lowest percentage of villages served by pucca road is in Sindewahi tehsil (30.53 percent) followed by Warora (35.06 percent) and Chimur (41 percent). The trend during 1991 – 2003 shows that large scale increase in percentage of villages served by roads was observed in Chandrapur tehsil where it rose sharply from 26.55 in 1991 to 48.61 percent in 2003. There was also increase in Warora and Rajura tehsils but it was still below the district average. However, in case of Nagbhir, Brahmapuri, Sindewahi, Mul, Gondpipri the percentage of villages served by pucca roads remained constant during 1991-2003 (Table 6.25) (Figure 6.2).

Table 6.25: Distribution of villages with pucca roads - 1991 & 2003

Sl. No.	Tehsil	No. of Inhabited Villages	% of Pop. Served	No. of villages served		% of villages served	
				1991	2003	1991	2003
1.	Chandrapur	113	54.24	30	55	26.55	48.67
2.	Bhadravati	125	73.	65	69	52.00	55.20
3.	Warora	154		37	54	24.02	35.06
4.	Chimur	178		72	73	40.45	41.01
5.	Nagbhir	114		49	49	42.98	42.98
6.	Brahmapuri	111		51	51	45.95	45.95
7.	Sindewahi	131		40	40	30.53	30.53
8.	Mul	133		85	85	63.91	63.91
9.	Gondpipri	144		77	77	53.47	53.47
10.	Rajura	270		96	128	35.56	47.41
Total		1473		602	681	40.87	46.23

Source: District Census Handbook 1991, PWD, Chandrapur

Table 6.26: Road length in urban areas – 1991

Sl. No.	Town	Road length (in Kms)		
		Surfaced Road	Unsurfaced Road	Total Road Length
1.	Chandrapur	75.38	35.00	110.38
2.	Bhadravati	3.00	8.00	11.00
3.	Warora	10.57	20.55	31.12
4.	Brahmapuri	1.00	8.00	9.00
5.	Ghugus	4.15	8.00	12.15
6.	Mul	9.60	9.94	19.54
7.	Rajura	12.00	11.00	23.00
8.	Nakoda	1.00	4.00	5.00
9.	Sasti	5.00	-	5.00
10.	Shivaji Nagar	5.00	3.00	8.00
11.	Ballarpur	25.66	16.40	42.06
12	Visapur	3.00	6.00	9.00

Source: Zilla Samajik Wo Arthik Samalochana 2000

The road length was highest in Chandrapur town (110.38 Kms.) while it was approximately 40 km in Ballarpur and 30 Kms in Warora towns. In Chandrapur the proportion of surfaced and unsurfaced roads was largest in all the towns in the district, stating that the road network was very well developed in this town. The road length was very less in Sasti, Nakoda, Sivaji Nagar, Brahmapuri and Visapur towns, which was less than 10 km. The road length was very low in Nakoda, Shivaji Nagar and Visapur which indicated that the road network was very poor in these towns (table 6.26).

There are bus routes operating within the district and also several inter-state bus routes pass through the district. There were 521 bus stops in the rural areas in 1991. According to PWD officials it was estimated that present by about 70 percent villages have access to a bus stop within a range of 5 km from the village whereas about only 12 percent had to travel more than 10 km to find a bus stop (table 6.27).

Table 6.27: Position of bus stops and their distance – 1991

Distance range (km)	No. of villages	% of total villages
0-5	642	67.44
5-10	117	20.27
10 and above	117	12.24
Total	952	100.00

Source: District Census Handbook 1991.

6.3.2 Communication

Communication facilities go a long way in information collection and its dissemination in an effective and speedy manner. In the modern society, the role of these facilities in the socio-economic development of the society is very well recognized. Communication facility help in the flow of information from one place to another in shortest time, thus helping administration and corporate managers to take crucial decisions relating to daily functioning of administration and business dealings in shortest possible time. The importance of developed communication network for the common men can be judged from the fact that in rural areas the farmers can benefit directly from the knowledge of prices prevailing in the market/mandi if it is flashed in the Panchayat/community computer system which may be interconnected to a local area network.

There has been marked increase in telephone, post offices, telegraph offices etc in the rural areas between 1991 and 2001 a rise of 23 percent. This was in conformity with the trends prevailing in rest of the country. In 2003 the number of villages having post offices was 252, while it was 205 in 1991. In Nagbhir and Chimur tehsils this facility was best developed which has more than 30 post offices each. There were 9 villages in 1991 having post and telegraph facilities which rose to 25 by 2003. In Sindewahi and Warora tehsils maximum numbers of villages had this facility while it was less in Rajura and Gondpipri. It was non-existent in four tehsils in the district i.e. Chandrapur, Bhadravati, Mul and Gondpipri. There has been significant jump in the phone facilities in the rural areas. There were only 59 villages with this facility in 1991, it rose to 859 villages by 2003. There was tremendous increase in the phone facility in Chimur and Warora tehsils from 1991 to 2003 followed by Nagbhir, Mul tehsils etc. these facilities were not prevalent in Chandrapur and Koropna tehsils in 1991. But in 2003, there were 72 phones in Chandrapur, 57 in Koropna tehsils. In rest of the tehsils also there has been sharp increase in number of villages having phone facilities. In fact, in the last decade the phone facility has increased by about 15 times keeping in line with the national trend. With the setting up of mobile telephone networks and call rates are getting cheaper, thus mobile phones are making deep inroads into the rural areas. It is expected that by the end of the 10^{th} Plan period almost all the villages will have telephone facilities (table 6.28).

Table 6.28: Distribution of villages with communication facilities – 2003

Tehsil	Total Villages	PO Facility	TO Facility	Post & Telegraph	Phone Facility 1991	Phone Facility 2003
1	**2**	**3**	**4**	**5**	**6**	**7**
1. Chandrapur	113	12	0	0	0	72
2. Bhadravati	125	21	0	0	9	67
3. Warora	154	17	0	5	6	105
4. Chimur	178	32	0	3	9	117
5. Nagbhir	114	30	0	3	1	66
6. Brahmapuri	111	17	0	3	3	64
7. Sindewahi	131	24	0	7	8	70
8. Mul	87	23	0	0	14	91
9. Gondpipri	144	21	0	0	7	78
10. Rajura	122	25	0	2	2	62
11. Korpana	92	22	0	2	0	57
12. Jiwati	50	8	0	0	0	10
Total		**252**	**0**	**25**	**59**	**859**

Source: District Census Handbook 1991

6.4 Market Facility

There were 127 villages only where such market facility exists. It was observed that the markets were largely found in Sindewahi (28) and Chimur (22) tehsils. The number of markets was least in Gondpipri and Rajura, Koropna and Chandrapur tehsils. In Rajura tehsil number of villages with no market facility was largest among all the tehsils (65) followed by Koropna (37).

Table 6.29: Distribution of markets village wise – 1991

Sl. No.	Tehsil	No. of Markets
1.	Bhadrawati	12
2.	Brahmapuri	8
3.	Chandrapur	7
4.	Chimur	22
5.	Gondpipri	6
6.	Koropna	2
7.	Mul	12
8.	Nagbhir	14
9.	Rajura	6
10.	Sindewahi	28
11.	Warora	12
Total		127

Source: District Census Handbook 1991

More than 90 percent villages did not have markets within the village but it is available at a distance from the village. 56 percent of villages have markets within 5 km distance, whereas in more than 40 percent villages it was located between 5-10 km and above 10 km. Thus in 592 villages markets were located beyond 5 km distance from the village, which is not a very healthy trend in a district where majority of the population is dependent on agriculture for their survival. (Table 6.29).

The block wise distribution indicates that 21.37 percent villages in Sindewahi had access to markets, which was highest among all the tehsils. In Chimur and Nagbhir, more than 12 percent villages had access to markets followed by Mul (9 percent). In Chandrapur 6.19 percent villages had access to markets while in Gondpipri it was 4.17 percent. This facility was lacking in Rajura where only 2.2 percent villages had access to it.

It can be observed that both in Gondpipri and Rajura tehsils more than 95 percent villages had no market facility. Similarly, 94 percent villages had no markets in Chandrapur. Thus on the whole, there were seven tehsils where more than 90 percent villages had no access to markets. In Sindewahi 78.63 percent villages did not have markets and more than 87 percent in both Nagbhir and Chimur also lacked in this facility. Thus despite the fact that these tehsils have largest number of villages with markets, still in comparison to the total number of villages in individual tehsils, this facility is still very poorly distributed (table 6.30).

Table 6.30: Tehsilwise villages not having market facilities but available within a distance – 1991

Sl. No.	Tehsils	No. of villages	No. of villages having	No. of villages not having	No. of Villages having within		
					0 - 5 Km	5 - 10 Km	Above 10 km
1	2	3	4	5	6	7	8
1	Chandrapur	113	7 (6.19)	106 (93.81)	65 (61.32)	21 (19.81)	20 (18.87)
2	Bhadravati	125	12 (9.60)	113 (90.40)	48 (42.48)	46 (40.71)	19 (16.81)
3	Warora	154	12 (7.79)	142 (92.21)	95 (66.90)	44 (30.99)	3 (2.11)
4	Chimur	178	22 (12.36)	156 (87.64)	99 (63.46)	53 (33.97)	4 (2.56)
5	Nagbhir	114	14 (12.28)	100 (87.72)	60 (60.00)	31 (31.00)	9 (9.00)
6	Brahmapuri	111	8 (7.21)	103 (92.79)	54 (52.43)	27 (26.21)	22 (21.36)
7	Sindewahi	131	28 (21.37)	103 (78.63)	63 (61.17)	15 (14.56)	25 (24.27)
8	Mul	133	12 (9.02)	121 (90.98)	66 (54.55)	36 (29.75)	19 (15.70)
9	Gondpipri	144	6 (4.17)	138 (95.83)	68 (49.28)	42 (30.43)	28 (20.29)
10	Rajura	270	6 (2.22)	258 (95.56)	130 (5.39)	2 (0.78)	126 (48.84)
Total		**1473**	**127 (8.62)**	**1340 (90.97)**	**748 (55.82)**	**317 (23.66)**	**275 (20.52)**

Source: District Census Handbook Chandrapur, 1991 Census.
Note: For 6 village's distance data is not available.

Distance from the market:

In the district, there were 1340 villages do not have market facilities within the village. However, in case of 748 villages (55.82 percent), the market facilities available within a distance of 5 km, 317 villages (23.66 percent) had this facility within between 5 to 10 km. There were 275 villages (20.52 percent) where this facility was available beyond 10 kms. In case of Chandrapur, Warora, Chimur and Nagbhir, more than 60 percent villages, which did not have market facility, were available within a distance of 5 km and in rest of the

tehsils it was 40 to 60 percent. In case of Rajura only 5.39 percent such villages had access to market facility within 5 km. and more than 48 percent villages had access to market facility beyond 10 km distance. In most of the tehsils except Rajura, this facility was available within a distance of 5 km and only 30 to 40 percent villages in the tehsils, the market facility is accessible within a distance of 5 to 10 km. In case of Brahmapuri, Sindewahi, Gondpipri tehsils around 20 percent villages had access to market facility beyond 10 km. (table 6.30).

Thus with increase in distance of market from the villages, the percentage of villages with this facility was declining significantly. It was very prominently observed that markets are very inadequate and totally lacking in the district. This was a very sparse distribution network in a district where large percentage of the population is SC and ST and people are totally dependent on agriculture for their livelihood. This may be due to the thick forest cover, low population growth, poor road network, and location of villages in isolated pockets in far-flung areas, poor government policy regarding the selection of villages for location of markets etc.

Therefore, it is important to increase the number of such markets in the rural areas since they are very essential for meeting the needs of the villages and an occasion for interaction and entertainment for the villages residing in surrounding villages. By increasing the road network to all the villages, accessibility will become easier in such a rugged hilly terrain and can further strengthen the market infrastructure.

6.5 Water Supply

The two most important sources of drinking water in the district are tap water and well water. 12.75 lakh population of the district have good facility of drinking water both in rural and urban areas. All the urban centres except Warora had piped water supply. The other important source of drinking water in the urban areas is well water which was available only in Rajura, Visapur and Warora. The main source of water in the villages is well, rivers and tanks. All the villages in the most tehsils had 100 percent access to it except Chandrapur, Rajura and Gondpipri where proportion of population served by it is less, the district average being 98.41 percent. This facility was available in all the villages irrespective of their distance from the nearest town.

Table 6.31: Distribution of water supply in urban areas – 1991

Sl. No.	Town	Sources of Drinking Water	
		Tap Water	Well Water
1.	Chandrapur	Y	Y
2.	Bhadravati	Y	Y
3.	Warora	N	N
4.	Brahmapuri	Y	Y
5.	Ghungus	Y	Y
6.	Mul	Y	Y
7.	Rajura	Y	N
8.	Nakoda	Y	Y
9.	Sasti	Y	Y
10.	Shivaji Nagar	Y	Y
11.	Ballarpur	Y	Y
12.	Visapur	Y	N

Source: District Census Handbook 1991

The 1991 census has reported that the position of water supply in the towns and villages of Chandrapur district was satisfactory in such facilities existed in them. Though the questions of the quality of water and per capita availability the regularity of supply and its availability throughout the year is important, no such data and information was collected in census 1991. The prominent sources of water in the rural areas have been reported to be open wells, hand pumps, tanks, lakes etc. Following table gives the tehsilwise distribution of villages by source of water as reported in 1991

Table 6.32 : Distribution of villages with water supply – 1991

Tehsil	Tap	Well	Tank	Hand Pump	River	Canal	Other Sources	More than 1 Source
1. Chandrapur	9	113	11	44	6	-	1	65
2. Bhadravati	5	123	20	59	21	1	8	95
3. Warora	83	91	1	2	84	-	82	87
4. Chimur	8	177	32	128	10	-	13	142
5. Nagbhir	4	113	39	100	1	4	13	107
6. Brahmapuri	9	108	30	97	14	-	5	101
7. Sindewahi	1	128	71	116	30	7	9	121
8. Mul	12	120	3	100	1	-	-	109
9. Gondpipri	4	143	8	98	24	-	4	108
10. Rajura	14	252	6	154	26	-	76	200
Total	**149**	**1368**	**221**	**898**	**217**	**12**	**211**	**1135**

Source: District Census Handbook 1991.

There were 149 villages where piped water supply was available. This number rose to 267 villages by 2002 according to Zilla Parishad. Two schemes are operating in so far as piped water supply. One caters to the individual connections, and the other to Community connections. Data for individual connections was not available. The Zilla Parishad provides community connections if the village panchayat deposits a certain percentage of cost of installation.

It is also to be noted that according to Ground Water Survey Department of the Zilla Parishad the quality of water is potable in all villages except 89 in the district, where the fluoride content is high. The GWSD department has already solved this problem in 31 villages and in the remaining 57 villages alternative source of water had been provided.

6.6 Sanitation

Almost all the rural areas lack in hygiene and sanitation. There are no facilities for disposal of sewages and sullage in these areas. Since most of the villages do not have surface drainage and facility of public latrines, they should be provided. Private latrines are absent in the rural areas and hence there is pollution creating unhygienic conditions. It is necessary to initiate schemes for preventing pollution due to improper disposal of wastewater in the open.

All the urban centres are provided with surface drains in the form of roadside gutters for carrying storm water. Collection and disposal of waste (human excreta) is done by conservatory system in all the urban centres. There is no underground drainage scheme for the urban centres. It is proposed that comprehensive and integrated drainage schemes for Chandrapur and Ballarpur towns be prepared immediately on priority basis in advance and be connected to sewage treatment plants of proposed underground drainage schemes to avoid existing unhygienic conditions. Similarly underground drainage schemes for other urban centres such as Warora, Rajura etc should also be prepared.

6.7 Electricity

The district enjoys the advantage of having electricity at its doorstep. The Ballarpur Thermal Power Station with an installed capacity of 22.5 MW is located about 15 km to the south of Chandrapur town and another at Warora receiving station with 220/66 KV. The total consumption of electricity was 132.7 million KWH per annum, of which the share of consumption in urban areas was extremely high (92.66 percent) and in rural areas it was very low (7.34 percent). In the urban areas, Chandrapur town had highest number of domestic connections (18529) followed by Ballarpur (7434) and Bhadravati (3411). Sasti and Shivaji Nagar had least number of connections (around 280). Maximum number of industrial connections were in Warora (617) followed by Chandrapur (539). Nakoda has minimum number of such connections (2) followed by Visapur and Shivaji Nagar with 3 each and Ghungus (4). The maximum number of commercial connections were found in Chandrapur (3493) and Ballarpur (1013) because large number of industries are located. Visapur and Sasti towns had very few connections whereas the Nakoda town did not have any such connection. The road lighting connections were found in large number in Chandrapur (4293) and to some extent in Ballarpur (1476). There were very few points of road lighting in other towns specially in Mul and Shivaji Nagar. Thus electricity had largest consumers for domestic purposes in all the towns. Chandrapur has maximum number of electricity connections among all the towns for industrial, commercial purposes since it was a very well developed town in the district. It had maximum number of road lighting points (table 6.33).

Table 6.33: Distribution of towns with electric supply - 1991

Sl. No.	Town	Electricity (No. of Connections)			
		Domestic	Industrial	Commercial	Street Lighting (Points)
1.	Ballarpur	7434	239	1013	1476
2.	Bhadravati	2973	89	91	340
3.	Brahmapuri	3411	66	574	87
4.	Chandrapur	18529	539	3493	4293
5.	Mul	876	4	15	315
6.	Ghugus	1364	62	277	3
7.	Nakoda	830	2	-	74
8.	Rajura	1630	52	223	351
9.	Sasti	287	32	12	103
10.	Shivaji Nagar	280	4	28	12
11.	Visapur	890	3	1	124
12.	Warora	2763	617	990	776

Source: District Census Handbook 1991

Power supply was good since more than 96 percent of the villages have access to it. The power supply was best in Mul tehsil where almost the total (99.55 percent) population have access to power supply, followed by Chandrapur (99.25 percent) and Warora (99.31 percent). Sindewahi was the only tehsil where only 86 percent villages had access to power supply which was the lowest among all the tehsils.

6.8 Housing

The total population of the district increased from 17.71 lakh in 1991 to 20.17 lakh in 2001 with an increase of 23.95 percent. This increase has resulted in shortage of houses in the district both in urban and rural areas. The average household size in 2001 was 5.20. The tehsil wise trend indicates that the size was less in those tehsils where there were urban settlements. This clearly states that the people living in these towns and in its nearby areas

were educated, more conscious and aware of the necessity of limiting the size of the family unlike their counterparts in rural areas. These people also had access to audio visual aids, which could provide them the relevant information and guide them in a right direction. This practice and such services are very much lacking in rural areas where due to illiteracy, lack of knowledge and traditional and conservative attitude, people are not willing to adopt family planning practices for betterment of their family. Thus in Chandrapur tehsil where there are five towns the average household size was least (4.39), followed by Warora (4.75) and Nagbhir (4.78), which was far, better than the district household size. It was largest in Koropna (6.03) and Bhadravati (5.56) tehsils, which may be due to lack of education, insufficient information about family planning techniques, lack of health awareness, conservative attitude and uncooperative behaviour of the people to family control methods. Sometimes even the lack of relevant medical facilities nearby and poor connectivity also hampers people from adopting these techniques.

Table 6.34: Distribution of households and number of houses – 2001

Sl. No.	*Tehsil*	Total population (2001)	No. of Residential Houses (in 000's)	No. of Households (in 000's)	Average House hold size
1	Warora	166151	32	35	4.75
2	Chimur	157828	30	31	5.09
3	Nagbhir	124358	24	26	4.78
4	Bhamhapuri	153112	29	31	4.94
5	Sindhewahi	106286	20	21	5.06
6	Bhadravati	156720	28	29	5.56
7	Chandrapur	448631	96	102	4.39
8	Mul	109947	19	20	5.49
9	Paubhurna	47631	-	-	-
10	Ballarpur	133660	-	-	-
11	Koropna	120619	19	20	6.03
12	Rajura	113809	27	29	3.92
13	Sawli	104583	20	20	5.22
14	Gondpipri	74574	23	24	3.10
TOTAL		**2017909**	**367**	**388**	**5.20**

Source: District Census Handbook 2001

The number of residential houses were 3,67,000 in the district. There was shortage of about 21,000 houses to meet the needs of 3,88,000 households. Similar trend was observed in all the tehsils where there was some shortage and was unable to meet the housing demand of the people. The maximum shortage for houses was in Chandrapur tehsil where about 6000 houses were still needed to meet the needs of 4.48 lakh population. While in rest of the tehsils the demand for houses was comparatively less and there was a shortage of houses between 1000 to 3000. In Sawli tehsil, there was no shortage of houses since number of households and houses was same. Thus it can be stated that the location of the tehsil, population growth, connectivity, employment potential, education and medical amenities affects the demand for houses. Since Chandrapur tehsil is located near the national highway and has industries, good education and medical amenities, there has been large-scale demand for housing for the population who migrate to this city for employment frequently on a regular basis.

Table 6.35: Distribution of houses and households – 1991

Sl. No	*Town*	Population	No. of Houses	No. of Occupied Residential Houses	Average Household Size
1.	Ballarpur	83511	16503	16503	5.06
2.	Bhadravati	19184	4152	3821	4.62
3.	Brahmapuri	26631	6224	5879	4.23
4.	Chandrapur	22615	50388	46690	4.49
5.	Mul	25002	5483	5350	4.56
6.	Ghugus	18008	3971	3660	4.53
7.	Nakoda	7127	1673	1639	4.26
8.	Rajura	18969	4188	3957	4.23
9.	Sasti	6398	1300	967	4.91
10.	Shivaji Nagar	13242	2820	2789	4.70
11.	Visapur	8925	1955	1862	4.56
12.	Warora	43721	9653	9302	4.53
Total		**496823**	**108310**	**102419**	**4.59**

Source: District Census Handbook 1991

The average household size in the urban varied between 4.23 to 5.06 which was slightly better than rural areas. The average household for the district was 4.59. Ballarpur and Sasti had worst household size at 5.06 and 4.91 whereas the best size shown by Brahmapuri, Nakoda and Rajura which was near to 4.25 and was far better than district average. The urban areas had a total shortfall of houses equaling to around 6000 houses. There is maximum shortage of houses in Chandrapur which was more than 3500 followed by Warora and Brahmapuir where it was more than 300 houses. There was no shortage of houses in Ballarpur. It was least in Shivajinagar and Nakoda (less than 30) towns.

7.9 Major finding

- The drinking water, education and power supply was in very good condition since more than 96 percent population had access to it. In Nagbhir, Warora, Bhadravati, Chimur and Sindewahi tehsils the highest proportion (more than 99 %) of population had access to best educational facilities while it was lowest in Chandrapur tehsil (94.44%). 135 villages did not have education facility but it was available within a distance of less than 5 km. With the increase in distance there was increase in percentage of villages having education and power supply but villages above 51 km away from the town had very low proportion of villages (133) with the facility.

- Power supply was good since more than 96 percent of the villages had access to it. The power supply was best in Mul tehsil where almost the total (99.55 percent) population had access to power supply, followed by Chandrapur (99.25 percent) and Warora (99.31 percent). Sindewahi was the only tehsil where only 86 percent villages had access to power supply which was the lowest among all the tehsils.

- Chandrapur town had highest number of domestic connections (18529) followed by Ballarpur (7434) and Bhadravati (3411). Sasti and Shivaji Nagar had least number of connections (around 280). Maximum number of industrial connections were in Warora (617) followed by Chandrapur (539). Nakoda had minimum

number of such connections (2) followed by Visapur and Shivaji Nagar with 3 each and Ghungus (4). The maximum number of commercial connections were found in Chandrapur (3493) and Ballarpur (1013) because large number of industries were located in these towns. Visapur and Sasti towns had very few connections whereas the Nakoda town did not have any such connection. The road lighting connections were found in large number in Chandrapur (4293) and to some extent in Ballarpur (1476). There were very few points of road lighting in other towns specially in Mul and Shivaji Nagar.

- The market hats were very much deficient in the district since only 133 villages had access to it. More than 40 percent of population in Rajura, Chimur and Sindehewahi were served by this facility. The market hats were totally deficient or negligible within a distance of 0-15 km but were largely found in 68 villages between a range of 16-50 km from the nearest town and to some extent above 51 km.

- All the urban centres except Warora had piped water supply. The other important sources of drinking water in the urban areas are well water that was available only in Rajura, Visapur and Warora.

- There was urgent need to distribute other facilities like market hat, health and post and telegraph to other villages where they are lacking. It is also pertinent to increase the distribution network of medical facilities in the totally deficient villages.

- The road network was well developed in the district. The lack of Transport Depots, truck drivers and transport companies generally avoid to go to remote areas within the district.

- The medical facility is very deficient in the district. 1147 villages did not have this facility within the village. In 711 villages it was available at a distance of less than 5 km. It is available in more than 45 percent villages with 0-15 km distance from the town. But it is essential to spread to other villages since health care is a very essential aspect for the well being of the people.

- There is need to establish motor repairs workshop and other related facilities so that the difficulties faced by transporters could be addressed in an effective manner.

- The state government should provide for more frequent and efficient bus services between different tourist spots and ancient monuments/temples in the district especially in Tadoba Forest reserves and resorts. This will boost tourism and will give a bounce to rural economy.

- There was excessive shortage of houses in Chandrapur and Warora tehsils due to good connectivity, health and education amenities, job potential etc. There is shortage of houses (1000 to 2000) in rest of the tehsils. In Sawli tehsil there is no shortage of house.

- The average household size in the urban varied between 4.23 to 5.06. Ballarpur and Sasti had worst household size at 5.06 and 4.91 whereas the best size was in

Brahmapuri, Nakoda and Rajura towns which is near to 4.25 and was far better than district average.

- The urban areas had a total shortfall of houses equaling to around 6000 houses. There was maximum shortage of houses in Chandrapur, which was more than 3500 followed by Warora and Brahmapuri where it was more than 300 houses. There was no shortage of houses in Ballarpur. It was least in Shivajinagar and Nakoda (less than 30) towns.

- There has been improvement in the communication facilities in the district. There were post offices in 252 villages, post and telegraph in 25 villages and phone facility in 859 villages. In fact, there has been sudden increase in villages with phone facilities from 59 in 1991 to 859 in 2003.

- Warora, Nagbhir, Chimur, Sindewahi tehsils have large number of villages with post offices, post and telegraph and phone facilities, while they are deficient in Chandrapur, Gondpipri and Brahmapuri tehsils.

Chapter - 7
Settlement Pattern

7.1 Distribution of Settlements

The total population of the district in 2001 was 20.77 lakh, who resided in 1472 villages and 12 urban settlements in 14 tehsils. There were five urban settlements in Chandrapur, two each in Bhadravati and Rajura and one each in Warora, Brahmapuri, Mul, Koropna and Ballarpur tehsils. More than 65 percent of the total population resided in rural areas and rest in the urban areas. Among the tehsils, largest numbers of villages were found in Chimur (178), Warora (153) and Koropna (142) and least in Ballarpur (30), Pombhurna (58) and Chandrapur (80). (Table 7.1) (Figure 7.1).

Table 7.1: Decadal change in the distribution of settlements, 1991 & 2001

Sl. No.	Tehsil	No. of Urban Settlements		No. of Villages	
		1991	2001	1991	2001
1.	Chandrapur	5	5	113	80
2.	Bhadrawati	2	2	125	124
3.	Warora	1	1	154	153
4.	Chimur	NA	NA	178	178
5.	Nagbhir	NA	NA	114	114
6.	Brahmapuri	1	1	111	111
7.	Sindewahi	NA	NA	131	92
8.	Mul	1	1	133	78
9.	Sawli	NA	NA	NA	97
10.	Gondpipri	NA	NA	144	89
11.	Rajura	2	2	270	127
12.	Koropna	NA	1	NA	142
13.	Poubhurna	NA	NA	NA	58
14.	Ballarpur	NA	1	NA	30
District Total		**12**	**14**	**1473**	**1472**

Source: District Census Handbook-1991 & 2001.

7.2 Urban Settlements

Chandrapur district has 14 towns as per 2001 census. In 1981 it was only 12. The towns of Chandrapur, Ghugus, Durgapur, Kondumal and Nakoda are in Chandrapur tehsil. Bhadravati and Shivaji Nagar are located in Bhadravati tehsil. Rajura has two towns and the tehsils of Ballarpur, Warora, Brahmapuri, Mul and Koropna have one town each. Of the 14 towns in the district, Chandrapur is the only Class-I town. Ballarpur and Bhadravati are the two Class-II towns. There are six Class-III towns namely Warora, Brahmapuri, Ghugus, Rajura, Mul and Chandur. The towns of Durgapur, Shivaji Nagar and Kondumal fall in the category of Class-IV. Nakoda and Sasti are in Class-V. Ghugus, Chandur, Durgapur, Shuivaji Nagar, Kondumal, Nakoda and Sasti have been declared as census town in 2001 whereas Visapur that was declared as census town in 1991 has now been declassified as rural in 2001 census. In terms of development, Ballarpur is the most developed center after the district headquarter, while rest of the towns are less developed and cover a very small area.

Table 7.2: Population, Class and Status of towns, 2001

Sl. No		Civic Status	AREA in Sqm.	Class	Population
1	Chandrapur	M.Cl.	56.28	I	289450
2	Ballarpur	M.Cl.	16.51	II	89995
3	Bhadravati	M.Cl.	3.39	II	56903
4	Warora	M.Cl.	7.92	III	41971
5	Brahmapuri	M.Cl.	21.91	III	31207
6	Ghugus	C.T.	12.94	III	29945
7	Rajura	M.Cl.	2.93	III	25843
8	Mul	M.Cl.	23.15	III	22330
9	Chandur	C.T.	NA	III	21731
10	Durgapur	C.T.	NA	IV	17714
11	Shivajinagar	C.T.	2.00	IV	14797
12	Kondumal	C.T.	NA	IV	11721
13	Nakoda	C.T.	3.51	V	6002
14	Sasti	C.T.	7.81	V	5458
15	Visapur	C.T.	3.83	NA	NA
Total					**665,067**

Source: District Census Handbook-1991 & 2001(Note: The tehsils of Sawli (from Mul & Sindewahi), Koropna (from Rajura), Pombhurna (from Gondpipri) & Ballarpur (from Chandrapur) were created after 1991.

It can be observed from the above table that Chandrapur is the largest urban centre in the district both in terms of area and population followed by Mul and Brahmapuri. It covers an area of 56.28 sq km, which is largest among all the towns. There are only three towns apart from Chandrapur that are spread over an area of more than 16 sq km viz., Mul, Brahmapuri and Ballarpur. The rest of the towns are very small having less than 10 sq.km of area.

The average population density in urban areas was 4101 persons per sq km in 2001, which was 3063 in 1991. Exceptional increase was noticed in Bhadravati town where it increased from 5659 to 16786 per sq km, indicating of more than 196 percent in this decade. This is the highest growth among all the towns which can be attributed to its location on the rail-road corridor, good transport linkages with district headquarter, fertile soil with good irrigation facilities, large agricultural market (APMC Yard) and offer ample job opportunities along with higher order infrastructural faculties and amenities. It was followed by Rajura (8820) and Shivajinagar (7399). Thus there were six towns where the density was more than the district average (4101). It was least in Sasti (699), Mul (965) and Brahmapuri (1424), which was far below the district average. There was substantial increase in density in other towns such as Rajura, Shivajinagar and Mul. In other towns very little change was observed in Chabndrapur, Ballarpur Ghugus and Brahmapuri. The decline was almost negligible in two viz., Warora and Sasti but it decreased by more than three times in Nakoda during this period that was quite prominent. Visapur town had urban population in 1991 but it was declassified as a rural in 2001 census which may be due to negligible population growth due to lack of jobs, poor quality of amenities, location of a bigger settlement in close vicinity etc. (table 7.4).

Table 7.3: Town wise density and growth, 1991,2001

Sl.No.	Town	Population		Density		P.C. Growth 1991-2001
		1991	2001	1991	2001	
1	2	5	6	7	8	9
1	Chandrapur	226,105	289450	4018	5143	28.02
2	Ballarpur	83,511	89995	5058	5451	7.76
3	Bhadravati	19,184	56903	5659	16786	196.62
4	Warora	43,721	41971	5520	5299	-4.00
5	Brahmapuri	26,631	31207	1215	1424	17.18
6	Ghugus	25,002	29945	1932	2314	19.77
7	Rajura	18,969	25843	6474	8820	36.24
8	Mul	18,008	22330	778	965	24.00
9	Chandur	0	21731	0	0	0.00
10	Durgapur	0	17714	0	0	0.00
11	Shivajinagar	13,242	14797	6621	7399	11.74
12	Kondumal	0	11721	0	0	0.00
13	Nakoda	7,127	6002	2030	1710	-15.79
14	Sasti	6,398	5458	819	699	-14.69
15	Visapur	8,925	NA	2330	0	0.00
Total		**496,823**	**665,067**	**3063**	**4101**	**33.86**

Source: Census of India, 1991 & 2001

In the district more than 33 percent of the population resided in the urban areas in 1991-2001 decade. Maximum growth was observed in Bhadravati town where it showed an increase of more than 196 percent that was very huge in comparison to the district average and in relation to other towns. It increased by more than 35 percent in Rajura and less than 30 percent was noticed in Chandrapur and Mul. The least population growth (7.7 percent) was observed in Ballarpur, followed by Shivajinagar (11 percent), which is far below the district average. The population declined very steeply (more than 14 percent) in Nakoda and Sasti, which may be due to migration of people to near by big towns for job opportunities, lack of good facilities etc. This is very low in comparison to district average. In Warora it declined by four percent that may be migration of people to other smaller settlements. In Chandur, Durgapur and Kondumal there was no population growth. Thus it can be stated that apart from Bhadravati, the population increase was marginal. The towns with maximum urban population (more than 23 percent) are Bhadravati, Rajura, Chandrapur and Mul which are well connected by a good network of roads and railways, located on the rail-road corridor, good linkages with district headquarters and offer ample job opportunities along with higher order infrastructural facilities and amenities.

7.3 Small and Medium Towns

Chandrapur

It is a very old settlement having a distinct historical and cultural tradition. It is a centre of vast resources and has a vast hinterland rich in minerals, forests and agricultural resources. It constitutes a high level of administrative hierarchy as a district centre as many administrative offices such as Collectorate and other government offices are located here. The town is well connected with other towns both by roads and railways. Two state highways Nagpur–Chandrapur–Allapalli and Nagpur–Mul-Chandrapur enter the town from north west and north east direction. The state highway also connects it to nearby urban centres of Ballarpur and Warora. Chandrapur is connected by central and south eastern railway as it lies

on Nagpur-Chennai main line and has access to Nagpur and Wardha since they lie within a radius of 157 km besides catering to the needs of its own population; it extends central services to large number of surrounding settlements comprising almost the whole district.

Nearly 22.11 percent of the total workers are engaged in industrial activities. About 63.03 percent are in tertiary, commercial and other allied activities. About 14.86 percent are engaged in agriculture and mining activities. The mineral resources such as coal, iron ore, manganese, mica, copper etc. and rich forest cover lie within the hinterland of the town. There is an industrial estate with an area of about 24 ha just outside the municipal limits on Mul road where big industries like Ordinance Factory, cement factory, paper mills etc. are located, but within the influence of its hinterland. The coal mining industries such as Rayatwari Colliery and Hindustan Lalpeth Colliery etc are located towards east of the town just outside the municipal limit. Within close proximity of the town, there are major industrial and mining establishments like Ballarpur Colliery, Bhandak Ordinance Factory, Sasti Colliery and Cement Factory etc. There are light agro-based and mineral based industries like oil mills, rice mills, saw mills, glass works, ceramic industries etc. Certain other industries like oil mills, saw mills, brick kilns and other service industries are located within the town.

Ballarpur

It is a historical town having rare memories of ancient “Gond Empire”. It is famous for Ballarpur Paper Mills all over the country, which was established in 1871. Ballarpur is a business-oriented city with growing industrial and commercial activities. It is an important commercial and industrial centre of wood, coal and paper commodities in Central India. It is now the tehsil headquarter of newly constituted Ballarpur tehsil and is situated on a state highway 15 km from district headquarter. Ballarpur junction railway station is an important station on Delhi–Chennai route. The good communication links has improved trading facilities and due to its nearness to the district headquarter, there exists good potential for the development of commercial activities.

Secondary and tertiary sector account for about 77.61 percent of the total workforce. Manufacturing and processing units’ employ about 33.54 percent of total labour force and about 15 percent of workers are engaged in mining and quarrying. More than 10 percent of workers are busy in trade and commerce activity. Due to the easy availability of good quality wood, from dense and rich forests the timber industry has developed here. Similarly the existence of paper mill has resulted in the rise of timber depots and saw mills in the town. Tiles, stoneware and pipe factories also exist in the town.

Brahmapuri

It is a taluka headquarters of Nagpur Revenue Division. It is about 123 km from Chandrapur by road and is linked to the west with Nagbhid-Wadsa State Highway. The Mul-Chandrapur road via Talodhi is also linked with narrow gauge railway station from Chandrapur–Gondia line, due to which Brahmapuri serves as a feeder town. Since the town has good communication facility, rich paddy producing zone and Agriculture Produce Market Committee, it has grown into a big marketing place for this commodity.

It is a centre of education and cultural activities in the western part after Chandrapur. Being the only town in the northern part of the region, it is likely to attract more agro-based industries and mineral based industries in the future to some extent.

Majority of workers are engaged in primary and tertiary sector. Largest numbers of labourers are employed in agriculture and others are in business and trading activity. The town has vast hinterland where high quality of rice is produced, due to which rice mills and

poha mills exist in the town. Due to availability of teak wood, saw mills have been established. Other industries such as oil mill, ice factory and paper mill that employs approximately 500 workers, also exists in the town

Mul

Mul is tehsil headquarter of Mul tehsil and is located about 43 km west of Chandrapur. According to 2001 Census, it had a population of 22,330. The population growth was 24 percent during 1991-2001. State Highway No. 92 passes through the town. It has narrow gauge railway line and the railway station is at Chanda Fort. Majority of workers are engaged in primary and tertiary sector. Agriculture employs the largest number of labourers and other workers are employed in business and trading activity.

Mul is an agricultural/business centre that has a vast hinterland where high quality rice is grown. Due to rich paddy fields and good communication facilities, this town has grown up as a big marketing place for paddy and also for Mangalore Roofing Tiles. Large numbers of rice mills have come up for processing raw rice, poha mills and few kukus kendras for making powder of paddy, which is further exported to Andhra Pradesh for extracting oil. There is principal yard of Agricultural Produce Market Committee. Due to availability of suitable clay for manufacture of Mangalore tiles, tile factories are functioning in the town. Few saw mills and seasonal oil extracting plants are also located in Mul.

Rajura

It is the headquarter of Rajura district. Various government offices, sub-divisional offices, civil and criminal courts are located here. It is 27 km from Chandrapur and is located on T-junction of two State Highways. The nearest railway station is Manikgarh that is 4 km away from the town. Majority of the workers are engaged in tertiary sector (68.92 percent in 1981). It is an industrial and commercial centre and the town's economy is based on industrial activity. It is situated in the midst of mineral resources such as limestone and coal, offering tremendous potential to establish industries based on these resources. In addition, agro-based industries can also be started in an economical manner. Rajura is well known for cement factory (Manikgarh Cement Factory). Different types of industries exist in the town such as pipe factory, tiles factory, oil mills, saw mills etc. In the surrounding area, there are cement and Swastic Tiles Factory. There is an Agriculture Produce Market Committee principal yard in the town. The main commercial area of the town is centrally located with main shopping weekly market, daily vegetable market, cotton market etc. Being in the cotton zone, it has cooperative ginning and processing factory, ginning factories and rice mills.

Warora

It is the administrative headquarter of Warora tehsil and is the third largest town of the region, which is well connected by roads (two state highways) and rail to other parts of the region and outside the region. It lies 45 km on the north west of Chandrapur. It is also connected with Chandrapur by broad gauge railway line, which further runs to Chennai. About 69.20 percent of the population is engaged in commercial, transport and other activities. The primary sector activity comprising of agricultural and mining activities, constitute about 14.6 percent of the total employment. The town offers very good marketing centre for agricultural produce. It has potential for industrial development despite the fact that these activities are not well developed and only 15 percent workers are employed in it. Very few industries such as ginning, pressing and oil mills are located here.

7.4 Rural Settlements

The district had a total rural population of 14.05 lakh spread over 1472 villages. Chimur tehsil has the highest number of villages (176) that account for 11.96 percent of the total number of villages in the district followed by Warora (156), Koropna (142), Rajura (130) and Bhadravati (119). Ballarpur has the least number of villages (32). The spatial distribution of villages shows that there is higher concentration of villages along the rail road corridor and all along the river banks of Wardha, Penganga and Wainganga. Villages are sparsely located in the central part of the district that is covered by dense forest. The tehsil wise size distribution of villages is given below:

Table 7.4: Distribution of villages by population ranges, 2001

Sl. No.	Tehsil	No. & percentage of inhabited villages	No. & percentage of villages in each range (figures in parenthesis indicate percentage of villages in each range)					
			Less than 200	200 to 499	500 to 1999	2000 to 4999	5000 to 9999	10000 and above
1	2	3	4	5	6	7	8	9
1	Chandrapur	80 (5.43)	8 (10.00)	22 (27.50)	43 (53.75)	5 (6.25)	2 (2.50)	-
2	Bhadravati	119 (8.08)	19 (15.97)	35 (29.41)	57 (47.90)	8 (6.72)	-	-
3	Warora	156 (10.60)	12 (7.69)	50 (32.06)	89 (57.05)	4 (2.56)	1 (0.64)	-
4	Chimur	176 (11.96)	33 (18.74)	52 (29.55)	77 (43.75)	10 (5.68)	2 (1.14)	2 (1.14)
5	Nagbhir	114 (7.74)	10 (8.77)	31 (27.19)	39 (51.75)	12 (10.53)	1 (0.88)	1 (0.88)
6	Brahmapuri	110 (7.47)	12 (10.91)	15 (13.64)	70 (63.64)	13 (11.82)	-	-
7	Sindewahi	92 (6.25)	15 (16.31)	22 (23.91)	43 (46.74)	9 (9.78)	2 (2.17)	1 (1.09)
8	Mul	79 (5.37)	11 (13.93)	19 (24.05)	35 (44.30)	14 (17.72)	-	-
9	Sawali	95 (6.45)	9 (9.47)	21 (22.11)	52 (54.74)	12 (12.63)	1 (1.05)	-
10	Gondpipri	89 (6.05)	8 (8.99)	28 (31.46)	47 (52.80)	5 (5.62)	1 (1.13)	-
11	Rajura	130 (8.83)	13 (10.00)	29 (22.31)	79 (60.77)	9 (6.92)	-	-
12	Koropna	142 (9.65)	16 (11.27)	46 (32.40)	71 (50.00)	8 (5.63)	1 (0.70)	-
13	Pombhurna	58 (3.94)	7 (12.07)	12 (20.69)	37 (63.79)	1 (1.72)	1 (1.73)	-
14	Ballarpur	32 (2.17)	5 (15.63)	7 (21.87)	14 (43.75)	4 (12.50)	2 (6.25)	-
District Total		**1472 (100)**	**178 (12.09)**	**389 (26.43)**	**773 (52.51)**	**114 (7.74)**	**14 (0.95)**	**4 (0.28)**

Source: District Census, 2001 Chandrapur District.

7.4.1 Size Distribution

The medium sized villages having population 500 to 2000 and small medium size villages account for more than three fourth of the total number of villages of the district. Large size villages having population above 2000 population are very in few in number that accounts for only 9 percent. Of the 1472 villages in 2001, 12 percent are small sized with a population below 200, 26 percent are in the size class 200-499, 52 percent are in the size class 500-1999, and a very small proportion of villages (7 percent) belong to the size class 2000-4999. There are very few villages in the size class of 5000 and above. Since 1991 there has been a slight increase (around two percent) in the percentage of villages falling in the size class of 500-1999 and 2000-4999. Very little increase has been noticed in the size class of 5000-10000 whereas marginal decline has been observed in the size classes of less than 200, 200-499 and 10,000 and above during the same period.

The villages have been further grouped as small sized (below 500), medium sized (500-1999), large sized (2000-4999) and exceptionally large sized (5000 and above). Within the district, small sized villages account for 38.5 percent; medium sized villages 52.5 percent of total inhabited villages whereas large sized (2000-4999) villages' account for 7.7 percent. The exceptionally large sized villages (5000 and above) account for only 1.2 percent. The group size distribution of villages highlights the predominance of small and medium size villages, which was 38.5 percent in 2001, in comparison to 42.8 percent in 1991 and 48.4 percent in 1981. This shows that they have been declining steadily since 1991 at the rate of about four percent which may be due to increase in population leading to shift to higher category. The proportion of medium size villages with 500 to 1999 population has shown an increasing trend. They have risen by about two percent since 1991, which was comparatively very slow increase, in comparison to 1981 when it was 46.2 percent (almost double since it rose to 50 percent). Similarly, in the case of exceptionally large villages, this proportion had risen to 9 percent from 6.9 percent in 1991 and 5.4 percent in 1981. There has been a sharp increase in the percentage of such villages especially from 1991 to 2001.

The tehsilwise distribution of villages given in table 7.5 indicates that the villages in Mul, Sawli, Brahmapuri, Nagbhir, and Chimur are larger in size while the small sized villages are found in Koropna, Rajura, Warora and Bhadravati. The large sized villages with population above 5000 are found in Chimur, Sindewahi, Nagbhir, Chandrapur and Ballarpur. Maximum numbers of such villages are found in Chimur and Sindewahi tehsils (7) out of the total of 18 villages. This shows that the tehsils, which are agriculturally fertile and have good agricultural land with good irrigation facilities, have large sized villages.

The percentage of small sized villages was the highest in Chimur in both 2001 and 1991 though it declined to 48.3 percent from 51.7 percent in 1991. Similarly it was lowest in Brahmapuri tehsil in both the years viz., 24.5 percent in 2001 and 32.4 percent in 1991 which showed a declining trend. The percentage of medium sized villages was highest in Brahmapuri (63.6 percent) in 2001 and same trend was noticed in 1991 (57.7 percent). The lowest medium sized villages were in Chimur and Ballarpur tehsils in 2001. There was very little increase in these villages in Chimur from 43.3 percent in 1991 to 43.7 percent in 2001. The large sized villages depicted an increasing trend especially in Mul tehsil where they rose to 17.7 percent in 2001 from 12.0 percent in 1991. It was lowest in Pombhurna (1.7 percent) and depicted an increase in number of such villages in Warora tehsil from 1.3 percent in 1991 to 2.6 percent in 2001. The small sized villages are declining in both number and population whereas the medium and large size villages are increasing. The number and population of villages in the ranges 500 to 999 and 1000 to 1999 have risen during 1991 and 2001 whereas in case of villages with population less than 500 it has declined. There has been an increase in the number of villages in the higher categories, because of population growth in small size

villages and crossing over to the higher size categories. This shows steady increase in population in all categories of villages.

In the tehsils where cultivable land is less such as Sindewahi, Brahmapuri, Nagbhir, Chandrapur and Bhadravati, the villages are generally small. The villages falling within Wardha-Wainganga river basins are generally located along the banks, trans, still it has potential for industrial development port corridor and are agriculturally prosperous. The villages located on the southern plateau and central upland with poor laterite soil are scattered and spread in isolated pockets with small population and poor linkages and may be composed of largely tribal population.

7.5 Major findings

- Chandrapur town is the most developed urban center where high level administrative offices exists and offers high level facilities and amenities in the district. Since it has a vast hinterland rich in natural resources, it caters to the needs of not only its own population but also extends central services to a large number of surrounding settlements comprising almost the entire district.
- Ballarpur has developed into a business-oriented centre with growing industrial and commercial activities due to its good communication links, improved trading facilities and nearness to the district headquarter. It is an important commercial and industrial centre of wood, coal and paper commodities in Central India.
- The villages in Mul, Sawli, Brahmapuri, Nagbhir, and Chimur are larger in size while the small sized villages are found in Koropna, Rajura, Warora and Bhadravati. The large sized villages with population above 5000 are found in Chimur, Sindewahi, Nagbhir, Chandrapur and Ballarpur.
- There are 18 exceptionally large sized villages in Chimur and Sindewahi and two each in Nagbhir, Ballarpur and Chandrapur in 2001.
- In the central part of Sindewahi, Bhadravati, Chandrapur and Chimur tehsils, where thick forest cover, undulating topography and low percentage of cultivable land exists, there is almost sparse distribution of settlements. There are large numbers of settlements in the southern, eastern and western parts and some centers are also located in the northern part of the district where the transport network, fertile soil, irrigation facilities etc are sparse.
- The tehsils that do not have urban centres or market towns, the rural market centres provide necessary functions like agricultural, marketing and other specialized services etc.
- Most of the higher order settlements are located along the main transport network and in the relatively fertile agricultural land, where agricultural surplus are generated. The central part of the district and southern most part of Rajura tehsil is forested and has lower population density and the provision of services and facilities is also relatively poor and patchy. There does not exists much possibility of development of new settlements in these areas.

7.6 Settlement Structure

Availability of economic activities plays an important role in distribution population in rural and urban areas. Presence of amenities and facilities in a settlement provide crucial information about the capacity of the settlement to stimulate growth. The term ‘Hierarchy’ denotes the relative importance of a settlement in terms of level of services the settlement provides within its catchment area with progressively increasing geographical area and population base owing to its location, accessibility and availability of amenities and facilities. Therefore to determine the hierarchy of settlement it is necessary to have a comprehensive

assessment of various facilities and amenities available at each settlement assigning due weightage to various factors.

Prior to 1960, the region was characterized by scattered rural settlements. The settlement structure of this isolated area has changed dramatically with the creation of Erai Dam, power generation, coal mining operation and other major industries. This has led to inward increase and new townships have been built. The beginning of hierarchy to centres has been introduced. The location of thermal power plant, paper industries in Chandrapur and Ballarpur towns have changed the spatial characteristics and the economy of these two towns. Availability of flat land and presence of good rail and road connectivity have added to the concentration of industries in this belt. There is thick concentration of settlements in those tehsils, which have good transport network, good drainage system, fertile soil, natural resources etc. There distribution is quite skewed. In the central parts of Sindewahi, Bhadravati, Chandrapur and Chimur tehsils where there is thick forest cover, undulating topography and uncultivable land with poor accessibility, there is almost sparse distribution of settlements. Majority of the urban settlements are located on the western side along the major rail road corridor, good transport linkages and higher order facilities. The central and eastern part of the district does not have good linkages and there are no major urban centres except Mul and Brahmapuri. Thus rural settlements are dispersed in almost all the directions but they are denser in the north western, south western and north eastern parts of the district. It may be noted that all the urban centres except Rajura and Chandur are located along the rail road corridor.

7.6.1 Urban Growth Centres

In the urban areas, Chandrapur is the Regional center, which constitutes a high level of administrative hierarchy as a district and tehsil headquarter. Important administrative offices such as Collectorate and other government offices are located here. Ballarpur, a satellite town of Chandrapur is the one Sub-Regional center, which is located very near to district headquarter. Due to its good communication links and important railway junction, improved trading facilities and nearness to the district headquarter, it has developed in to a business-oriented centre with growing industrial and commercial activities. In the next level, are the 5 Market Towns viz. Bhadravati, Warora, Brahmapuri, Mul and Rajura, which are tehsil headquarter towns and have APMC principal yard and are located on rail-road corridor and have good linkages with the district headquarter. Chandur, a class III 2001 census town located in Koropna tehsil having APMC subyard at present does not qualify to be a market town since it lacks basic social facilities. However, it has potential to develop as the future market centre for Koropna and part of Rajura tehsil. Durgapur, Kondumal and Nakoda being close to bigger urban centres are serving as satellite townships. Therefore these towns have not been considered in the existing hierarchy system. Ghughus and Shivajinagar (Census town 2001) are also small industrial towns well connected by rail and road having little growth potential. But they can be considered as alternate site as industrial growth centres for future industrial development since basic infrastructure already exists in these towns.

7.6.2 Rural Areas

In rural areas even where there is primarily a subsistence economy, certain villages provide necessary facilities for local exchange of goods and services for a self-content community. Therefore, few settlements have currently established themselves as important central places. As the economy of the rural areas changed from subsistence economy to agricultural surplus, demands for specialized services and facilities increased. It is the spatial concentration of these activities that led to the formation of central places that later became a growth centre.

The analysis has been carried out to assist the existing relative importance of rural settlements in order to describe the existing population concentration and their areas of influence and to provide the basis for selected preferred location for the new concentration and dispersal of services and infrastructure.

To assist the existing centrality of settlement information of a range of facilities has been tabulated and analysed for each village tehsil wise under the following headings:

- **Education**: Primary Schools, Middle Schools, Secondary Schools.
- **Health**: **Primary**: Primary Health Sub-centre, Primary Health Centre.
- **Communications**: Pucca Roads, Bus Stop, Post Offices, Telephone Facility.
- **Commerce**: APMC Main Yards, Sub-Yards, Village Market.
- **Others**: Veterinary Hospital Rank I and II.

The settlements in the district has been ranked based on the availability of facilities in each village and their respective weightage The relative importance/weightage of each facility has been determined by the number of villages having the facility in relation to the total number of inhabited villages in the district (Table 7.5).

Table 7.5 Facility wise weightage assigned

Sl. No.	Name of Facility	No. of villages having	Weightage of each facility
1	Pucca Road	682	2
2	APMC Principal Yard	6	246
3	APMC Sub-yard	25	59
4	Veterinary Dispensary Grade-I	28	53
5	Veterinary Dispensary Grade-II	102	14
6	Primary Health Centre (PHC)	54	33
7	Primary Health Sub-Centre (PHS)	306	5
8	Middle School	343	4
9	High School	144	10
10	Graduate College	8	184
11	Adult literacy Centre	53	28
12	Health Centre	22	45
13	Post Office	252	6
14	Telephone Facility	852	2
15	Market Facility	133	11
16	Bus Stop	492	3
17	Railway Station	37	40

Source: District Census, 2001 Chandrapur District.

Formula of calculating relative weightage of each facility in villages:

$$W = \frac{t}{f_1} \times f_2$$

W= Weightage assigned
t= Total number of Inhabited Villages in the district
f_1= Number of villages in the district having the facility
f_2 = Number of facility available in the village

The facility wise ranks assigned to the villages have been aggregated to achieve a Composite Functional Index (CFI) and arranged in descending order. The villages having CFI 300 and above have been considered as the established Rural Market Centre, the highest order rural settlement having either APMC Main Yard or sub-yard along with all other necessary functions. There are about 7 such settlements existing in the tehsils of Chimur, Nagbhir, Sindewahi, Sawli, Warora and Rajura. Except Madheli all these centres are also the tehsil headquarters.

The villages having CFI 100 to 300 having High School, Primary Health Centres, Veterinary Dispensary grade-I have been identified as existing rural service centres. There are about 27 such villages spread over in all the tehsils except Koropna. The villages having CFI less than 100 having Pucca roads and Primary Health Sub Centre, Middle School or Veterinary dispensary or daily market have been identified as basic villages. There are 140 such identified villages presently functioning as basic villages spread over all the 14 tehsils. The three levels of rural settlements have been identified viz., (Table 7.6)

- Rural Market Center (10000 and above population),
- Rural Service Center (5000-10000 population) and
- Basic Village (2000-5000 population).

Table 7.6 Existing Hierarchy of Rural Settlements

Level		CFI Range	No. of Settlements	Remarks
I	Rural Market Centre	300 & Above	7	Highest order in the hierarchy having APMC Main Yard or Sub yard and other necessary health and education facilities.
II	Rural Service Centre	100 – 300	27	Villages having high school, PHC & veterinary dispensary-I
III	Basic Village	Less than 100	140	Villages connected with pucca road and having minimum any two of the basic facilities: Primary Health Sub-Centre, Middle School, Veterinary Dispensary–II, Daily Market
	Total		**281**	

Source: Census, 2001 Chandrapur District.

7.7 Settlement Hierarchy

Based on the above analysis of settlements in the district and depending upon their location, population growth, availability of facilities, connectivity etc, the following hierarchy of settlements at six different levels in both urban and rural areas has been identified.

I Regional Center

It is a well-established center performing apex functions for a large area and is marked by highly specialized secondary and tertiary sector activities. It also has advanced industrial development and a concentration of administrative and higher order service functions. At present Chandrapur town, the district headquarters is serving as Regional Centre.

II Sub-regional Center

A Sub-regional center is generally a medium size town. It performs a variety of roles, particularly in promoting and supporting rural development and in providing functional linkages between the smaller towns and big towns as well as rural and urban settlements. The economic service functions such as infrastructure like transport, power and water, credit and banking, developmental promotion, marketing, managerial services and training and research are provided in this center. The tertiary services such as retail distribution, rural services like health, education, cultural activities etc. are also localized in this center.

III Market Town

The Market Town is a small town having direct linkages with immediate rural hinterland and rural growth centres. It caters to service functions, and also has a large-scale agricultural market with regulated market principal yard and necessary warehousing and storage facilities. These settlements also provide for processing of agriculture produce in the form of rice mills, oil mills etc.

IV Rural Market Centre

The market centre is the highest-level rural growth centre having good accessibility; higher-level rural services and facilities like education and health and has the capacity to serve a catchment population of 30,000. The APMC Sub-yards are generally located in these settlements. These settlements provide good linkages with its hinterland and the market towns. Most of these centres are also the administrative headquarters of the tehsils and has the potentialities to grow as the market towns in near future.

V Rural Service Centre

The Service Center is the next order villages having relatively better services and facilities in terms of education, health, communication, accessibility and has the capacity to serve a catchment population of 10,000. This center is proposed to provide basic social amenities and facilities for population engaged in agriculture and other primary activities. This centre is the potential rural centre having good accessibility, better services and facilities like education, health etc. It is ideal for locating the sub-yards of Regulated Markets and other basic facilities, communication system, vocational services and professional skills of lower level.

VI Basic Village

These are small and medium size villages strategically located and accessible by pucca road from higher order settlements and the surrounding villages within the catchment. These villages are supposed to provide basic minimum medical, educational or other services to the surrounding rural population of approximately 5000 within its catchment.

Based on the above analysis of settlements and the criteria adopted for determining the levels of hierarchy of growth centres, following number of settlements have been identified to be existing and providing necessary services within its catchment for the entire district. (Table 7.7) (Figure 7.2). Hierarchy wise list of existing settlements thus identified is given in table 7.8.

Table 7.7 : Existing Settlement Hierarchy

Level	No. of Settlement	Existing Situation
I Regional Centre	1	Chandrapur, the district & tehsil HQ is the highest order in the hierarchy and serves the entire district.
II Sub-Regional Centre	1	Ballarpur town, an industrial town & tehsil HQ is the second in the hierarchy.
III Market Town	5	• Tehsil HQ. • APMC Principal Yard. • Other higher order facilities.
IV Rural Market Centres	7	• CFI above 300. • Large size tehsil HQ villages. • Having APMC Principal Yard. • Colleges. • High School. • Primary Health Centre. • Veterinary dispensary grade – I.
V Rural Service Centre	27	• CFI 100-300. • Centrally located large & medium size villages. • APMC sub yard. • Veterinary dispensary. • PHC. • High School.
VI Basic Villages	140	• CFI below 100. • Centrally located small & medium size villages. • Pucca Road. • Veterinary dispensary grade II. • Primary Health Sub-Centre. • Middle School.

Source: Census, 2001 Chandrapur District.

Table 7.8: List of Existing Hierarchy of Settlements

Level	Hierarchy	Tehsil	Name of Settlement
I	**Regional Centre**	Chandrapur	Chandrapur
II	**Sub-Regional Centre**	Ballarpur	Ballarpur
III	**Market Town**	Bhadravati	Bhadravati
		Mul	Mul
		Rajura	Rajura
		Warora	Warora
		Bramhapuri	Bramhapuri
IV	**Rural Market Centre**	Chimur	Chimur
		Gondpipri	Gond Pipari
		Korpana	Korpana
		Nagbhir	Nagbhir
		Sawali	Sawali
		Sindewahi	Sindewahi
		Warora	Madheli
V	**Rural Service Centre**	Ballarpur	Kothari
		Bhadravati	Chandan Kheda
			Ghodpeth
			Mudholi
			Nandori Bk.
		Brahmapuri	Gangalwadi
			Mudaza
		Chandrapur	Chichpalli
			Pandhar Kawada
		Chimur	Bhisi
			Bothali
			Khadsangi
			Neri
			Shankarpur
		Gondpipri	Tohogaon
		Mul	Bembal
			Rajoli
		Nagbhir	Chargaon Manapur
			Gangasagar Heti (N.V.)
		Pombhurna	Pobhurna
		Rajura	Patan
			Warur
		Sawali	Londholi
			Pathari
		Sindewahi	Navargaon
		Warora	Anandvan
			Shegaon Bk.
VI	**Basic Villages**	Ballarpur	Bamhani
			Manora

			Nandgaon Pode
			Palasgaon
			Shivanichor
		Bhadravati	Ashta
			Belgaon
			Charur Dharapure
			Chora
			Deulwada
			Ghutakala Raiyyatwari
			Jananiwali
			Kiloni
			Kondha
			Majari
			Mangli Raiyyatwari
			Moharli
			Patala
			Pirli
		Bhadravati	Sagara
			Shegaon Kh.
			Waigaon Tukum
		Brahmapuri	Awalgaon
			Bhuj Tukum
			Ekara
			Halda
			Kaleta
			Khandala
			Maldongri
			Mendaki
			Nanhori
			Nilaj
			Pimpalgaon
			Rui
			Talodi Kh
			Torgaon Bk.
			Udapur
			Wandra
			Waygaon
		Chandrapur	Dewada
			Dhanora
			Marada
			Nagala
			Padoli
			Payali Bhatali
			Sakharwahi
			Shengaon
			Sidur
			Tadali
			Yerur
		Chimur	Ambeneri

			Ambodi
			Bothali
			Hirapur
			Jambhul Ghat
			Khambada
			Kolari
			Motegaon
			Pimpalneri
			Sathgaon
			Wadasi
		Gondpipri	Aksapur
			Bhangram Talodhi
			Chak Darur
			Dhaba
			Lathi
			Vithalwada
			Wadholi
			Wedgaon
		Korpana	Antargaon Bk.
			Bakhardi
			Bibi
			Chandur
			Kumbhezari (N.V.)
			Lakhamapur
			Mandawa
			Matha
			Nandgaon
			Naranda
			Teka Mandwa
			Upparwahi
			Wansadi
			Yergavhan
		Mul	Bhejgaon
			Chikhli
			Chimadha
			Chiroli
			Dongargaon
			Gadisurla
			Junasurla
			Kelzar
			Nandgaon
			Rajgad
			Sushi Dabgaon
		Nagbhir	Paharni
		Pombhurna	Dewada Kh
			Dongar Haldi Mal
			Ghatkul
			Nawegaon More
			Umari Potdar
		Rajura	Chanakha

			Chunala
			Gowari
			Lakkadkot
			Nagrala
			Nandappa
			Pachgaon
			Pellora
			Shengaon
			Sindi
			Sonapur
			Subai
			Vihirgaon Bk.
			Wirur Station
		Sawali	Bothali
			Haramba
			Jibgaon
			Kapsi
			Keroda
			Mokhala
			Samada Bk.
			Vyahad Bk.
			Vyahad Kh.
		Sindewahi	Maregaon Tuk.
			Palasgaon Jat
			Pendhari
			Saradpar
		Warora	Bhatala
			Chargaon Bk.
			Charurkhati
			Chikani
			Dahegaon
			Dongargaon
			Khambada
			Kharwad
			Kosarsar
			Nagari
			Salori
			Soit
			Tembhurda

Source: Census, 2001 Chandrapur District.

Chapter-8
Environmental Problems

8.1 Background

Chandrapur district of Maharasthra is located at the southeast tip of the state. It is rich in natural resources in the form of minerals like salts of gypsum, ores of iron, coal and high quality teak wood and firewood. About 35% area of the district is covered with forests The availability of water from rivers Wardha and Wainganga, coal from local coal fields and limestone and dolomite in the adjoining areas have provided favorable conditions for setting up cement factory and thermal power plant at Chandrapur district. Besides, a large number of stone quarries have come up in this area to meet the demand of large-scale construction activities. These activities, owing to their nature, scale and location, have serious ecological implications. These activities have also resulted in the proliferation of slums around the activity areas. Realizing the rich potential of the natural resources, the private firms like Thapar, Birla, Ambuja etc have installed their factories because they get raw material required for the factories easily. At present, there are six main industries functioning in the district. As it is clearly indicated in the district directory that 65% of the population of the district is working only in the agriculture sector. The local population has got a meagre share in employment in these industrial units. The district directory also reveals that about 25% to 35% population of the district belongs to ST/SC communities who are living on forestland. This large-scale acquisition of land has for setting up of industries, lead to destruction of valuable forest area, resulting in permanent alteration in the land use pattern. The establishment of these industries has hardly changed the life style of the rural people. Although with the coming up of these industries the environmental degradation has definitely occurred which has added to adverse ill effects on the health of the rural as well as urban people. The table below shows the various types of pollution added into the atmosphere.

Table 8.1: Types of pollution emitted by the industries

Sl. No.	Name of the Industry	Year of establish-ment	Quantity of Production/ day or month	Pollution created	Remarks
1.	Gujrat Ambuja Cement Ltd.	September 2001 in Rajura Tehsil, Chandrapur (village .Upperwahi)	6600 MT/day cement is produced.	Air Pollution, Water & noise pollution from Saw mill, kiln, Coal mill, Cement mill & packing plant	Domestic effluents 530 m3/day. And 569.0 m3/days industrial effluent is generated. ETP Provided.
2.	Manikgarh Cement Ltd	1985 in Tehsil Koropna district Chandrapur	Cement 140000 MT/M	Air pollution-killer Raw mill, cement mill & chinker Coolers, water and noise pollution	Domestic effluent 1420 Cum/day. Sewerage treatment plant provided.
3.	The Associated Cement Companies Ltd.	1970 at Ghugus in Chandrapur district	80000 MT/M	Air pollution From saw mill, cement mill, coal mill water	Industrial pollution 482 cum/day. Domestic

				pollution from industries.	effluent 400m^3/day. ETP provided.
4.	Larsen and Turbo Cement Ltd	October 1983 At God Chandur in Chandrapur district	Cement 250000 MT/M	Air pollution, kiln, raw mill, cement mill, coal mill, and clinker cooler. Water pollution noise pollution compressor unit. & domestic effluent.	Domestic effluent 474 Cum/day. Sewerage treatment plant provided for domestic effluent.
5.	Ballarpur Industries Ltd (Thapar Group) at Ballarpur.	June 1952 At Ballarpur in Chandrapur	Paper 11000MT/M Soda 1200MT/M	Air pollution from boilers and coal fired boilers, water pollution, noise pollution from boilers, compressors, turbine.	Domestic and industrial effluent (4800m3 &57500 M^3/day respectively) is discharged into River Wardha. (57500 M^3/day.) ETP provided
6.	Chandrapur Super Thermal Power Station	April 1984 At Durgapur in Chandrapur district	Electricity 2340 MW	Daily 36000 MT of coal is used. Air pollution, water and noise pollution and the ash from the boiler.	Daily industrial effluent to the tune of 1,72,000 Cum/day & domestic effluent of 10000m3/day is generated. ETP is provided

Source: State Pollution Control Board.

From the above table, it is ample clear that these major industries established in the district has spoiled the environmental health of the area and have serious ecological implications on the overall ecosystem of the area. For establishing these industries in this district, the land which has been purchased or acquired that belonged either to the forest or to the agriculture sector. The following are the environmental parameters that are directly affected by the pollution created by these industrial establishments.

8.2 Air pollution:

The major industries established in the area consist of cement industry, paper mill and a super thermal power station. The raw material used in these industries is limestone and dolomite. Open cut quarry is the main method adopted in the extraction of these ores. Firstly, mining of these ores give rise to air pollution to a great extent. Secondly for generating power, the local coal is used in the thermal power station. Huge quantity of the ash is produced by the power plant every day. Combustion of huge quantity of coal in the thermal power plant produces many harmful chemicals, like SO_2, NO, aerosols etc. Combustion of

large quantity of coal in the thermal power plant creates complex ecological problems because it simultaneously produces many harmful chemicals such as,

a) Particulates and aerosols.
b) Carbon monoxide and carbon dioxide.
c) Sulphur dioxide and their derivates (especially sulphates).
d) Nitrogen oxide and
e) Hydrocarbons.

The ash content of the coal burnt in the thermal power station is 40% and out of this 20% is non-combustible, which is converted into bottom ash, and 80% is converted into fly ash. Although Efficient Electrostatic Precipitators (ESP) has already been installed at the thermal power station but their efficiency is further increased if the tall stacks are provided at the thermal power station for the emission of the these gases. It is noticed that fly ash particles, which escape into the atmosphere, have complex chemical features and also long residence time as well. Fly ash reduce the visibility apart from being a health hazard. At the site of power plant huge quantity of SO_2 is produced every year. The Efficient Electrostatic Precipitators (ESP) does not have the effective control in the composition of the gases. Huge amount of SO_2 and NO_2 are released into the atmosphere unchecked with the flue gases. Tall stacks help boilers mixing, dilution and wider dispensing of acidic gases, but infact, it spreads the air pollution problem over an abnormally large area by way of acid rain.

Plants being stationary and outdoors are continuously exposed to these acidic gaseous pollutants which may induce irreversible changes in the biosphere and may even change the eco- system as a whole in a subtle manner over a period of time. Gases like SO_2 diffuse into leaves mainly through stomata that inactivate the green chlorophyll pigment and alter leaf's enzyme machinery. The secondary effect of gaseous emissions from the thermal power plant is acid precipitation, which has long-term consequences, and due to tall stacks it may become regional problem. The direct effect of acid rain on plants includes progressive erosion and damage to leaf surface and leaching of calcium and potassium from plant canopies, which indirectly leads to serious biological and chemical changes in the soil.

Environmentally, cement production is generally considered as highly hazardous since it emits huge amount of dust. Limestone/dolomite is the two main raw materials used. These are put in the automatic crusher, which produces large quantity of dust and creates serious dust pollution in the environment. At times, the visibility becomes extremely poor, posing danger to moving vehicles. Besides, dust pollution poses serious threat to the health of the workers and dust, in the form of particulate matter, may even contaminate the atmosphere around the factory, thus creating ecological imbalance. There are four major cement-producing units installed by various private sector companies in the area. The air pollution is the main environmental hazard of this industry that is mainly caused from saw mill, kilns, coal mill, cement mill and packing plant. Apart from dust pollution, combustion of large amount of coal in the cement factories also create simultaneously many harmful substances such as particulates/aerosols, carbon monoxide and carbon dioxide, sulphur dioxide, nitrogen oxide, etc. Fly ash particles, which escape into the atmosphere, also have complex chemical features. Fly ash also reduces visibility apart from being a potential health hazard.

8.3 Water Pollution

Sources of water pollution from thermal power plant are mainly a) fly ash dykes and b) waste heat discharge that is being disposed of in the fly ash slurry into ponds and finally into nearby water body, thereby making the water body vulnerable to water pollution. Apart

from this, discharge of waste heat into the water body causes thermal pollution as well, which adversely affects the aquatic life. Apart from the use of gypsum stone, as a raw material in the cement industry, a huge quantity of coal for boiler burning is also used which gives birth of industrial and domestic effluent in thousand cum/per day, which is disposed of through water sluicing on a temporary ash pond located close to Wardha River. Leaching water from these ash pond and disposal of ash transport water into the river pose serious threat to the aquatic eco-system of the river. Besides, sporadic leakages from the ash slurry pipes cause widespread contamination problems in many areas along the pipelines. The waste hot water discharge from the plant into the river also poses environmental problem, particularly thermal pollution. Along with waste heat discharge, many harmful chemicals such as detergents, algaecides and anticorrosion substances like oil, grease, etc. used in the plant also find their way into the river, adding further to the problem of water pollution. Again, the industrial houses have although provided effluent treatment plants, but finally this wastewater carrying varying quantity of different salts is disposed of into the water bodies near these cement industries causing a great damage to the ecology of the area.

8.3.1 Ash Dykes

The super thermal power station at Chandrapur produces 2340 MW of electricity daily and coal consumption in it is 36000 MT/Day. So an estimate 8774.41 tonnes of the ash is produced daily. For disposing of this huge quantity of fly ash daily, fly ash ponds are constructed over a sufficiently large area and ash slurry is being transported by water sluicing into these ponds. Leaching water from these ash ponds seeping though the soil carry toxic metal ions posing danger to the water bodies in the near vicinity of the plant into which this water is disposed of. This water is also a potential threat to the genetic eco system of the region and may destroy the genetic life. Alongwith fly ash, the thermal power plant, also produces varying amount of low-density minute hallow spheres of ash called, “Ionosphere” which normally float over the ash transport water because it does not settle under gravity. The amount of ecospheres in ash varies, depending upon the coal composition, fusion temperature and other characteristics. Discharge of ecosphere alongwith ash transport water may add to the water pollution in the water bodies. The waste heat discharged into the water body changes its thermal characteristics, producing detrimental effect on aquatic flora and fauna. Increase in the temperature of water body reduces the dissolved oxygen which influences biological activities such as, living habits and reproductive behavior of fish and other organisms. Along with waste heat discharge, many harmful chemicals such as, detergents, algaecides and anticorrosion substances like oil and grease used in plants operations also find their way into lake, adding further to water pollution

8.4 Coal Mines

As per an estimate the mining operation of coal in the Chandrapur district alone was 53.14 lakh tonnes for the year 2000-2001. There are twenty-one coalmines in the district. In general open cut land mining is resorted to for the excavation of the coal. This method of mining coal affects the topsoil of the land and hence the problem of soil erosion and soil compactness is prevalent in the district.

8.4.1 Noise Pollution

Chandrapur district had a very good and virgin natural environment before the setting of four cement plants, a super thermal plant and a paper mill in it. Noise pollution has risen because of setting of these plants equipped with heavy machinery, movement of heavy vehicles on the roads, digging of coal in the open cut mines, shrieks of boilers in the super thermal power station and grinding noise in the cement plants. In some of the cases the noise level exceed the tolerable limit of human beings, which is between 45-55 decibels. The greatest risk of this noise is to the most sensitive Tiger reserve and the Wild Life sanctuary

located very near to these industrial establishments. It severely affects their genetic behavior and reproductive system of the fauna living in these areas. For the safety of the industrial workers the companies provide the earplugs.

8.5 Environmentally sensitive areas

Tadoba –Andhari Tiger Reserve is situated in the Chandrapur district of Maharashtra. It represents a unique habitat for wildlife in Central India. Tadoba National Park is the oldest Park of the State. It has been named after the name of local God"Taru". The local people offer their prayers to the God with this belief, that if they offer the prayers to Tadoba Deo and sprinkle the water from Tadoba lake in their fields with a belief that it will protect their crops from the diseases or pests .The Sanctuary is named Andhari after the name of River Andhari that flows through the Sanctuary. The area all-round the National Park is a unique place for the habitat of flora and fauna. Tadoba National Park has an area of 116.5 Sq. Km.and Andhari Wild life Sanctuary has an area of 508.85 Sq. Km.The Wild life Sanctuary has been established under a centrally sponsored scheme of' Project Tiger' over the composite area of Tadoba National Park and Andhari Wild life Sanctuary as Tadoba – Andhari Tiger Reserve, the second Tiger Reserve in the State under the Project Tiger. The total area of the Tadoba Andhari Tiger Reserve is 625.40 Sq km and it has been divided into three zones namely:

a) Core Zone: It consists of 218.76 Sq km. It comprises of the entire National Park area and portion of the area along the River Andhari.

b) Buffer Zone: It comprises of an area of 357.02 sq. km.and consist of major part of the Sanctuary. There are six villages in this part. This is the most sensitive habitat area for the Wild life and requires an improvement on a large scale for the habitat and enforcement of the protection measures in a stringent manner.

c) Tourism Zone; It consists of the three sub zones namely Moharly, Navegaon and Kosla. There is a tremendous tourist pressure on this zone of Tadoba region.

d) Interface Zone: There are fifty-three villages on the periphery of the Reserve Forest that are partly or completely dependent on the Protected area for their requirement The composite area of Tadoba- AndhariTiger Reserve has global as well national significance as it is it is one of the prime habitats of the Indian Tiger that is found mostly in India and is threatened by poaching and habitat loss. The famous shooting blocks of Karwa, kosla and moharli are now the integral part of the Tiger Reserve. Tadoba Lake situated in the heart of the National Park is picturesque and abounds in marsh crocodiles.The religious and archeological features add to the importance of the area. The tall cement pillars seen adjoining to the Moharli Khatoba Road were erected for the purpose of communication during the period of Gond King Tadoba Deo and Hanuman temple situated on the bank Tadoba lake are visited by the tribal during the winter months. The area is rich with biodiversity of life. Tadoba area is visited by thousands of tourists every year, which add to the educational and recreational values of the region. The catchment area of rivers and lakes is also very crucial for agriculture and fishing purposes. The water from the Erai Dam is used for supplying water to Chandrapur city. Thus the forest of the Tiger Reserve has a direct linkage to the daily life of the people of Chandrapur city.

Main Flora; The drydeciduous forests are the dominant species of the region. The main associates of the teak are Ain, Bamboo, Bija Dhaoda haldu Salai, Semal tendu etc. The associates of teak however, vary depending upon the physiographic features of the habitat.

Main Fauna: The common fauna (208 species) found in the region includes 50 species of migratory birds and 158 species of resident birds. One remarkable bird Barheaded goose, which is a winter visitor from Ladakh and Tibet inhabits in Chargaon and Sitarampeth tanks, which are adjoining to the protected area**.**

8.5.1 Major Problems of Protected Area

Forest fire poses a major threat to the habitat of the area. The tendu collectors for securing fresh flush of tendu leaves usually start them. Tendu collection in the units adjoining to the Tiger Reserve needs to be done departmentally. This will reduce the fire incidences and at the same time ensure wages for the villagers in the periphery areas. Fire protection measures need to be strengthened. Other major problems include grazing, illicit cutting of fuel wood and collection mostly for the domestic use, illicit removal of bamboo trees and timber to a limited extend on the western and northern boundaries of the National Park. This calls for urgent attention to preserve this area.

Possible solutions

- Expediting the settlement process, relocation of the villagers and notification for non-reserved forest areas.
- Drastic reduction in targets in Tendu units adjoining Tadoba Andhari Tiger Reserve if departmental collection in these units is not found feasible.
- A carefully drawn Village–Eco–Development Plan is to be taken up for developing a Social–Buffer around the Tiger Reserve so that the dependency of the villagers on the Reserve Forest is minimized to a certain extent.
- Expediting the tourism complex development at Moharli.
- Upgradation of the wireless network from low band frequency to high band frequency.

8.6 Unauthorised Development

With the fast economic growth and concentration of development activities over the years and due to lack of control of development within and outside the industrial areas, the study area has also witnessed rampant growth of informal sector activities. The most vulnerable places are important roads, places near the plant complexes and other public utilities. During a recent site visit, it has been observed that a large-scale development of unauthorized shopping has taken place in Ballarpur town and Chandrapur near the temporary bus stand. Most of these shops are very small in size having kutcha or temporary structures.
Apart from this, the area has also witnessed a growing influx of population from the adjoining area owing to fast economic growth. This has given rise to growth of slum areas at many places in Ballarpur, and Chandrapur. The most important slum concentration is found near Ballarpur Paper Mill and Gughus factory along the roads. More than 300 shanties have come up near cement factories in three different locations and most of the slum dwellers are engaged in nearby stone quarries.

All these unauthorized developments are devoid of any essential services and facilities, such as water supply and sanitation and are causing severe environmental problems in the area.

8.7 Environmental Management:

Governments and organizations at various levels can play crucial roles in Environmental Management. While the more important roles of monitoring, evaluation, control, standardization, enforcement, etc. mostly lie with the local level and state governments, the Central Government plays very important roles in the realms of legislation,

standardization, planning and environmental clearance of large and important projects, regional and system study of environmental problems funding, organization of special projects, etc.

According to the Environment (Protection) Act, 1986 the Central Government shall have wide powers to take measures to protect and improve environment. It says:
"3. (1) Subject to the provisions of this Act, the Central Government shall have the power to take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing, controlling and abating environmental pollution".

These measures are very comprehensive and varied in nature, to cover the entire gamut of environmental management e.g. coordination of action by the State Governments and related agencies, planning and execution of environmental pollution control programmes, laying down standards for the quality of environment as well as those for emission or discharge of pollutants, restriction of areas in which any industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards, laying down procedures or safeguards, for the prevention of accidents which may lead to environmental pollution, laying down procedures or safeguards for the handling of hazardous substances etc. It further provides for inspection, examination, research of the industrial plants, premises, machinery, processes materials or substances etc. to prevent environmental pollution. Preparation of manuals, codes, guides, dissemination of information, establishment or recognition of laboratories pertaining to prevention, control and abatement of environmental pollution are the other important functions, which may be adopted.

Under the Environment (Protection) Act, the State Government has the legal and executive authority for prevention control and abatement of environmental pollution within the State Pollution Control Board of the State Government, monitor the level of pollution of air, water and ground and, if necessary, can take action for prevention and control of environmental pollution. However, at present, the Maharashtra Pollution Control Board with its office at Bombay has no monitoring station at the Chandrapur area.

State Government, through proper planning and management, can also take necessary measures for the prevention, control and abatement of environmental pollution in course of the development of roads, industries, urban centers etc., under the Town and Country Planning Act, zoning regulations and other relevant acts and regulations for such developments.

There are few public sector undertakings and private industrial organizations in the area running industries and mining activities such as cement plants, thermal power station , stone quarries, etc. which add to the environmental pollution. It is the duty of such organizations to prevent and minimize pollution by suitable technical and managerial measures, to strictly follow the zoning regulations, guidelines and standards set forth with regard to monitor the pollution level in and around the factory area and the effluent discharge points, and also to allow inspection and monitoring by the pollution control board and other concerned agencies to maintain a healthy environment. Community and Non-Government Organization can contribute a lot in this regard by evolving their own monitoring system of pollution in the area and to draw the attention of the concerned authorities when pollution level crosses the safety limit. They can also create awareness among the public for preventing pollution and maintaining healthy environment and can provide guidance for sustainable and environment friendly development activities in their areas. Priority should be given for setting up monitoring stations in this region for monitoring air, water and ground pollution.

The State Pollution Control Board should taken necessary action in this regard. Norms and standards should be evolved for various types of pollution considering both short term as well as long-term view. If due to some technological limitation certain amount of pollution is allowed at present, in the long term, the standards should be made more stringent with the upgradation of technology according to a time bound programme.

8.7.1 Environmental protection measures

For the protection of environment of the area where coal mining, thermal power station and cement factories are established, the following measures are necessary and should be taken care of.

- Aforestation, infrastructure facilities like nurseries, after care of polluted areas, preventive and suppressive measures for air pollution treatment of industrial effluents, neutralization of acid mine water, possibility of use of fly ash for filling up of mining areas or for other purposes may be explored for technical reasons. Serious endeavors should be made to reclaim the effected mining areas as far as possible. A policy decision has to be taken that for every hectare of land used for mining, equivalent land will be afforested as a compulsory aforestation. Mined out areas are to be back filled, restored and reclaimed. Apart from it social forestation and compulsory forestation has to be encouraged. This can be achieved in the form of green belts surrounding the mining areas. The aim should be to restore environment to a state as good as it was before mining and even to improve it.
- The air quality monitoring stations should be established in the region and sophisticated instruments and computers should be installed to record air quality data. The noise pollution of the area should also be checked.
- Greater attention for the control of soil erosion and storm water run off may be done by vegetation and structural measures. Recovering it before piling up of OBD should minimize damage and loss of valuable topsoil in the process of open cut mining.
- The private sector entrepreneurs engaged in exploiting the regional wealth should be asked to share the responsibility of restoring the ecological balance of the area.
- To reduce the noise level suitably, located embankments barrio walls and larger green buffer zones for isolating the working areas are essential.
- In order to maintain the ecological balance of the area, afforestation operations in and around the mining areas may be intensified.

Chapter-9
Development Administration

9.1 Zilla Parishad

Maharashtra is one of the few states in the country, which have the three-tier Panchayat Raj institutional set-up in the local level administration since 1962. With a view to promote development of democratic institutions and to secure greater measure of participation by the people in Development Plans and in local and governmental affairs by decentralization of powers and functions, Zilla Parishad and Panchayat Samitis (C.D. Block) have been established in the districts of Maharashtra under the provisions of the Zilla Parishads and Panchayat Samitis Act, 1962. The administrative and developmental responsibilities were conferred on Zilla Parishad (ZP) and Panchayat Samitis and the jurisdiction of the Zilla Parishad and the Panchayat Samitis (C.D Blocks) correspond to the district and tahsil boundaries except that they do not cover the municipal towns.

The Zilla Parishad elects its President and Vice-President and Chairmen of its committees from amongst the elected councilors. The term of office of the councilors is five years. The State Government as the Chief Executive Officer to the Zilla Parishad deputes an Officer in the senior scale of I.A.S.. Various departments also assist the Parishad and the heads of those departments at the district level are officers of Class I or II service under the State Government. At the Block level, the Panchayat Samitis (C.D. Blocks) have an elected Chairman and Deputy Chairman. The Block Development Officer works as Secretary to the Panchayat Samiti (C.D. Block). The executive authority for carrying out the provisions of the Maharashtra Zilla Parishad and Panchayat Samitis (C.D. Blocks) Act vests in the Chief Executive Officer and the Block Development Officers. The Deputy Chief Executive Officer works as a Secretary of the General body of the Zilla Parishad.

9.1.1 Administrative Powers and duties of Zilla Parishad:

(a) The Zilla Parishad shall endeavor to promote planned development of the district by utilizing to the maximum extent, local resources and for that purpose prepared annual and long term plans, regard being had to the plans already prepared by the Panchayat Samities.

(b) Zilla Parishad may with the assistance of grant-in-aid provided by the State government, undertake, through the State agencies execution of piped water supply schemes (including works), with a net capital cost of rupees one lakh or more for each such scheme.

(c) A Zilla Parishad may also make provision for carrying out within the district any other work or measure which is likely to promote the health, safety, education, comfort, convenience, or social, economic or cultural well being of the inhabitants of the district.

9.1.2 Powers and Functions of Zilla Parishad:

(a) Do all things necessary for the proper discharge of the functions and duties imposed on it by or under the Act,

(b) Sanction of works or development schemes within the District (not being works or development schemes which a Panchayat Samiti has been empowered by this Act to sanction within the Block from block grants);

(c) Call for any proceedings of the Standing Committee or any subjects committee, or for any return, statement, account or report concerning or connected with any subjects.

(d) Invite any of its officers or servants to attend any meeting of the Zilla Parishad and tender advice on any matter which concerns the department under which such officer or servant is working; and every such officer or servant shall comply with such requisition;
(e) exercise powers or perform functions in respect of matters which by or under this Act are not expressly conferred or imposed on the panchayat Samiti or Standing Committee or a Subjects committee, presiding authority or officer of servant of or under the Zilla Parishad;
(f) subject to the instructions or directions, if any, given or issued under, sub-section (1) of section 261, revise or modify any decision taken by the Standing committee, a Subjects Committee, presiding authority, or officer of or under, or servant of, the Zilla Parishad;
(g) exercise administrative control over officers and servants holding office under it.
(h) Supervise execution of all duties and functions under this Act.

9.1.3 Functions of President

(a) To watch over the financial and executive administration of Zilla Parishad and submit to the Zilla Parishad all questions connected with this.
(b) To act as the administrative head and control over the Chief Executive Officer for securing implementation of resolution or decisions of the Zilla Parishad, various committees and samatis.
(c) To execute the suspension, stoppage of any work, doing of any act which requires the sanction of the Zilla Parishad etc., which is necessary for the service or safety of the public
(d) To direct the execution or maintenance of any work or any development scheme is transferred or entrusted by the State Government to any Zilla Parishad.
(e) To direct the Standing Committee and the appropriate Subjects Committee at their next meetings and the Zilla Parishad or the committee may amend or annul the direction made by the President.

9.1.4 Functions of Vice-President:

(a) In the absence of the President, preside at the meetings, of the Zilla Parishad;
(b) To act the powers and perform such of the duties of the President as the President from time to time may subject to the rules made by the State Government in this behalf, delegate to him by an order in writing and
(c) To exercise powers and perform the duties of the President when the election of a President is pending, during the absence of the President from the District, by reason of leave for a period exceeding thirty days.

9.1.5 Functions of Chief Executive Officer and Deputy Chief Executive Officer

The State Government will appoint a Chief Executive Officer and one or more Deputy Chief Executive Officers for every Zilla Parishad.

(a) To exercise all the powers specifically imposed or conferred upon him by or under this Act, or under any other law for the time being in force.
(b) To lay down the duties of all officers and servants of or holding office under the Zilla Parishad in accordance with rules made by the State Government,
(c) To attend meetings of the Zilla Parishad and may with the permission of the presiding authority, tender information or clarification in respect of any matter under discussion at such meeting.
(d) To attend the meetings of any Committee of the Zilla Parishad and of any Panchayat Samiti in the District

(e) To call for any information, return, statement, account of report from any officer or servant of , or holding office under the Zilla Parishad
(f) To grant leave of absence, for a period not exceeding two months, to Class I and Class II Officers
(g) To call for call for an explanation from any officer or servant of, or holding office under the Zilla Parishad,
(h) To take necessary measures for the speedy execution of all works and development schemes of the Zilla Parishad
(i) To appoint servants of Class IV service in the prescribed manner
(j) To supervise and control the execution of all activities of the Zilla Parishad
(k) To take responsibility to all papers and documents connected with the proceedings of meetings of the Zilla Parishad and of its Committees
(l) To control over the acts of officers and servants holding officer under the Zilla Parishad in matters of executive administration and those relating to accounts and records of the Zilla Parishad

9.2 Panchayat Samiti

Panchayat Samiti consists of an elected Chairman, Deputy Chairman and the councilors who are belongs to the electoral divisions included in the block. The Chairman is responsible to conducting exclusively the business of purchase and sale of agricultural products in the block. The co-opted councilor should be resided in the same block.

9.2.1 Powers and function of Panchayat Samiti:

The obligatory and optional functions carried out by Panchayat Samiti are as follows:

1. To prepare an overall plan of works and development schemes to be undertaken in the Block.
2. To prepare a plan of works and development schemes to be undertaken from block grants with a view to utilizing local resources in the Block to the maximum possible extent.
3. To execute, sanction, supervise or administer any works or development schemes from block grants.
4. To execute, maintain, supervise and administer the works and development schemes of the Zilla Parishad.
5. To exercise powers and perform functions in respect of matters concerning block grants, which by or under this Act are not expressly conferred on it.
6. To inform the Zilla Parishad for the consideration of the any works developments schemes and indicate the extent to which local resources are likely to be obtain in such works or schemes.
7. To forward every quarter to the Zilla Parishad a summary of the proceeding of its meetings; and
8. To exercise general supervision and control over the work of the Block Development Officer in connection with the functions and duties vested in it

9.2.2 Powers and Functions of Chairman of Panchayat Samiti:

The chairman of a Panchayat Samiti shall:

(a) To preside and conduct meetings of the Panchayat Samiti.
(b) Have access to the records of the Panchayat Samiti,
(c) To supervise and control over the acts of officers and servants or under the Zilla Parishad and working in the Block in matters of execution.
(d) To call for any information, return, statement, account or report from any officer or servant working under the Panchayat Samiti,
(e) To inspect any immoveable property in the Block occupied by the Zilla Parishad and under its direction.

9.2.3 Powers and Functions of Deputy Chairman of Panchayat Samiti:

1. in the absence of the Chairman, preside at the meetings, of the Panchayat Samiti;
2. To exercise the powers and perform such of the duties of the Chairman as the Chairman from time to time may subject to the rules made by the State Government in this behalf, delegate to him by an order in writing and
3. pending the election of a President or during the absence of the Chairman from the District, or by reason of leave for a period exceeding thirty days, exercise the powers and perform the duties of the Chairman.

9.3 Committee of Sarpanchas:

The Committee is a consultative and advisory body and shall tender its advise to the Panchayat Samiti on all matters relating to the discharge of its functions of control and supervision of Panchayats Every Panchayat Samiti shall in the manner hereafter provided appoint a Committee consisting of either fifteen Sarpanchas or of Sarpanchas of one fifth of the total number of Panchayats in the Block whichever is more to be known as the committee of Sarpanchas. The Sarpanchas shall be nominated by the Panchayat Samitis by rotation every year. The manner and periodicity of a rotation of such nomination shall be such as may be prescribed by the State Government

The Deputy Chairman shall be ex-officio Chairman of the Committee. Block Development Officer shall be ex-officio Secretary of the Committee. One Extension Officer(Panchayats) also be nominated.

Every Zilla Parishad will appoint a Standing committee and also the following Subjects Committees within one month from the date of its first meeting.

1. Finance Committee,
2. Works Committee,
3. Agriculture Committee,
4. Social Welfare Committee,
5. Education committee,
6. Health Committee,
7. Animal Husbandry and Diary Committee,
8. Women and Child Welfare Committee.

9.4 Powers and Functions of Standing Committee and Subject Committees:

The powers and functions of Standing committee or a Subject Committee in relation to subjects allotted as follows:

i. To be in charge of works and development schemes
ii. To ensure that the estimates of works and development schemes are proposed and sanctioned and supervise their execution
iii. To supervise the expenditure of provisions made in the budget,, review periodically the progress of activities of the Zilla Parishad, place reports thereon before the Zilla Parishad
iv. To call call for any information, return, statement, account or report from it Chairman or from any officer or servant holding office under the Zilla Parishad;
v. To supervise and control the imposition and collection of taxes, rates, dues fees or tolls;
vi. To maintain a schedule of rates in connection with the execution of constructional works and development schemes and may revise it periodically so however, that the rates shall not be higher than the rates laid down by the State Government for similar works or development schemes in the locality
vii. To examine and pass monthly accounts of receipts and expenditure of the Zilla Parishad not being monthly accounts in relation to block grants given to the Panchayat Samiti
viii. To review periodically the progress of all activities of the Zilla Parishad
ix. To call for any proceedings of any Subjects committee or for any return, statement, account, or report, concerning or connected with any subject allotted to such Subjects Committee.
x. To manage and regulate the investment of the district funds

9.5 Special Powers and Functions of Finance Committee:

(a) To scrutinize the annual budget estimates of income and expenditure of the Zilla Parishad and of the Panchayat Samities prepared under section 137 in detail as it may consider necessary and tender advice so as to ensure that the objectives of the Zilla Parishad and Panchayat Samiti are carried out in the most economical and efficient manner;
(b) To scrutinize the revised or supplementary budget estimates of the Zilla Parishad and Panchayat Samities prepared under section 138, in a like manner;
(c) To examine the statement of accounts of receipt and expenditure of the Zilla Parishad and the panchayat Samitis prepared under section 136;
(d) To scrutinize the audit report on the accounts of the Zilla Parishad, panchayat Samitis and of any institutions or undertaking working under the Zilla Parishad;

9.6 Powers and Functions of Block Development Officer:

State Government will appoint Block Development Officer for every Panchayat Samiti BDO subject to the general order of the Chief Executive Officer, grant leave of absence to officers or servants of Class III service of the Class IV service of the Zilla Parishad working under the Panchayat Samiti and call for any information, return, statement, account, report or explanation from any such officer or servant

Specific functions of a block Development Officer are as follows:

(a) Responsible for all papers and documents connected with the proceedings of meeting of the Panchayat Samiti;
(b) To provided by or under this Act, exercise executive powers in the Block for the purpose of carrying out the provisions of this Act therein;
(c) To draw and disburse money out of the grant of grants payable to the Panchayat Samiti

9.7 Urban Local Bodies

The statutory urban local bodies are municipalities. The urban local bodies elect councilors from each of the ward and his term is 5 years. Neither the President of the Municipal Council nor the Mayor of the corporation as also their Deputies are elected from amongst elected councilors and their term is for one year. The Chairmen of various committees are also elected from amongst the elected councilors with a term of one year. Although for day-to-day administration the Chief Officer is responsible in a municipal council, he works under the administrative control of the President of Municipal Council. In Corporations, a senior IAS Officer is deputed by the State Government as Municipal Commissioner who is responsible for day-to-day administration and the executive authority lies in him.

9.8 District Rural Development Agency

District Rural Development Agency has been constituted under the registration of Societies Act, 1860 and this society comes to existence on 1861. The head office of the society is located at the district headquarters with the following objectives:

1. To identify the beneficiaries and their problems in its area.
2. To draw up model plans for investment and production activities undertaken by the beneficiaries for raising their income and execute these plans directly or through coordination with some agencies in the similar field.
3. To review the progress of the execution of these activities and the effectiveness of the benefits.
4. To execute any other objectives prescribed by the central or state governments from time to time..

The designated Minister of the district acts as the President of the society and Commissioner of the concerned division as Vice President along with other 22 members which includes district collector, Zilla Parishad president, Executive Officer of ZP, Chairman of Agricultural Committee and representatives of various bodies of the district. The project Officer will act as the Member Secretary of the Society.

9.9 District Planning and Development Councils

District Planning and Development Councils comes to existence on 16th January 1986 with a view to providing appropriate and efficient planning for formulating and coordinating development plans at the district level. The obligatory functions of the District Planning and Development Councils are as follows:

1. To ensure coordinated action by various implementing agencies at the district level including the Zilla Parishad
2. To provide guidelines to various implementing agencies at the district level in regards to the preparation and implementation of development plans.
3. To approve the Five year and Annual Plans of the district
4. To review the implementation of the Five year and Annual Plans of the district
5. To consider and approve reappropriation of the savings/excess within the approved district plan.
6. To perform any other functions directed by the central or state governments from time to time.

The designated Minister of the district act as the Chairman of the DPDCs and Commissioner of the concerned division as Vice Chairman along with other members which includes Zilla Parishad president, all MLAs, MPs, Chief Executive Officer of ZP, Chairman

of District Cooperative Bank, District collector and representatives of various bodies of the district. The District Planning Officer will act as the Member Secretary of the DPDCs.

9.10 District Planning Committee

The Constitution (74th Amendment) Act, 1992 provides for a District Planning Committee (DPC) with wide ranging powers and functions to plan and develop the district by integrating the plans prepared by the panchayats and the Municipalities, thus prepare a Comprehensive Plan for the whole district including the urban and the rural areas. The Act envisages spatial and environmental planning at various levels and provides for integration of the municipal and panchayat plans with district plans and through them with the state and national plans. The function of the DPC as assigned by the 74th Amendment is not merely to aggregate fiscal and investment plans for the annual/five year plans. Article 243-ZD(3-a) enlarges the scope of the DPC to include spatial planning, sharing of water and other physical and natural resources, integrated development of infrastructure and environmental conservation. The act also provides for a new dimension to the planning and development process by ensuring devolution of power to the people to plan for themselves and participate in the decision making process as constitutional obligation. Therefore the outstanding features with regard to DPC are:

- Establishment of District Planning Committee at the district level.
- To prepare a draft development plan for the entire district by integrating the plans prepared by the Panchayats and the Municipalities.
- Four-fifth of its members will be elected by and amongst the elected members of the district panchayat and the municipality in proportion to the ratio between the population of rural and urban areas in the district.
- While preparing the draft plan, the DPC will – (1) look into matters of common interests between the Panchayats and the Municipalities, (2) sharing of water and other physical and natural resources, (3) take up spatial planning, (4) and prepare integrated development of infrastructure and environmental conservation.
- While doing so, the DPC will consider the extent and type of resources – finance or others.
- DPC will consult institutions and organisations as specified by the government in its task.
- The chairperson will forward the development plan to the government.

Besides the mandated provisions as mentioned above the respective state legislature has been empowered to enact upon the following items as the constitutional provision of the Act (Article 243-ZD) relating to its structure, composition and functions, which are not explicit in the act.

1. Composition of and procedure to fill-in the seats in the DPC.
2. Function of the DPC.
3. Method to choose the chairperson.

Keeping in view the various provisions of the Act and the above issues, the model Urban & Regional Planning and Development Law earlier prepared by TCPO has been appropriately revised in 1996 at the behest of the Ministry of Urban Development & Poverty Alleviation incorporating all the new provisions of the Act. Copy of the model law has been passed on to the state governments for adoption. However extracts of the relevant portion pertaining to the composition, powers and functions of District Planning Committee (DPC) is annexed at annexure-III for ready reference and appropriate state legislation.

As a sequel to these provisions the state of Maharashtra has enacted **Maharashtra District Planning Committees (Constitution and Functions) Act, 1998** which is in force since 9th October, 1998 with a view to strengthen development process of the district as a whole and extends to the whole State of Maharashtra. District Planning Committee (Constitution and Functions) Amendment Act 2000 dated 4th May 2000 was promulgated in the Gazette by the Govt. of Maharasthra has come into effect from 5th May, 2000. This Act provides for constituting a district level planning committee to integrate the various plans and schemes prepared by the Panchayats and Municipalities in the district and to prepare a development plan for the district as a whole.

According to the population of the district, the number of members of the District Planning Committee is restricted to a minimum of 30 and a maximum of 50. If the population is less than 20 lakhs, there will be a 30 member committee and if population is between 20 lakhs and 30 lakhs, there will be 40 members and if the population is more than 30 lakhs, there will have a maximum of 50 members in the committee.

The Minister-in-charge of the district will be the Chairperson of the District Planning Committee and the Collector of the district as the Member Secretary. Every District Planning Committee consists of at least 6 Ex-officio members namely Minister-in-charge, President of Zilla Parishad, representative from the district statutory Development Board, Divisional Commissioner, District Collector, and Chief Executive Officer of the Zilla Parishad. In addition to the 6 Ex-officio members, there are 2 nominated members for a district having 40 members and 4 in the case of a district having 50 members. Of the total number of members of the DPC, not less than 4/5th will be elected members. Besides, MP's, MLA's are special invitees for this committee. There will be reservation of seats for scheduled caste/tribe, backward class citizens and women in the elected members of the DPC. Among the 24-40 elected members, 30% seats are reserved for the backward classes and within this 1/3rd are reserved for the women belonging to backward class. In the case of SC/ST percentage of reservation in the DPC is depends on the population of the SC/ST in the urban and rural areas of the district. A proportion equal to the percentage of SC/ST population is reserved for SC/ST members and within this 1/3rd is reserved for the women belonging to SC/ST.

Main functions of the DPC is to consolidate the various plans and schemes prepared by the Panchayats and Municipalities in the district and to prepare a development plan and coordinate to prepare a draft five year plan and perspective development plan for the district as a whole. DPC also have the power to review and monitor the progress of District Annual Plan in accordance with the guidelines issued by the Governments.

Subsequently the DPC of Chandrapur was constituted vide State Government Gazette Notification on 22nd July, 1999. The salient features of the Chandrapur DPC are given below:

1. Chandrapur District Planning Committee shall have Members as under:
   - **(i) Ex-officio Members**
     - (a) Minister In charge of the District.
     - (b) President of the Zilla Parishad.
     - (c) District Collector.

(ii) Nominated Members:

(a) Governor shall nominate one Member as his representative from the respective Statutory Development Board.
(b) State Govt. shall nominate two Members from the Legislative Assembly and Members of Parliament residing or elected from that area.
(c) State Govt. shall nominate two Members in case of a district having 40 Members and 4 Members in case the district having 50 Members, having knowledge relating to District Planning, in addition to the Ex-Officio and Nominated Members.
(d) In case a nominated member under Clause (b) and (c) happens to be a Minster, then this member shall be the co-president of the Committee.

(iii) Elected Members:

(a) Of the total number of members of the District Planning Committee not less than four fifths shall be elected by and from amongst the elected members of the Panchayat at the district level and of the Municipalities in the district, in proportion to the ratio between the population of the rural areas and of the urban areas in the district.
(b) The members to be elected under clause (a) to the District Planning Committee shall be elected by single transferable vote from amongst the voters in the electoral college earmarked for the purpose.
(c) The election of members shall be conducted in accordance with the system specified in clause (b) by such authority or officer and in such manner as may be prescribed.

(iv) Special Invitees:

(a) Apart from the State Nominated Members under Clause 2, the Members of Parliament, the Member of Maharasthra State Legislature elected from or ordinarily residents of the area of the District Planning Committee.
(b) Divisional Commissioner of the District.
(c) Chief Executive Officer of the Zilla Parishad.
(d) Officer on Special Duty (Planning) in the office of the Divisional Commissioner.
(e) District Planning Officer and
(f) In consultation with the Chairperson of the DPC, State Govt. shall nominate 10, 12 and 15 persons for the 30, 40 and 50 member DPC as Special Invitees who are having experience in Planning and are ordinarily a resident of the area of the DPC. Out of 10, 12 and 15 Special Invitees, one post shall be reserved for the Executive President of State Planning Board and one for the Member of the Board.

2. The Minister-in-charge of the district shall be the Chairperson of the District Planning Committee and the Collector of the district shall be the Member-Secretary of the District Planning Committee.
3. In the absence of the Chairperson at any meeting of the DPC, the members may elect the Chairperson from amongst themselves to preside over the meeting.

9.10.1 Functions of District Planning Committee:

As per the existing system of functioning of DPC, the work allocation is as under:

(i) Preparation of Annual District Plan.
(ii) Preparation of Annual Plan for Scheduled Caste Areas.
(iii) Review of District Annual Plans from time to time.
(iv) To prepare Annual Plan for the district grant.
(v) Preparation of Local Development Programme and implementation thereof.
(vi) Preparation of re-investment proposals and submission to the Govt. for approval.
(vii) Taking overview of 20-point programme.
(viii) Preparation of individual interests plan for the tribals outside the tribal sub-plan area.
(ix) Preparation of Annual Hill Area Development Plan for hill areas.
(x) Preparation of Five Year / Perspective Plan.
(xi) To organize meetings for review of various schemes.

9.10.2 A suggestive framework of District Planning Committee

In view of the various mandated provisions of the act and the power of state legislature to enact structure, composition and functions of DPC based on the model law, an attempt has been made to work out a suggestive model there upon for the district of Chandrapur, which may be replicated in other districts as well. However, in order to get the best out of the provisions of the act the state government may like to resolve and sort out some of the issues before finalising the set up. The salient features of the DPC in the state of Maharashtra are given below:

(a) Article 243K and 243ZA enjoin the appointment of a State Election Commission for the conduct of elections for the local bodies. The same body may be entrusted the responsibility for conducting the election of DPC. Establishing another institution for this may not be necessary.
(b) The DPC should be part of the Zilla Parishad and it should function within its premises.
(c) The District Collector should be the Member Secretary of the DPC.
(d) Representatives from Voluntary Agencies or self-help group should also be nominated in the committee.
(e) All MPs, MLAs, sectoral and line department officials at the district level should be permanent invitees.
(f) State government may nominate on rotation for a period of two years specialists and experts preferably in the field of finance, engineering, environment, demographers etc.
(g) A full time Urban & Regional Planning member with requisite educational qualifications as recognised by the Institute of Town Planners, India to be appointed by the State Government.
(h) The district planning committee should prepare the perspective plan and district development plan with the assistance of the urban & regional planning member.
(i) For better integration and taking holistic view of the district any agency/authorities existing at the district level having overlapping jurisdictions and functions which may undermine the sanctity of DPC should be abolished and all development planning task be entrusted to the DPCs.

The model structure of the DPC for Chandrapur district as stipulated in the model law (Section 3) and the Maharashtra DPC Act 1998 which can be replicated in other districts, is given in Figure.10.1

9.10.3 Suggested Powers and Functions of DPC

In the light of the provisions of the Act (Article 243-ZD) the DPC will consolidate the plans prepared by the municipal bodies and the panchayats in the district and prepare draft development plan for district as a whole. It further provides that every DPC will, in preparation of draft development plan, have regard to, among others:

(a) matters of common interest between the panchayats and the municipalities including spatial planning, sharing of water and other physical and natural resources, integrated development of infrastructure and environment conservation;
(b) The extent and type of available resources whether financial or otherwise.

Based on the above provisions of the Act and the Model Law made prepared there under, the functions of the district planning committee will be to formulate development goals, objectives, policies and priorities in matters relating to planning, development and use of rural and urban land in the district having due regard to social justice. In view of the above and section 26 of the model law the powers and functions of the DPC for Chandrapur district are given below:

9.10.4 Mandatory functions:

1. Consolidate the plans (perspective, development and annual) prepared by the municipalities and the panchayats in the district.
2. Prepare a perspective plan for the district taking into account the state perspective plan and the perspective plans of panchayats and municipalties. This should indicate long term, twenty to twenty five years, policies, strategies and priorities for spatio-economic development of the district.
3. Formulate a district development plan taking into account the development goals, objectives and priorities for five years as stipulated in the perspective plan of the district. This should indicate sectoral requirements of various panchayats and municipal bodies and their spatial implications.
4. Formulate annual plan within the framework of approved district development plan.
5. Inviting objections and suggestions from public.
6. Getting the plans approved from the State Planning Board
7. Gazette Notification of development plans.
8. Review and revision of plans

9.10.5 Other Functions:

1. Resolve local issues between local bodies pertaining to development of peripheral areas of urban areas, sharing of water and other resources.
2. Monitoring and coordination of physical development and investment of local bodies.
3. Advise and assist local bodies pertaining to planning and development.
4. Serve as nodal agency for disbursement of funds to the panchayats.

9.10.6 District Planning System and Processes:

Considering the above functions of the DPC, the planning system should provide long term policy plan, mid-term comprehensive plan and annual plans. Therefore the planning system consists of the following:

A **perspective plan** is a long-term written document providing the goals, policies and strategies regarding development of settlements. It serves as a guide for the local bodies in preparation of development plans. The plan should generally be for a period of 20 years and the plan period of 20-25 years should be so adjusted that it coincides with the terms of the National/State Five Year Plans to facilitate better integration of spatial and economic policy planning. The main purpose of the perspective plan is to provide a policy framework for

further detailing. The scope of this plan covers social, economic and spatial development goals, policies and priorities of development relating to settlements. It covers long-term policies regarding development infrastructure and resource mobilisation.

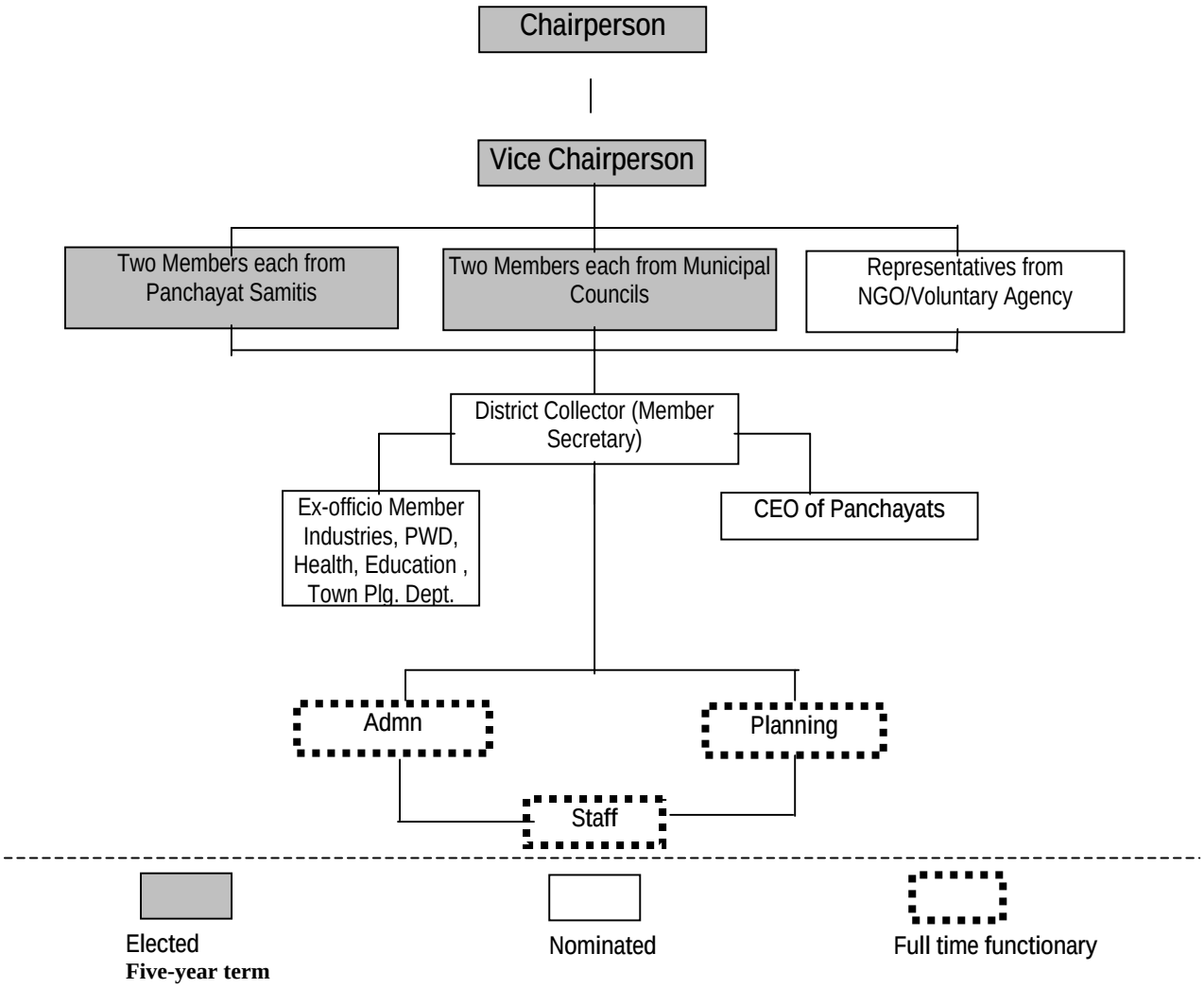
A **development plan** within the framework of the approved perspective plan is a medium-term (5 year) plan providing the comprehensive proposals for socio-economic ands physical development of spatio-economic development of settlements within the district. The objective of the development plan is to provide further necessary details and intended actions in the form of strategies and physical proposals for various policies given in the perspective plan depending upon the economic and social needs and aspiration of the people, available resources and priorities. The scope of the plan covers an assessment of current issues, prospects, priorities and proposals for development of the settlements.

An **Annual Plan** is a plan conceived within the framework of the approved development plan containing the details of new and ongoing projects that the urban bodies and panchayats intend to implement during the respective financial year including fiscal requirements through plan funds and other sources.

The planning system, processes and the hierarchy of agencies involved in the above three tier planning system as stipulated in the section 26 of the model law are shown in figure 10.2, 10.3 and 10.4 which are self explanatory.

Figure.9.2

Proposed District Planning Committee



Other salient features of DPC as per the section 27 and 28 of the Model Law:

- ***Chairperson & Vice Chairperson to be elected from amongst the elected members.***
- ***Members to be elected by secret ballot from amongst the elected members of the panchayat and the municipal bodies in the district.***
- ***Five members to be appointed by the government from district level officials.***
- ***A full time Administrative Officer is to be appointed by the DPC.***
- ***A qualified Urban and Regional Planner should be appointed as the full time Planning Member.***
- ***The DPC may appoint any number of officers and employees (including experts for technical work) as may be necessary for the efficient performance of its functions.***
- ***If any member elected ceases to be an elected member of the concerned local body, he shall cease to be a member of DPC.***

Figure 9.3

District Planning System

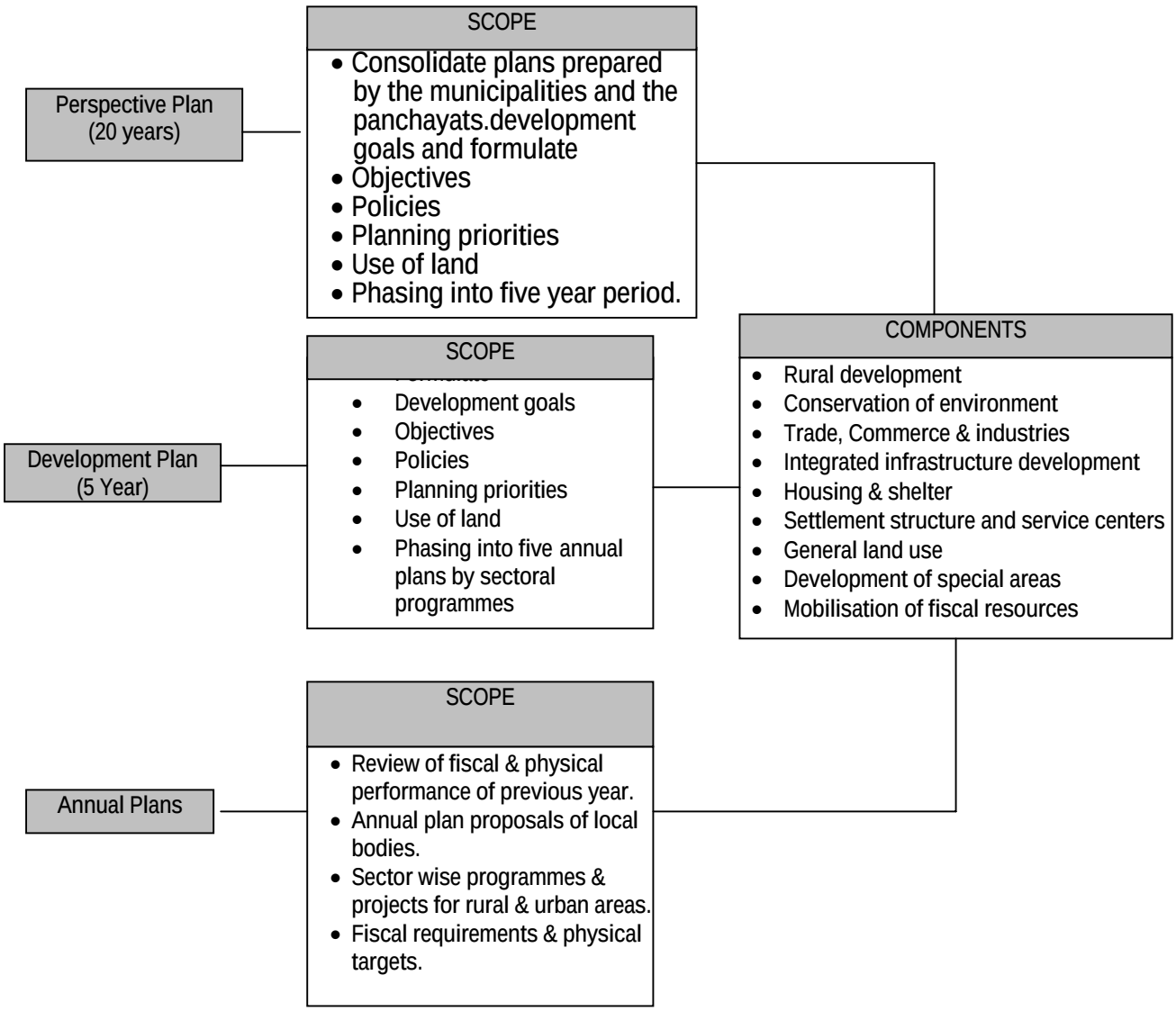


Figure 9.4

Hierarchy of Planning Bodies

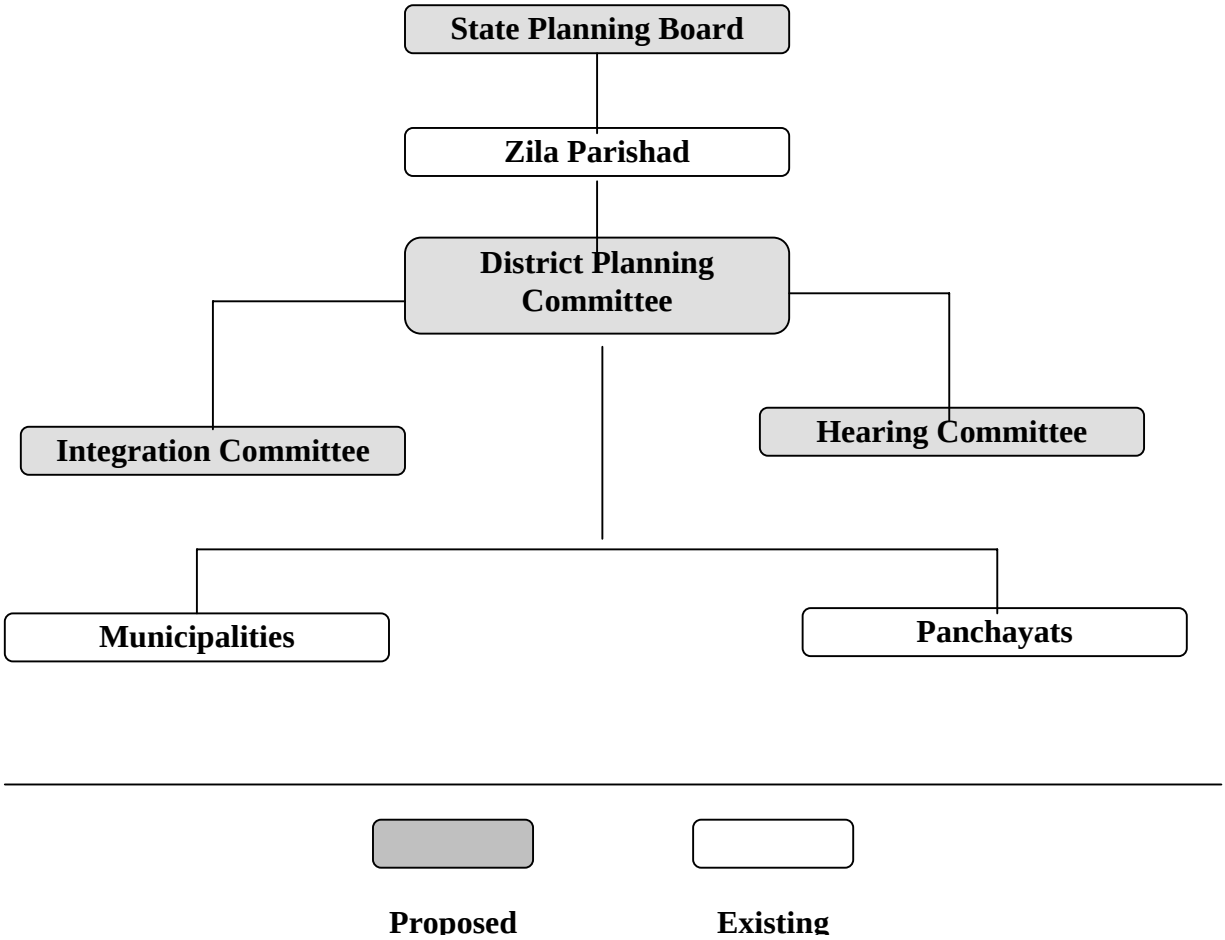
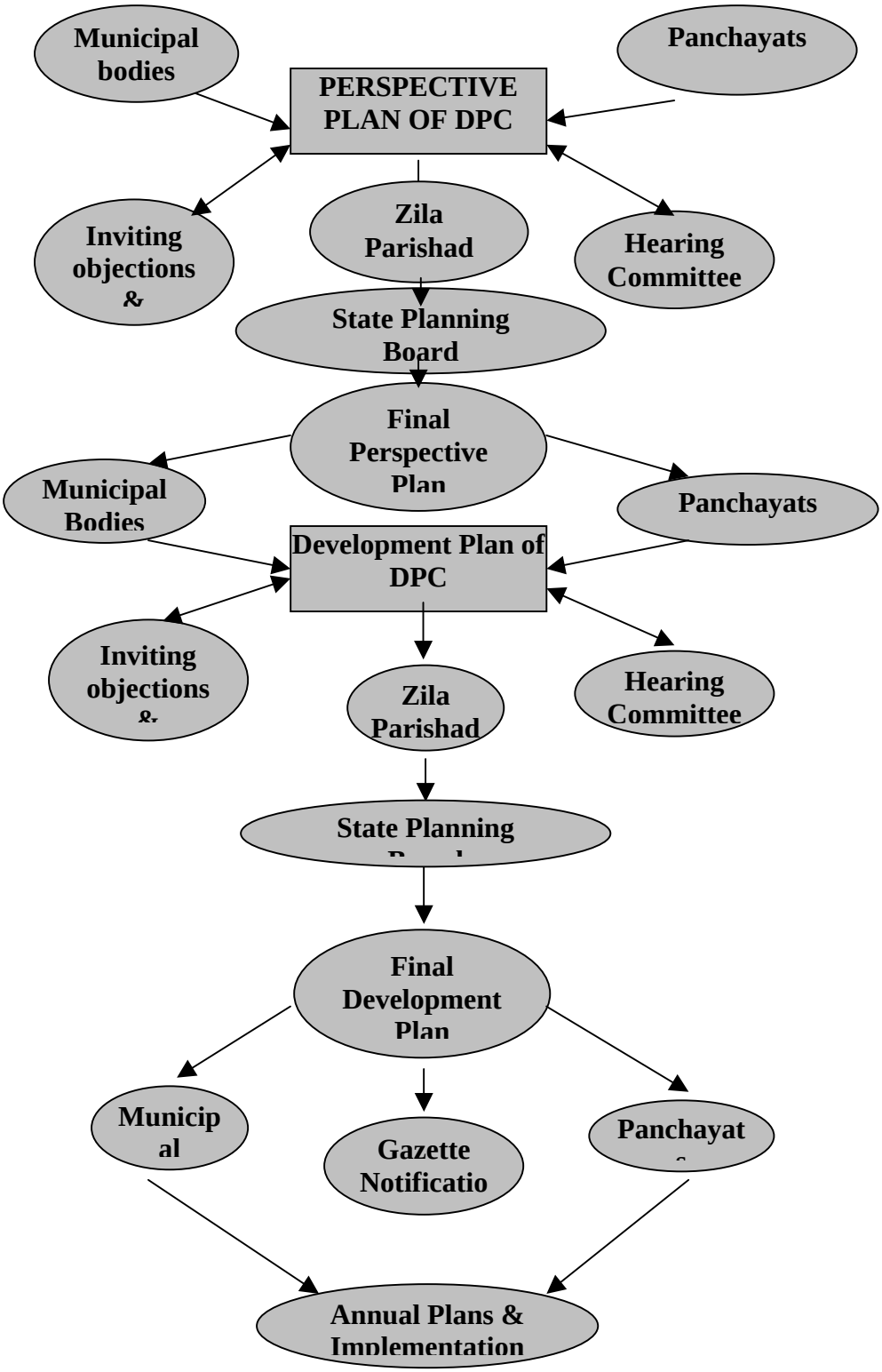


Figure 9.5

District Planning Process



Chapter 10
Strategy For Development

10.1 Levels of Development

The foregoing chapters described the physical and socio-economic characteristics of Chandrapur district and its people, activities of various sectors of the economy and infrastructural facilities and also discussed the development potentials and constraints. In each chapter problems were analysed as well as directions for future development were briefly outlined.

Levels of development of an area is the result of various inter-related factors such as availability of infrastructure facilities, growth of industries, employment opportunities, availability of natural resources, literacy etc. In the district, there is wide difference in the levels of development of different tehsils due to number of factors such as terrain condition, soil fertility, availability of suitable land for agriculture, road network, presence of natural resources, literacy, population growth etc. In order to assess the development status of all the tehsils, it is essential to identify certain indicators which can provide an idea about the level of development viz. fast, slow or poor development over a period of time. Accordingly the strategies for development of individual sectors in the tehsils can be adopted which can guide future development in different tehsils of the district.

In order to evaluate the existing level of development in all the tehsils, certain indicators have been selected which are very much correlated with levels of development. These are as follows:

1. Population density.
2. Percentage of urban population.
3. Percentage of literates.
4. Population growth 1991-2001.
5. Percentage of workers in non-agricultural activities.
6. Number of hospital beds per 1000 population.
7. Percentage of villages connected by pucca roads.

The percentage figures of each indicator has been converted into 10 point and then rounded up. Indicator wise values or weightage have been aggregated tehsilwise to arrive at composite index as shown in table 10.1.

It has been observed that Chandrapur tehsil had the highest index (39) followed by Bhadravati (25) Rajura (22) and Warora (20). All theses four tehsils are contiguous and located along the trunk rail and road corridor which had an added advantage of having higher-level infrastructure facilities, location of industries and higher rate of urbanisation. This belt is also agriculturally more prosperous having higher agriculture income being located on rich black cotton soil where important cash crops like cotton, pulses and oilseeds are grown. The rest of the tehsils have shown poor levels of development with very low urbanisation, little employment in non-agriculture activities, poor soil, lack of irrigation facilities and high proportion of cultivable waste. The composite index varies between 15 to 19 and Chimur and Gondpipri have the lowest index of 15.

Table 10.1: Composite Index Block wise Levels of Development

Sl.No.	Tehsil	Popul-ation Density	Index	Urban Popu-lation	Index	Literacy	Index	Decadal Popul-ation Growth	Index	Workers engaged in non-agricult-ural activities (%)	Index	No.of Beds per 1000 Pop.	Index	Villages with Pucca Roads	Index	Composite Index
1	**Chandrapur**	477	5	80.48	8	82.94	8	22.32	2	62.26	6	466	5	48.67	5	**39**
2	**Bhadravati**	140	1	45.67	5	78.68	8	18.65	2	25.35	3	96	1	55.20	6	**25**
3	**Warora**	140	1	25.31	3	77.37	8	6.59	1	27.78	3	80	1	35.06	4	**20**
4	**Chimur**	156	2	0	0	70.37	7	10.35	1	12.43	1	48	0	41.01	4	**15**
5	**Nagbhir**	189	2	0	0	69.35	7	10.38	1	12.35	1	78	1	42.98	4	**16**
6	**Brahmapuri**	162	2	20.33	2	70.11	7	11.16	1	13.89	1	60	1	45.95	5	**19**
7	**Sindewahi**	171	2	0	0	68.55	7	21.51	2	11.97	1	54	1	30.53	3	**16**
8	**Mul**	222	2	20.28	2	63.52	6	4.86	0	13.21	1	97	1	63.91	6	**19**
9	**Gondpipri**	69	1	0	0	62.13	6	12.62	1	18.84	2	36	0	53.47	5	**15**
10	**Rajura**	123	2	20.56	2	68.45	7	29.19	3	25.57	3	134	1	47.41	5	**22**

It is also observed that in some parts of Chandrapur, Brahmapuri, Mul, Warora etc, there is still some scope for increasing the area under cultivation, since it has high proportion of cultivable wasteland and fallow land. But in Sindewahi, Nagbhir, Rajura, Gondpipri and Bhadravati, there is very little potential for further agricultural development due to high percentage of forest cover, uneven topography and non-availability of arable land for further agricultural development.

10.2 Population Projection

The population projection has been worked out for 2011 and 2021 keeping in view the growth trend both in urban and rural areas since 1981 to 2001. The past trend shows that the district has maintained an average growth of 2.3 percent per annum during 1981, 1991 and 2001.

Table 10.2 Population Projections

Sl. No	Tehsil	2001			Projected Population					
					2011			2021		
		Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
1	Chandrapur	440897	86065	354832	542656	67181	475475	667901	30765	637136
2	Bhadrawati	156995	85295	71700	193229	97151	96078	237827	109082	128745
3	Warora	165843	123872	41971	204120	147878	56241	251230	175867	75363
4	Chimur	156772	156772	0	192955	172985	19970	237489	210729	26760
5	Nagbhir	124425	124425	0	153142	137360	15783	188488	167339	21149
6	Brahmapuri	153486	122279	31207	188911	147093	41817	232511	176476	56035
7	Sindewahi	106275	106275	0	130803	113434	17369	160993	137718	23275
8	Mul	110109	87779	22330	135522	105600	29922	166801	126705	40096
9	Sawli	104686	104686	0	128848	117061	11787	158586	142791	15794
10	Gondpipri	74559	74559	0	91767	82068	9699	112947	99951	12997
11	Rajura	152216	120915	31301	187347	145404	41943	230587	174383	56204
12	Koropna	143210	121479	21731	176263	147143	29120	216944	177924	39020
13	Pombhurna	47906	47906	0	58963	51591	7371	72571	62694	9878
14	Ballarpur	133722	43727	89995	164585	43992	120593	202571	40976	161595
Total		**2071101**	**1406034**	**665067**	**2549111**	**1575943**	**973168**	**3137446**	**1833400**	**1304046**

Note: *1. Average total population growth rate of the district during 1981-2001 was 2.3 percent per annum.*

2. The average urban population growth rate of 3.4 per cent per annum during 1991-2001 is not likely to exceed.

3. The tahsil headquarters large rural settlement - Chimur, Naghbir, Sindewahi, Sawali, Gondpipri and Pombhurna will eventually become urban centres in the next decade owing to their growth potentalities and anticipated increased functions.

Although the district had shown a declining trend during 1991 and 2001 of 16.88 percent during 1991 and 2001. This shows that the district is experiencing out migration due to lack of economic development and employment opportunities. However, for the purpose of population projection, it is assumed that with the growth of economy, the district will be maintaining a growth rate of 2.3 percent per annum. Similarly, the urban growth of population, which has stabilized, now to 3.4 percent, is expected to grow at the same rate in the following decades. Simultaneously, there will be proportionate decrease in rural population in different tehsils. It is observed that some of the tehsils do not have any urban population and the district headquarter are located in large villages which are likely to become urban in the next decade and there will be a shift of rural population to urban areas. Keeping in view the above facts, the population of each tehsils has been projected for 2011 and 2021, separately for urban and rural areas, which are shown in the table 10.2.

The future requirement, basic facilities and other infrastructure in different tehsils will have to be provided keeping in view the projected population. The salient features of population projection for 2011 and 2021 are given below:

1. It is expected that in 2011 the district will have an addition of 5.5 lakh population and the population of the district will be approximately 25.5 lakh population and in 2021 it will be approximately 31.4 lakh.
2. The urban population that was 6.65 lakh, is likely to grow up to 9.70 lakh in 2011 and 13 lakh in 2021. The rural population of the district, which was 14 lakhs in 2001, is expected to become 15.76 lakh in 2011 and 18.33 lakh in 2021.
3. The tehsils, which will have new urban centres the growth of rural population will be relatively less due to shift of rural population to urban areas.

10.3 Development Strategy

A strategy for development of Chandrapur district can be formulated only by adopting a holistic approach. The strategy is based on three important aspects viz., economic, social and spatial, all interconnected and interwoven to form the general pattern of development. Economic development through the development of primary, secondary and tertiary sector activities will not only generate demand for more and more goods and services but will also increase the demand for labour resulting in immigration. Therefore social development through the provision of socio-economic infrastructure and services should be also provided high priority. Hierarchy and locational choice in relation to the human settlement pattern are crucial while formulating the socio-economic infrastructure development strategy. This calls for a well conceived spatial development strategy to serve the largest segment of population with the required social and economic infrastructure and facilities. The spatial development strategy will evolve in consonance with the economic strategy as well as socio-economic infrastructure development strategy for the district.

Various development programmes at district level e.g. employment generation, provision of facilities as drinking water, housing, school or for delivery of inputs under rural development schemes, etc., require locational guidance.

The aims and objectives of spatial plan for Chandrapur district are to guide the development programmes through a locational plan and at the same time to help develop rural-urban integration and continuum. Another important aspect of the objectives is the conservation and preservation of environment. Adopting a decentralised pattern of development to reach wider section of population should ensure distributive justice in respect of access to consumption and production facilities for the weaker sections of society. Therefore the major tasks of spatial planning will be to identify requirements of support infrastructure to improve the quality of life and to promote economic activities at specified locations so that desired levels can be achieved. Another important task of spatial planning is to identify and reduce the gap of availability and requirement of infrastructure at specified locations to raise the level of development through out the district.

10.3.1 Economic Development Strategy:

This strategy concentrates on the rural areas and agricultural improvement. The objective is to keep people on the land and bring about a balanced development throughout the district. This strategy could comprise a combination of the following components:

a) Improved water management:
There is sufficient surface water during the wet season which can be harvested and retained through the construction of check dams. Improved irrigation is fundamental to the agricultural development of rural areas and for enhancement and well being of indigenous people.

b) **Agricultural development – agriculture and horticulture:**
Increased acreage under irrigation and increased agricultural inputs would result in improved agricultural production and create an opportunity for horticulture.

c) **Establish agro-processing enterprises:**
Increased production of food grains and oilseeds would create the possibility for establishing agro-processing enterprises. It is suggested that a limited number of agro processing enterprises could be established as demonstration units following the implementation of the water management and agricultural development option components.

d) **Encourage dairying:**
The potential for organized dairy farming is high. Cattle ownership is common in the region but currently used largely for subsistence purposes.

e) **Forestry resource development:**
Social forestry and forest and medicinal plants based industries may be priority areas.

f) **Encourage rural and urban enterprises to support agricultural development:**
Maintenance shops and repair units to facilitate the development of agriculture and allied activities, fertilizer/pesticide mixing and packaging, small agricultural tools, cold storage/warehousing. Finance and technical assistance would be the focus of this project component.

g) **Set up market yards and encourage rural banks:**
The former are required to facilitate marketing of agricultural produce in the region and the latter to provide improved access to credit for agricultural, horticultural and associated operations.

10.3.2 Settlement, Infrastructure and Service Strategies:

The future settlement, infrastructure and service development strategies for the study area need to be presented within the context of the economic and environmental strategies presented above. It is necessary to demonstrate how these alternative strategies impact on the distribution of settlements and service facilities:

a) **Dispersal of Settlements and Industry:**
Emphasizing dispersal of employment, infrastructure and services to encourage a more scattered settlement pattern (broadly conforming to economic development strategy one; or

b) **Concentration of Settlements and Industry:**
Emphasizing concentration of employment, infrastructure and services to benefit from economics of scale and broadly conforming to economic development strategy.

10.4 Development options:

Strategy ONE: Dispersal of settlements:

- To encourage major new industries (e.g. power stations and industrial complexes such as Power mineral based industries) to locate throughout the region, in order to open up new areas to the influence of modernization and higher order facilities. Chandrapur – Ballarpur - Ghugus development is an example of this approach.
- To encourage new smaller scale business and industry to locate in smaller centres throughout the region rather than at the four urban centres. Assistance such as improved communication and serviced sites may be necessary to achieve this aim which should reduce the number of people needing to move to the urban areas in search of work.
- To ensure that priority provision of government spending on services and infrastructure goes to smaller centres throughout the region.

Strategy TWO: Concentration of Settlements:

- To encourage major new industries to be located within the four urban areas close to the existing workforce, infrastructure and services.
- To encourage other new business and industry to locate in the urban areas and to develop the potential market linkages with the major industries; unless they have rural linkages and they should be located in a few selected rural centres.
- To direct government spending on infrastructure and services to ensure it supports economic growth and links with markets.

Strategy THREE: A Combination of strategies One and Two:

With either strategies or a mix between them, a hierarchy of settlements or centres can provide a framework for the distribution of development. A proposed hierarchy is identified to provide a basis for future decisions on distribution and growth, which can be adjusted to support the selected economic and environmental strategies.

10.5 Recommended Strategy for Economic Development

Strategy for Agriculture and Rural Development:

- Concentrate on water management (e.g. check dams and lake water irrigation) to increase food production for local consumption and sale; or
- Encourage dairying within rural areas as part of a programme to increase rural food security and sell produce to the urban industrial areas of the region; or
- Develop forest resources (monoculture or polyculture), a primary objective of which will be to provide employment and income for tribal people; or
- Concentrate on rural craft manufacture, agro processing and supply services.

Moreover, it may be that combination of: (i) agricultural development through sound water management and social forestry; (ii) improving local sourcing capabilities; and (iii) economic and social development through a range of infrastructure and urban service development is the most appropriate economic development strategy.

10.5.1 Sector wise recommendations

The strategies have been proposed keeping into consideration the proposals formulated in the Regional Plan of 1985 for Chandrapur and some of them have been included as strategies under specific sectors.

(a) Agriculture:

The dependence of farmers on cultivable land is putting tremendous strain on the limited land resource, since agriculture is the major source of employment in the district. This is resulting in decline in cultivable land and net sown area to some extent, with large-scale increase in the uncultivable land. There is predominance of farmers with small land holdings, who have very low purchasing power and are unable to adopt modern methods of farming due to lack of financial resources.

- The farmers should be encouraged to diversify the cropping pattern and change to cash and commercial crops like soyabean, cashew, chilies, sugarcane, cotton, turmeric etc., which have huge demand in the market and will yield good returns. Horticulture crops will also provide good profits to the farmers. These crops can be grown alongwith traditional crops in small areas initially since it will require less expenditure.
- As the soil conditions are favourable and with increased irrigation facilities over time, there is ample scope for advancement of agricultural sector. There is scope for expansion of cultivated area since fallow land can atleast partly be bought under cultivation
- The government should also set up small model farms in the villages on a regular basis where the farmers can be provided training regarding cultivation by modern methods of farming with tractors/threshers etc to get good yields in short time. Modernization of farm practices needs to be encouraged.
- The extension services may be developed to enhance the yield of agricultural produce. The availability of major inputs in respect of agriculture, such as supply of seeds, fertilizers, insecticides, pesticides and use of modern implements alongwith the availability of infrastructural facilities like roads, electricity, marketing, finance etc should be given priority.
- The government should also provide higher support prices in view of high input costs of seeds, fertilizers, manures, etc. They should be provided subsidies/incentives in the form of interest free loans for purchasing high yielding varieties of seeds, manures, fertilizers, insecticides, machines etc. Some measures may be devised so that cotton producer can get maximum price for his crop.
- They should also restrict the import of cash crops from outside the district and provide incentives for farmers to grow these crops, which are in high demand within the district, so that they can be exported on large scale to generate high revenue.
- Research is required on improving yields from dry farming especially in Chandrapur and Warora sub-regions where the irrigation potential is limited.
- Attempts are needed to increase the area under pulses since its yield lags behind considerably in this respect.
- Wherever facilities of irrigation and irrigation potential are available, attempts will have to be made to introduce double cropping so that maximum benefits can be gained.
- Efforts should be made to see that no fertile land or other land, which are likely to be brought under irrigation command of project, be converted into non-agricultural use.
- Since substantial number of agricultural holdings are of upto 2 hectares, it is essential to extend the high yielding varieties programme, to cover entire agricultural land in the region and especially farmers with small holdings.

- The conditions are very much conducive to increase the production of silk since superior and high yielding varieties of mulberry suited for cultivation in rain-fed areas have been developed.
- The problem of soil erosion is also quite rampant. Therefore efforts should be made by the govt. to concentrate on other techniques of soil conservation like, building of check dams on non-arable lands, paddy bunding, loose bolder structures, nullah bunding etc. and other similar measures which are not very expensive to adopt.

(b) Irrigation

- Rainwater harvesting can be profitably experimented at suitable locations and the water so stored can be utilised in dry spells.
- Since the maintenance and upkeep of equipments installed to lift water from rural lift irrigation schemes is not carried out regularly, the farmers experience difficulty in irrigating their fields. Due to this problem, they are generally disinclined to irrigate their fields from these sources. Efforts should therefore, be made to popularize this scheme among the local farmers so that the utilisation level of these irrigation schemes goes up.

(c) Horticulture

- The practice of growing these crops by farmers in their fields needs to be discouraged since it leads to decline in crop production. They need to be made aware that the fruits can be grown easily on fallow land.
- It is important to increase the number of APMC markets for selling these crops since farmers grow them in less quantity due to shortage of markets.
- Cheaper inputs and constant encouragement provided by the government can help in increasing the area. Financial assistance, cheaper loans and other incentives, modern techniques, high yielding variety of seeds, better marketing facilities etc. will help in developing this sector.
- Establishment of agricultural institutes can increase the awareness of farmers regarding the profits to be accrued from growing these crops and make them aware of its importance. These institutes can organise demonstration camps, training centres in rural areas, which can provide knowledge and assistance to them in everyway on a regular basis.
- Oranges can be grown in Warora, Chimur, Koropna etc. where scope exists for increasing the area.

(d) Agriculture Marketing Infrastructure

- New main yards and sub-yards should be identified and located at suitable distances, which have proper road connectivity so that the farmers can reach swiftly without damage to their precious crops.
- The storage facilities at these yards should be increased so that the farmers can store them properly without fear of it getting wasted.
- Supply and distribution of high yielding varieties of seeds and fertilisers through APMC yards and sub-yards should be strengthened. The distribution network of inputs such as seeds, fertilizers, manures etc needs to be extended so that it is easily accessible to small farmers.
- The govt. should allow sale and purchase of other crops cultivated in the district in the APMC yards also.

- The storage facilities will consist of village cooperative godowns and govt owned godowns. Cooperative godowns should be encouraged at all rural market centres and rural service centres.
- The govt. godowns would be located at rural market towns.

(e) Markets

- Since they are very less in proportion to the population and number of villages in all the tehsils, it is very essential to increase them in rural areas as they are essential for meeting needs of the villagers and a source of entertainment.
- Strengthening of marketing infrastructure by increasing road network to all villages, which will facilitate movement within the villages at a faster rate.

(f) Animal Husbandry

- Relocation of existing veterinary facilities and identification of some new centres for establishing these facilities, so that they can serve the needs of large population in this rugged terrain.
- There is need to increase the number of primary trained veterinary personnel in the district since they are unevenly distributed and are always in relation to the demand in short supply.
- It is essential to establish more hospitals in other tehsils also since those found in Warora and Chandrapur are not easily accessible to the farmers.
- It is necessary to extend the facilities of cattle markets to other villages in the future in addition to existing seven markets, so that the farmers can buy them easily when required and quickly without travelling long distances. It has been proposed to extend this facility to all rural market centres and rural market towns.
- The various facilities like Veterinary Aid Centre combined with artificial insemination sub-centre should be provided for cattle population of about 16,000 at a travel distance of 5 to 8 km.
- Similarly Veterinary Dispensary combined with artificial insemination centre is recommended and the dispensary be provided for 60,000 cattle population with a distance of 10 to 15 km.
- Veterinary hospital with cattle breeding farm be established at rural market towns, sub-regional and regional growth centres.

(g) Dairy Industry

- There is urgent need to develop this industry in a scientific manner since there is tremendous scope for its growth as there are large number of milch cattle.
- It is essential to make proper arrangement regarding collection of milk through milkmen cooperatives at remunerative prices, since Chandrapur dairy plant is not being utilised upto its installed capacity. It is grossly under utilised since the prices offered by govt. agencies are not remunerative and so villagers sell them to private operators.
- Efforts need to be made to develop it in dry farming areas since region is rich in cattle wealth.
- It is essential to develop good and quick transport network, since the private operators collect milk from milkmen from the villages unlike in a govt. agency where they have to travel for selling it to a collection depot.

- Sheep rearing and poultry farming can be encouraged for those people who are practicing dairy farming, as it will provide them income and there is huge demand for meat products in the district..
- Incentives, transport facilities, financial assistance and markets are to be provided to these cooperatives, so that they can collect from individual milkmen, which will increase the quantity of milk collected by these cooperatives.

(h) Fisheries

- There is large potential for development of this sector due to presence of large number of ponds and lakes and more are likely to come with the completion of irrigation projects.
- There is good scope for developing fishing activity since there is great demand for fish. Employment potential exists in this sector whereby the repaired seasonal ponds and other bodies can result in increased production. Small fish can be reared in these ponds and seeds can be made available to local unemployed youth who can rear them and market them to fish producers.
- There is urgent need to develop better marketing facilities, good storage facilities, quick transportation facility by refrigerated vans for development of fisheries.
- The fishermen need to be trained in modern techniques of fishing, provision of loans and subsidy for purchase of fishery equipment like boats and mats. This will help in creating technical personnel for manning the mechanised vessel.
- The land available for fishing can be utilised by adopting new techniques and modern equipments to increase the fish catch. There is immense scope for developing fisheries in Sawli, Gondpipri, Rajura, Koropna and Pombhurna where there is abundance of unutilised water.

(i) Forestry

- Conservation, development and marketing of forest based products and herbs with medical value.
- Creation of forest development strategy laying emphasis on the development of alternative sources of fuel for meeting needs of the villagers.
- The strategy should also help in creating suitable employment opportunities throughout the year particularly during the lean season for villages.
- The catchment areas of the ongoing irrigation schemes should be considered for afforestation purposes.
- Planting of suitable grasses and fodder plants at specific locations for development of grazing land for animals.
- Protection of women's traditional right to collect and market certain forest produce, for renewal of forest and empowerment of women.
- Top priority should be given to forest fire prevention and control to reduce losses and emission of green house gases.
- Since the forest areas have abundant wild life which consists of different species of birds, they can serve as a tourist destination for bird watchers interested in observing wild life in its natural habitat. Thus further attempts are required to demarcate new areas as wild life sanctuaries and bird sanctuaries and provide them with adequate access through out the year and other essential facilities.

(j) Industries

- There is urgent need to establish higher educational facilities in professional and technical fields since there is shortage of skilled and professionally trained manpower.
- It is very important to develop training programmes for local people so that they can be educated regarding the importance of establishing industries related to medical plants /herbs traditional handicrafts etc. since there is scope for it.
- A large potential exists for tanning and leather industries, which needs to be harnessed.
- There is scope for establishing agro-based industries related to sugarcane, chillies, cotton, turmeric etc. since their production is expected to rise tremendously. Rice and poha mills in all tehsils except Rajura and vanaspati oil mill in Brahmapuri can be started since production of groundnut is expected to rise from 206 ha. to 15,500 ha.
- There is tremendous scope for promoting traditional handicrafts of tribal people. The Khadi and Village Industries Commission can play a major role in promoting these crafts by providing training, marketing facility etc to tribal populace.
- In the sub-regional centre, industries such as large and medium scale can be established. They can be related to food processing, vegetable oils, decorative furniture from the forests, agricultural and industrial machinery, distillery, cattle feed, poultry feed mixing units etc.
- In the market towns both in the rural and urban areas, industries based on livestock resources such as bone crushing, processing of hides and skins, footwear and leather goods, saw mills, straw boards, spinning mills etc can be started.
- In the rural market centres all type of cottage and small industries based on forest produce can be located which will be based on manual skills involving small investment. The y will provide supplementary work during the year and off-season. Kandsari units, oils from special type of grass for use as scent in soaps and cosmetics, fabric weaving by hand/powerlooms, footwear and leather goods can be set up.

(k) Transport and Communications

- Since this district has undulating topography, there is lack of transport in the remote areas. Therefore, the govt. should establish develop state transport services viz., permanent bus station and depots, temporary bus stations, pick-up stops, transport depots, but stands, etc. for easy commutation of the people.
- The road network to remote areas needs to be strengthened, by building more roads and by providing very frequent and regular bus services run by the state govt.
- Certain infrastructure related to the development of transport such as motor repair workshop, rest house, hotels for truck drivers, training facilities for drivers etc. can give a boost to the transport sector.
- The broad gauge railway linkages need to be enlarged to cover remote areas of the district. The existing airstrip at Morwa near Chandrapur for landing and take off the bigger passenger planes needs to be upgraded.
- The existing water courses shall be properly developed for water transport.
- It is necessary to increase the network of post and telegraph services to other deficient villages so that people can become aware of recent development programme taking

place in the district. This will also help them in developing awareness about various schemes run by the govt. for their benefit.

- It is proposed to provide the postal and telecommunication services within the easy roach of the settlements as per the norms (postal and telegraph department). Settlements from non-tribal area having a population more than 2000 are entitled to have a Branch Post Office, whereas in tribal area it is applicable to settlement with population above 1000.

(l) Tourism

- It is very important to develop proper tourist infrastructure such as hotels, rest houses, sources of entertainment, bus depots etc.
- Some training programmes/publicity campaigns need to be developed to create awareness and popularise the various tourist sites available in the district.
- For proper upkeep and maintenance of these sites, entry fees can be levied by the govt.
- The strengthening of roads will give a boost to tourism in the district since many tourist spots monuments are located in remote areas. It will also act as an active agent for bringing development in the region.
- Developments of transportation facility like roads/railways etc. so that tourists can reach these places easily.
- The development of major and medium irrigation projects and proposed sites and surroundings of tanks creating large reservoirs, can serve as tourist centre attracting centers/picnic spots, if they are properly developed with adequate infrastructure.

10.6 Strategy for Social Infrastructure

(a) Education

- It is important to locate higher level of educational institutions in the rural areas at all the designated market towns and rural market centres so that they are easily accessible to the villagers.
- The vocational colleges, technical institutions related to the tribal culture may be provided in the market towns that can help in increasing literacy among these people and thereby improve their standard of living.
- Provision of special schools on part time basis especially for women and girls of tribal areas in the villages and at convenient timings.
- The sub-regional growth centres and market towns viz. Bhadravati, Nagbhir, Rajura, Sindewahi etc. should be provided with college facility.
- The agricultural college at Warora should be strengthened for research needs. A well-equipped ceramic technical school is proposed to be set up at Chandrapur due to the scope of ceramic industry in the district.

(b) Health

- It is important to provide higher order facilities like hospitals, maternity and child care centres in rural service centres and rural market towns also within commutable distance and well connected.

- The hospitals need to be set up in those tehsils like Mul, Gondpipri, Rajura etc. where they are lacking. The hospitals need to be located in such towns/bigger villages, which are easily accessible by road and are within proper distance from the villages.
- The number of medical personnel like doctors is quite low in many tehsils like Rajura, Gondpipri etc. Thus the govt. should formulate policy by which it becomes necessary for doctors to serve compulsorily for sometime in the rural areas.
- The numbers of beds in hospitals has not kept pace with the increase in population in some tehsils. Thus it is necessary to redistribute this criterion in terms of norms laid down by the govt, especially in the deficient tehsils depending upon the existing distribution of health facilities. In addition, a provision of one bed for every 1000 population has also been made. There are about 900 beds in all existing hospitals whereas about 1900 beds have been suggested.
- For the projected population, additional 850 beds are needed and they would be located at different levels of medical facilities distributed amongst urban and rural market towns.
- It is suggested that existing civil hospital be expanded and existing rural hospitals at Bramhapuri be converted into civil hospital with a capacity of 250 beds taking into consideration population growth.

(c) Water Supply

- The existing supply needs to be augmented for projected population at the rate of 115 to 140 litres/day/capita, as the present rate of water supply is inadequate for the towns of Chandrapur, Ballarpur, Rajura, Desiganj and Warora. The water supply schemes should be designed taking into consideration the overspill of population in adjacent areas like Durgapur, Wadagaon, Govindpur, Tukum, Shastrinagar etc.
- All the urban centres except Warora have piped water supply. The piped water supply should be extended to other towns also. It is important to increase the proportion of population served by water supply in some villages of Chandrapur, Rajura and Gondpipri tehsils where it is less in comparison to others.
- There is need to extend the facility of piped water supply to other villages where it is not available.

(d) Drainage and Waste Disposal

- There are no facilities for disposal of dirty water and waste products in the rural and urban areas. Thus it is necessary to prepare integrated drainage schemes, which can be connected to sewage treatment plants with proposed underground drainage scheme.
- It is necessary to prepare a comprehensive and integrated underground drainage schemes for Chandrapur and Ballarpur towns on priority basis in order to avoid existing unhygienic conditions taking into consideration the extent and location of areas likely to be brought under urban expansion.
- The underground drainage schemes for other municipal towns such as Warora, Rajura etc. should also be prepared in different phases.

10.7 Strategy for Spatial Development

A spatial framework of district planning is essential to provide locational guidance to the various programmes and schemes taken up for development of the district. As mentioned in the objectives, the spatial plan aims not only to provide locational plan for the development programmes and schemes but also develops rural-urban integration and reduces disparity in

development over the space. The spatial strategy provides two broad directions, the first is on hierarchy of urban and rural settlements in the region and the second is regarding the proposed functions of the settlements, during the plan period. In simple term it is the size and function of the settlement alongwith their linkages that are described in the strategy on which detailed planning and programming are to be taken up in the subsequent stage. The nodality of the region particularly focused at Chandrapur city play an important role in attracting urban-industrial activities to this region. For future development of the district it is envisaged that both transport and communication will be strengthened and developed in keeping with the requirements of the proposed settlement system in hierarchical order.

10.8 Determination of functional hierarchy

In the proposed settlement system, the existing six levels as identified in the district remains the same. However the existing number of growth centres as identified at different levels is not sufficient to meet the present requirement of the district in terms of provision of services. Moreover they are not uniformly distributed among the tehsils. Therefore it is necessary to evolve a settlement system by identifying and designating new growth centres which will not only meet the requirement of present population but also the future population which is estimated to grow at the rate 2.3 percent annually. In identifying new centres it has been aimed at selecting the settlements that are likely to evolve naturally due to its location and potentialities. The factors taken into consideration while selecting new centres both rural and urban are given below:

Urban

1. Urban population size and rate of growth.
2. Spatial location.
3. Economic and industrial potential.
4. Social and cultural factors.
5. Administrative factors.

Rural

1. **The present importance of the settlement.** The services that particularly mark the importance of a settlement are the higher order health facilities, secondary education and accessibility.
2. **The population in the area of influence of the settlement.** The 2001 census provides population for each village area and these can be grouped to suggest catchment population.
3. **The distance between centres.** Ideally the number and distribution of centres should be so as to ensure that no population concentration is more than 5 - 10 km from a centre to ensure accessibility to its services.
4. **The communication links to the centre**. Each centre should have easy access to its hinterland and other selected centres.
5. **The development potential**. The potential for increased agricultural production in each catchment area and the potential for business development in each centre are important consideration.

Based on the above factors, potentialities of each settlement have been assessed before designating them as growth centres at different levels of hierarchy. Certain settlements already fulfil the criteria and are functioning as growth centres. However, to fill the gaps of existing provision of services to bring about balanced development in the district and also to meet the requirement of projected population additional growth centres have been identified. The proposed hierarchy of settlements is shown in table 10.3 and (Figure 10.2). The list of existing and proposed growth centres at different levels is given in table 10.4.

Table 10.3: Proposed Settlement Hierarchy

Level	Exiting	Proposed	Remarks
I Regional Centre	1	1	*Chandrapur, the district & Tehsil HQ is the highest order settlement in the hierarchy and serves the entire district.*
II Sub-Regional Centre	1	2	*Ballarpur town is the existing Sub regional centre serving the southern part of the district. Brahmapuri a tehsil HQ town 150 Km from district HQ located along the eastern rail road corridor presently functioning as market town proposed as the second sub regional centre to serve the northern part of the district.*
III Market Town	5	11	*Five existing and six large tehsil HQ villages and one town with APMC Principal yards having higher order facilities proposed to be upgraded*
IV Rural Market Centres	7	17	*Large villages having APMC Sub Yard, and other higher order facilities have been selected. 15 existing rural service centres proposed to be upgraded*
V Rural Service Centre	27	67	*Medium size village accessible by pucca road having Vet-II dispensary, PHS and Middle or High school and Daily Market. 56 Basic villages are proposed to be upgraded to Service centre.*
VI Basic Villages	140	280	*Medium size villages having at least one Vet-II or Middle School or Daily market.196 villages are proposed to be upgraded.*

Table 10.4 Proposed Hierarchy of Settlements

		Existing		Proposed	
Level	**Hierarchy**	**Tehsil**	**Settlement**	**Tehsil**	**Settlement**
I	**Regional Centre**	Chandrapur	Chandrapur	Chandrapur	Chandrapur
II	**Sub-Regional Centre**	Ballarpur	Ballarpur	Ballarpur	Ballarpur
				Brahmapuri	Brahmapuri
III	**Market Town**	Bhadravati	Bhadravati	Bhadravati	Bhadravati
		Mul	Mul	Mul	Mul
		Rajura	Rajura	Rajura	Rajura
		Warora	Warora	Warora	Warora
		Brahmapuri	Brahmapuri	Chimur	Chimur
				Gondpipri	Gondpipri
				Korpana (2)	Korpana
					Chandur
				Nagbhir	Nagbhir
				Sawli	Sawli
				Sindewahi	Sindewahi
IV	**Rural Market Centre**	Gondpipri	Gondpipri	Ballarpur	Kothari
		Korpana	Korpana	Bhadravati (2)	Chandan Kheda
		Nagbhir	Nagbhir		Nandori Bk.
		Sawli	Sawli	Brahmapuri	Gangalwadi
		Sindewahi	Sindewahi	Chandrapur (2)	Chichpalli
		Warora	Madheli		Pandhar Kawada
		Chimur	Chimur	Chimur (2)	Bhisi
					Neri
				Mul (2)	Bembal
					Rajoli
				Nagbhir	Talodhi
				Pombhurna	Pobhurna
				Sawli	Pathari
				Sindewahi (2)	Navargaon
					Palasgaon Jat
				Warora (2)	Madheli
					Shegaon Bk.
V	**Rural Service Centre**	Ballarpur (1)	Kothari	Ballarpur (4)	Bamhani
		Bhadravati (4)	Chandan Kheda		Manora
			Ghodpeth		Nandgaon Pode
			Mudholi		Palasgaon
			Nandori Bk.	Bhadravati (8)	Ashta
		Brahmapuri (2)	Gangalwadi		Chora
			Mudaza		Ghodpeth
		Chandrapur (2)	Chichpalli		Jananiwali
			Pandhar Kawada		Kondha
		Chimur (5)	Bhisi		Majari
			Bothali		Mudholi
			Khadsangi		Sagara
			Neri	Brahmapuri (5)	Awalgaon
			Shankarpur		Mendaki
		Gondpipri (1)	Tohogaon		Mudaza

		Mul (2)	Bembal		Nanhori
			Rajoli		Pimpalgaon
		Nagbhir (2)	Chargaon Manapur	Chandrapur (2)	Sakharwahi
			Gangasagar Heti (N.V.)		Tadali
		Pombhurna (1)	Pobhurna	Chimur (7)	Ambodi
		Rajura (2)	Patan		Bothali
			Warur		Jambhul Ghat
		Sawali (2)	Londholi		Khadsangi
			Pathari		Kolari
		Sindewahi (1)	Navargaon		Motegaon
		Warora (2)	Anandvan		Shankarpur
			Shegaon Bk.	Gondpipri (7)	Aksapur
					Bhangram Talodhi
					Dhaba
					Tohogaon
					Vithalwada
					Wadholi
					Wedgaon
				Korpana (4)	Antargaon Bk.
					Kumbhezari (N.V.)
					Mandawa
					Naranda
				Mul (7)	Chiroli
					Dongargaon
					Gadisurla
					Junasurla
					Kelzar
					Nandgaon
					Rajgad
				Nagbhir (2)	Chargaon Manapur
					Gangasagar Heti (N.V.)
				Pombhurna (2)	Dewada Kh
					Nawegaon More
				Rajura (6)	Gowari
					Patan
					Pellora
					Vihirgaon Bk.
					Warur
					Wirur Station
				Sawli (3)	Bothali
					Londholi
					Vyahad Bk.
				Sindewahi	Pendhari
				Warora (9)	Anandvan
					Bhatala
					Chargaon Bk.
					Charurkhati
					Chikani

					Dongargaon
					Kosarsar
					Nagari
					Tembhurda
VI	**Basic Villages**	Ballarpur (5)	Bamhani	Ballarpur (5)	Asegaon
			Manora		Dudholi
			Nandgaon Pode		Itoli Chak No.2.
			Palasgaon		Kinhi
			Shivanichor		Shivanichor
		Bhadravati (14)	Ashta	Bhadravati (38)	Ashti M.
			Belgaon		Ashti Tukum
			Charur Dharapure		Belgaon
			Chora		Chak Khapari
			Deulwada		Chak Tirawanja
			Ghutakala Raiyyatwari		Chandan Kheda Makta
			Jananiwali		Charur Dharapure
			Kiloni		Chek Baranj
			Kondha		Chicholi
			Majari		Chiparala
			Mangli Raiyyatwari		Deulwada
			Moharli		Dhanoli
			Patala		Dongargaon Kharda
			Pirli		Ghot Nimbala
		Bhadravati (3)	Sagara		Ghutakala Raiyyatwari
			Shegaon Kh.		Gothala
			Waigaon Tukum		Gowardip
		Brahmapuri (17)	Awalgaon		Gunjala
			Bhuj Tukum		Hardala
			Ekara		Khutwanda Raiyyatwari
			Halda		Kiloni
			Kaleta		Mangli Raiyyatwari
			Khandala		Moharli
			Maldongri		Mursa
			Mendaki		Pachagaon Tukum
			Nanhori		Palasgaon
			Nilaj		Patala
			Pimpalgaon		Pirli
			Rui		Rampuri Raiyyatwari
			Talodi Kh		Sawala Shirpuralias Wadegaon
			Torgaon Bk.		Sawari
			Udapur		Shegaon Kh.
			Wandra		Sindgavhan
			Waygaon		Tamasi Rt.

		Chandrapur (11)	Dewada		Telawasa
			Dhanora		Viloda
			Marada		Waigaon Raiyyatwari
			Nagala		Waigaon Tukum
			Padoli	Brahmapuri (71)	Ahernavargaon
			Payali Bhatali		Belgaon Kh
			Sakharwahi		Bhuj Tukum
			Shengaon		Bodegaon
			Sidur		Bodra
			Tadali		Borgaon
			Yerur		Budhewada
		Chimur (11)	Ambeneri		Chak Ballarpur
			Ambodi		Chak Bothali
			Bothali		Chak Kosambi Rith
			Hirapur		Chandali
			Jambhul Ghat		Chandgaon
			Khambada		Chaugaon
			Kolari		Chicholi Bk
			Motegaon		Dhanoli Tukum
			Pimpalneri		Dighori
			Sathgaon		Ekara
			Wadasi		Gawarla Chak
		Gondpipri (8)	Aksapur		Halda
			Bhangram Talodhi		Jugnala
			Chak Darur		Kalamgaon
			Dhaba		Kaleta
			Lathi		Kanhalgaon
			Vithalwada		Katali Chak
			Wadholi		Khamb Talodhi
			Wedgaon		Khambada Rith
		Korpana (14)	Antargaon Bk.		Khandala
			Bakhardi		Kharkada
			Bibi		Kudesawali
			Chandur		Maldongri
			Kumbhezari (N.V.)		Mangli
			Lakhamapur		Manikpur Rith
			Mandawa		Marar Mendha
			Matha		Mui
			Nandgaon		Murpar
			Naranda		Nandgaon Jani
			Teka Mandwa		Navegaon Kh
			Upparwahi		Navegaon Makta
			Wansadi		Nilaj
			Yergavhan		Nimgaon
		Mul (11)	Bhejgaon		Padmapur Chak
			Chikhli		Padmapur Tukum
			Chimadha		Palasgaon Makta
			Chiroli		Panchagaon

			Dongargaon		Paradgaon
			Gadisurla		Parsodi
			Junasurla		Parsodi Jani
			Kelzar		Powanpar
			Nandgaon		Rampuri
			Rajgad		Ranbothali
			Sushi Dabgaon		Ranmochan
		Nagbhir (1)	Paharni		Ratnapur Rith
		Pombhurna (5)	Dewada Kh		Rudrapur Rith
			Dongar Haldi Mal		Rui
			Ghatkul		Saigaon Tukum
			Nawegaon More		Shivsagar Tukum
			Umari Potdar		Surbodi
		Rajura (14)	Chanakha		Talodi Kh
			Chunala		Tapal
			Gowari		Tekari Rith
			Lakkadkot		Telandongari
			Nagrala		Torgaon Bk.
			Nandappa		Torgaon Kh.
			Pachgaon		Tulan Chak
			Pellora		Tulan Mendha
			Shengaon		Tumdi Mendha
			Sindi		Uchali
			Sonapur		Uchali Chak
			Subai		Udapur
			Vihirgaon Bk.		Wandra
			Wirur Station		Waygaon
		Sawali (9)	Bothali	Chandrapur (37)	Ajayapur Raiyyatwari
			Haramba		Borda Indarpawar
			Jibgaon		Chak Borda
			Kapsi		Chak Nimbala
			Keroda		Chak Pimpal Khut
			Mokhala		Chandsurla
			Samada Bk.		Chandur
			Vyahad Bk.		Chargaon
			Vyahad Kh.		Chichala
		Sindewahi (4)	Maregaon Tuk.		Chorala
			Palasgaon Jat		Chorgaon
			Pendhari		Datala
			Saradpar		Dewada
		Warora (13)	Bhatala		Dhanora
			Chargaon Bk.		Doni
			Charurkhati		Durgapur
			Chikani		Junona Rayyatwari
			Dahegaon		Khutala
			Dongargaon		Kitali

			Khambada		Mamala Mokasa
			Kharwad		Marada
			Kosarsar		Nagala
			Nagari		Nimbala
			Salori		Padamapur Raiyyatwari
			Soit		Padoli
			Tembhurda		Pahami
					Payali Bhatali
					Pipri
					Ranvendali
					Shengaon
					Sidur
					Temta
					Umrilalman
					Urjanagar (N.V)
					Warwat
					Yerur
					Zari
				Chimur (22)	Adegaon
					Adegaon
					Amarpuri
					Ambeneri
					Bothali
					Doma
					Gondeda
					Hirapur
					Kajalsar
					Kaparla Bk.
					Khambada
					Lawari Bk
					Masal Bk
					Navatala
					Palasgaon
					Pimpalneri
					Puyardand
					Sathgaon
					Sawargaon
					Shedegaon
					Siraspur
					Wadasi
				Gondpipri (5)	Chak Darur
					Hiwara
					Karanji
					Kharal Peth
					Lathi
				Korpana (19)	Awalpur
					Bakhardi
					Bibi
					Chincholi
					Dhonda Arjuni

				Jiwati
				Lakhamapur
				Matha
				Nandgaon
				Pandharwani(Dewada)
				Pardi
				Piparda
				Rupapeth
				Sonurli (Wansadi)
				Teka Mandwa
				Upparwahi
				Virur(Gadegaon)
				Wansadi
				Yergavhan
			Mul (6)	Bhejgaon
				Chikhli
				Chimadha
				Fiskuti
				Maroda
				Sushi Dabgaon
			Nagbhir (27)	Adyal Mendha
				Balapur Bk
				Chikhal Parsodi
				Chindhi Raiyyatwari
				Dongargaon Bk
				Govindpur
				Jankapur
				Kanhalgaon
				Kanpa
				Khadki
				Kirmiti
				Kotalpar
				Kotgaon
				Mangali
				Mindala
				Mohadi Mokasa
				Moushi
				Moushi Chak
				Navegaon Pandav
				Paharni
				Sawangi Badge
				Sawargaon
				Sonapur
				Sonuli
				Wadhona
				Wasala Makta
				Zadbori
			Pombhurna (4)	Chak Chintaldhaba No.1
				Dongar Haldi Mal

				Ghatkul
				Umari Potdar
			Rajura (17)	Bhavi
				Chanakha
				Chincholi Bk.
				Chunala
				Dewada
				Kadholi Bk.
				Lakkadkot
				Mangi
				Nagrala
				Nandappa
				Pachgaon
				Pandharpauni
				Satri
				Shengaon
				Sindi
				Sonapur
				Subai
			Sawali (9)	Chichbodi
				Haramba
				Jibgaon
				Kapsi
				Keroda
				Mokhala
				Nimgaon
				Samada Bk.
				Vyahad Kh.
			Sindewahi (11)	Gadbori
				Kalamgaon Tukum
				Kukadheti
				Maregaon Tuk.
				Mohali
				Nandgaon
				Petgaon
				Powanpar
				Saradpar
				Shivani
				Wasera
			Warora (9)	Chargaon Kh.
				Dahegaon
				Khambada
				Kharwad
				Sakhara Rajapur
				Salori
				Sawari
				Soit
				Waghnakh

10.9 Development of growth centres

Designation of hierarchy of centres aims to assess the equitable and efficient provision of services and facilities. Even so, neither the hierarchy itself nor the proposed range of services and facilities for each level of hierarchy should be regarded as more than guidelines and subject to amendments in the light of local circumstances and rate of growth.

(a) Regional Centre

Chandrapur town being the district and tehsil headquarter is already functioning as the regional centre and will continue to do so. Important administrative offices such as Collectorate and other Govt. offices are located here. Due to good communication links and important rail head, improved trading facilities have developed into a business centre for the district. It is also well linked and accessible from the 14 tehsil headquarters. It is expected that this town will continue to attract more and more commercial and industrial activities due to availability of necessary infrastructure. The development plans for the town has been prepared by the State Town Planning and Evaluation Department. It is expected that the future development of the town will be in a planned manner. Service provision and development of necessary infrastructure will be carried out by the respective agencies as suggested in the Master Plan. The district lacks higher order education facilities like Technical Colleges. It is therefore proposed that the technical institutes like polytechnics, veterinary colleges and basic training colleges for teachers may be set up in the town.

(b) Sub-Regional Centre:

The proposed Sub-Regional Centres of Ballarpur and Brahmapuri have a crucial role to play in the overall hierarchy of settlements. These intermediate towns have been designated to accommodate the future industrial activities and simultaneously provide necessary support to market towns vis-à-vis rural hinterlands. Presently Ballarpur town is acting as the satellite town of Chandrapur. Spillover activities as well as the new industrial estates are being located in these centres. Ballarpur town is prone to environmental pollution due to the location of paper mill and stoneware pipe manufacturing units in the centre of the town. Encroachment on the main arterial road is common. The Ballarpur Paper Mill of Thapar Group of Industries was established in 1952, which is located in the heart of the town. This industry uses bamboo and timber as raw material for paper pulp transported from the neighbouring district of Gadchiroli by road. The stockyards of bamboo and timber to be used in the paper industry are located all along the road within the town. Bad ordour emanating from the pulp processing unit of the industry can be felt all over the town which is some time quite nauseating and uncomfortable for those who are living in this town or passing through the town creating lot of environmental problem for the town. Besides the Paper Mill uses land adjacent to the forest along eastern side of the State High way for dumping the pulp waste, which may gradually encroach upon the forest land. Another heavily polluting industry is the stoneware pipes manufacturing unit located in the heart of the town. This industry uses coal, which emits lot of smoke through its low stack and pollutes the air and the surrounding areas. According to the Regional Pollution Control Board this unit has already been asked to shift to a new site away from the town. The Ballarpur town is situated on the western periphery of the Junana Reserve Forest and the State highway connecting this town with Chandrapur is passes through the forest. The fringe area of Chandrapur and Ballarpur towns has already encroached in the forestland as many unauthorized structures have come up along the road for residential and commercial purposes. This has led to large-scale deforestation. Barren and degraded forestland can be seen in this area. The forest department is not able to check this growth although lot of new teak wood plantation has been carried out in the degraded land. Unless these areas are protected more forestland is likely to be encroached upon and affected. It is therefore recommended that the activities that create environmental pollution and encroachment may be relocated on the designated site outside the town and accordingly

landuse plan may be revised. The centre of the town may be used only for commercial activities that are compatible with the surrounding landuse. The fringe area towards Chandrapur town needs to be properly planned to avoid any further encroachment on the forest land.

Brahmapuri town which is located 123 Km from Chandrapur along the Nagbhir-Wadsa State Highway has been proposed to be another Sub-Regional Centre serving the northern part of the district which is away from the district headquarter. At present it is serving as the centre for education and cultural activities and it has potentialities to attract more agro-based industries in the future. Being the tehsil headquarter, tehsil level administrative offices are also located in this town. It is well linked by road and railway with the surrounding tehsil headquarters and rural market centres. Master Plans for these two towns have been prepared. However, it is recommended that while revising the Master Plans of these towns, the service provisions and necessary infrastructure may be developed in accordance with the level of services required in the Sub-Regional Centre as given below:

- Industrial estates
- Improvement and widening of roads
- Whole sale market
- Shopping Centres
- Piped water supply
- Sanitation and Solid Waste Management.
- Preparation of Environmental Management Plan.

(c) Market Towns:

Keeping in view the existing level of agricultural development and surplus generated, the number of market towns have been restricted to 11. It is also assumed that the existing cropping pattern and the crop production cannot sustain more market towns for another 10 years. At present one market town in each tehsil will serve the purpose. While selecting the market towns preferences were given to the tehsil headquarters and settlements both rural and urban where APMC Mainyards are located. However, the Brahmapuri town, which has been designated as Sub-Regional Centre, will continue to act as market town for the tehsil since it has the entire necessary infrastructure like APMC Mainyard and other necessary facilities. Similarly, Ballarpur tehsil does not require any market town since Ballarpur Sub-Regional Centre and Chandrapur Regional Centre, which already has adequate infrastructure, will serve it. The market town of Gondpipri will also serve adjacent Pombhurna tehsil.

All these market towns are proposed to be linked with all Rural Growth Centres i.e. Rural Market Centres and Service Centres with good road network and communication system. It is also assumed that the existing Rural Market Centres having APMC principal yards will eventually grow into market towns depending upon their potentialities, strategic locations and provision of better infrastructure facilities. For developing these towns provision of good transportation, water supply and electricity is important. Development of Agro-Industrial Complexes such as food processing, cold storage and warehousing etc. should come up in the market towns to cater to the surrounding catchment area. The need for developing the market towns assumes greater importance in the fertile agricultural areas of the district to increase production in terms of large agricultural surplus.

There is need to initiate legislative measures for agricultural markets by (a) keeping a check on fraudulent practices in weighing and payments and other dealings, (b) by providing display and storage facilities and thus adding to the bargaining power of the farmer-seller, and by the very fact of providing centralized locations for marketing, where a large number

of traders would compete for the produce brought on the market and institutionalized credit facilities would develop, so that the farmer-seller would be less dependent on village money lenders and itinerant traders. This would help the farmers to get better price and distress sales would decrease. This eventually expands the marketed surplus of agriculture. Infrastructure requirement for regulated markets are (a) construction of new market yards, (2) development of feeder roads, (3) improvement of storage, (4) sale of inputs and consumer goods, (5) development of processing industries. As per the Agricultural Produce Market Act, Regulated Market Committee (RMC) has been constituted by notification. It also declares the market area of each Regulated Market Committee comprising of number of Gram Panchayats. Market Area of each Regulated Market Committee will have one principal yard and number of sub-yards in the centrally localised villages. In view of these provisions of the aforesaid Act, it is suggested that all the proposed Market Towns will have the principal yards of the Regulated Market Committees and the sub-yards will be located in the proposed Market Centres in the rural areas. Principal yards of each RMC should have the following amenities on an approximate 15-20 acres of land:

- Auction platforms (open).
- Auction platforms (covered).
- Godowns 400 tonnes capacity.
- Godowns 100 tonnes capacity.
- Godowns 50 tonnes capacity.
- Warehousing facilities.
- Cowsheds 20x60 feet.
- Farmers rest rooms.
- Kitchen sheds.
- Office building.
- Traders shops cum godown.
- Consumer article inputs.
- Banks.
- Seeds, fertilizer and pesticides distribution centre.
- Water supply with storage facility.
- Sanitation.
- National grid godown.
- Small-scale agro-produce processing units.
- Solid Waste Treatment Plant.

The existing market towns of Mul, Rajura, Bhadravati and Warora have requisite services like water supply, electricity and transport facility, APMC principal yard. These towns are also the tehsil headquarter. However, the newly proposed market towns which are presently rural need to be upgraded and the schemes identified for these towns are given below:

- Improvement of Roads,
- Water Supply,
- Solid Waste Disposal
- Shops and Vegetable Markets,
- Improvement of Existing APMC yards
- Vet Hospital
- Agro based industries e.g. Food processing, Rice Mills, Poha Mills, Oil Mills,

10.9.1 Development of Rural Hierarchy of Centres:

- Having determined an appropriate hierarchy of centres, and the existing services and facilities in each selected centre, recommendations for rural centre development and the priorities can be outlined. This enables programmes for each Five Year Plan period to be prepared. As a result, the issues concerned are:
  - Which service and facilities should be introduced into each selected centre;
  - The programming of these introduction; and
  - The rationale for the basis of the decision.
- The decision to introduce new facilities and services is based on a number of criteria, discussed below. It must be emphasized that there is no simple formula. Each decision will result from a number of considerations and in each case it will be a matter of judgment which criteria should carry greater weight.
- The services and facilities being considered are those whose provision can be determined by government action. The important concern will be education and health facilities and rural infrastructure. However, the private sector will also play an important role in the development of these centres and must be encouraged to support the selected hierarchy by directing investment to the designated settlements.

The major criteria to be considered include the following:

(i) Catchment Population:

Each service requires a certain size catchment population to support it, and the size of this population will vary from service to service. This is of particular concern with private sector enterprises where market demand is an essential requirement.

(ii) Accessibility:

Even where population is adequate, if distances to the centre are too great or access is difficult because of poor tracks, difficult terrain or rivers, a more frequent distribution of service centres may be required to ensure access to key facilities – e.g. primary schools.

(iii) Development potential:

Where population is expected to increase faster than the average rural growth rates, additional service centres need to be selected. This may occur where agricultural development can be extended with new areas opened up, or the introduction of a new road, which will encourage further population concentration.

(iv) Position in the hierarchy:

The selection position in the hierarchy provides a basis to programme government capital expenditure unless particular requirements occur such as:

- A severe existing shortfall in services and facilities: or
- An unexpected population increase.

The recommended services and facilities to provide an equitable distribution in the growth centres at six levels are listed below:

Table 10.5: Services in the proposed growth centres

Level	Facilities	Distance	Catchment Population
I Regional Centre	• District Civil Hospital • Veterinary Hospital • Specialised Hospitals and Educational institutions • District offices of the State • Commercial Banks • District Central Cooperative Bank • ST Division • Various Govt. & Semi Govt. Orgns. • Agricultural Produce Market Principal Yard • General Post Office • Higher Order Godown etc.		*Entire District*
II Sub-Regional Centre	• Rural Hospital • Primary Health Centre • Veterinary Hospital • Bus Depot and Workshop • Technical School, Colleges • Artificial Insemination Centre • APMC Sub-yard • Nationalised and Coop. Banks • Post and Telegraph Office • Specialised services • Govt. & Semi-Govt. Organisations • Middle Order Godowns		*North and South of the district*
III Market Town	• Hospital • Degree College • Municipal Dispensary • Veterinary dispensary-I • Artificial Insemination Centre • Telegraph Office • Cooperative and nationalised Banks • Middle Order Godown • APMC Principal yard • Police Station		*Each Tehsil*
IV Rural Market Centre	• Primary schools • Middle school • Secondary school • Primary Health Centres • Metalled road link to urban centre • Public transport connection bus (and in some cases-rail). • Post Office	*10-15 kms.*	

	• Electricity supply • Telephone service • Water supply • Bank • Cooperative society • Fair price shop • Regional market • Community centre • Police post. • Primary Health Centre • Veterinary dispensary • Artificial Insemination Centre • Cooperative and Nationalized Banks • Middle Order Godowns • APMC Sub-yard • Petrol station.		
V Rural Service Centre	• Pucca Road to Market Centre. • WBM vehicular road links to villages in catchment • Electricity supply • Water supply • Fair price shop • Community centre • Post Office • Secondary Schools. • P.H.Sub-Centre • Bus Station • Weekly Market • Bank (Branch) • Artificial Insemination Centre • Z.P.Ayurvedic Dispensary etc.	*Upto 5 kms.*	
VI Basic Village	• Primary and Middle School • Dispensary • Branch Post Office • Weekly Market • Regular Bus Stop • Coop. Bank • Veterinary Aid Centre etc.	*Within 2 kms.*	

These lists are guidelines to be applied to the local circumstances in each planning area based on the shortfalls in existing provision and the potential future requirements. Many of the services centre facilities will also be required in other villages, e.g. primary schools. The purpose of this list is not to limit their development elsewhere, but to ensure the first priority is to provide the service or facility in the selected centres.