CHAPTER – II

GEOGRAPHICAL BACKGROUND OF THE STUDY

AREA

Historical Background

No record is available to show the present name of Kalahandi. According to Lieutenant Eliot, the then Deputy Commissioner, Raipur (1856), it was previously known as Katond. In Nagpur side of the Maharashtra state this district was known as Khanonde, from which the Oriya name Kalahandi being derived. In the Maratha records, the word Karond was used invariably, but since 1905 when this territory was formed a part of Bengal Presidency, the name Kalahandi is commonly used.

According to popular belief of the local people, a powerful man at Rajputana named Kalahambir came to this part and ruled it for many years. After his name this part was called Kalahambir which in due course of time, corrupted into Kalahandi. The word Kalahandi literally mean, "Black Pot" or it may also mean "Pot of art".

Junagarh was the headquarter of Kalahandi. It was mentioned for the first time in the Dadhibaman Temple inscription, Junagarh (unpublished), which was issued by Maharaja Juga Sahi Deo from Kalahandi Nagar, his capital in the Yuga Era 4819 i.e. 1718 A. D. The modern Junagarh was known as Kalahandi Nagar in those days. The ex-state of Kalahandi was perhaps named after its headquarters town Kalahandi (modern Junagarh). In later period, the head quarters of the ex-state was
shifted to Bhawanipatna, though the name of ex-state remained unaltered.

History of the district as an administrative unit changes from time to time the district consist of two sub-divisions, viz, Kalahandi and Dharamgarh (District Reorganisation, 1993)*. Coincidentally the situation was same at the time of independence. Later on Nawapara part of the then Sambalpur district was merged with the district in first April, 1936 was again separated and formed another district with the same name during recent district re-organisation in 1993. During 1948 to 1993 various parts like Kashipur block of the then Koraput district, Sonepur and Patna (which was later formed the then Bolangir district), was added and separated in due course of time which is not worthwhile to discuss here in detail.

In the present administrative set up Kalahandi district consist of two sub-division viz Kalahandi and Dharamgarh, 13 Blocks, 195 Gram Panchayats and 2068 villages and 3 urban centre.

Physiography

The district of Kalahandi is located in the southwestern part of Orissa. It extends between 19 3'N to 20 22' N latitudes and 82 32'E to 83 47'E longitudes (see figure 2.1). It is bounded on the north by the district of Bolangir, and Raipur

* The district reorganization took place in Orissa in 1993. The then Kalahandi district was divided into two districts i.e. Kalahandi and Nawapara.
Madhya Pradesh). On the south it is bounded by the district of Nowarangpur and Rayagada and on the northeastern side bonded by Phulbani district. It extends over an area of 8,364 square kilometers.

Broadly the district has two physiographic regions. They are (1) the hilly tracts and (2) the plain areas.

(1) The Hilly Tracts

It commences about eight kilometers south east of Bhawanipatna. The mountain tract is called Dongarla, which covers a vast tract of 3,665 square kilometers on the eastern side of the district. It extends southwards to the Koraput district border. It also extends to the entire western part of Nawapara district which contains abroad plateau varying from 610 to 915 meters in height. Particularly in eastern and south eastern part height extends up to 1200 meters (see figure 2.2). This region is cut off from the plains below by a range of precipitous hills.

The principal hill ranges belongs to Eastern Ghats. These ranges are named at different points differently after the villages near their base. The highest peak Tangri Dongar (1,229m.) is situated in Thuamul Rampur police station. The other notable peaks are Kunkot Parbat (852m.) in Kegaon Police Station.

(2) Plateaus and Plains

The plains cover Bhawanipatna block and then move westward through Junagarh and Dharamgarh and then further up to the boundary of the district.

The Valley of Utei and Tel form the plain country of Bhawanipatna and Dharamgarh sub-division, which is undulating. The general elevation of this tract is
Figure 2.3

KALAHANDI DISTRICT
SLOPES

SLOPE
(in metres per km)

- Less than 10
- 10 - 20
- 20 - 80
240 metres above the sea level. The plain area stretches away from the river Tel to the south of about 65 kms. and in the east it includes most part of Madanpur Rampur Police Station. From Bhawanipatna, the plain country sweeps round on the west through Junagarh and runs southwards to the Jeypore border forming a regular valley between the upland of the dongarla and the high hills of the Rayagada, Nowrangpur and Nawapara district.

Slope

As mentioned in the physiography, the entire district is full of undulating slope (see figure 2.3). If the entire district is divided in terms of slope then two distinct categories emerges. The first one is below 20 meters (mainly plain areas) and the other one is more than 20 meters (hilly and plateau areas).

Geology

The different litho-stratigraphic units met within the district are basement gneises, chamockite and khotdalite suits of rocks, Leptynite anorthosite, granitoid gneiss, vein quartz, Pegmatite metadlerite, nepheline and horublends syline, subarkosic quartzite, shale quartzite, laterite soil and alluvium. Geology or rock groups of Kalahandi district can be broadly classified in to six groups (see figure 2.4). These six groups are as follows:

(a) **Basement Gneiss**

This rock type is exposed in the western part of the district between the plateau i.e. 250m. and 1000m. It is pink and grey in colour, gneisose in texture and composed of mineral like feldspar, biotite, hornblends and pyroxene. Bands of
amphibololite, mica schists and quartzite occur in this rock with cuddapah slates indicating contact metamorphism. Nest of Khariar, shale and conglomerates with overlaps on to gneiss which is the basement of cuddapah garnet developed along its contact with Khondalite.

b) Khondalite Group

The Khondalite group of rocks consists of graphite, siliminite and quartzite. They are interbanded with Charnockite and gneiss. The Khondalite group of rocks widely exposed from the 910m. hill towards south-east and form the western margin of the eastern ghats. They occur as bands within the gneisses and charnockites. They are usually foliated and consists of minerals, quartz, garnet, siliminite and graphite. The trend of the foliation of these rocks is north-north eastern to south-south western.

c) Charnockite Groups

This group of rock is well exposed near Bhawanipatna, Dharamgarh, Mahulpatna and Ranimat. The members of this group are hypersthene bearing rocks of acid and basic composition. They vary in colour from brownish black to grey, usually coarse grained showing frequent occurrence of porphyric feldspar and garnet. Lenses and bands of pyroxene granulite occur in the Charnockite suite of rocks.

d) Granite and Granitoid Gneis

These rocks are intrusive into Khondalite and Charnockite suites of rocks. In
the vicinity of Bhawanipatna they are course grained gneisose and contain large grains of pink feldspar and broken fragments of red garnet distributed within a dark coloured ground mass. At places these rocks have been crushed, put verised due to intense pressure resulting into mylonite. These gneisses varies from course grained banded gneisses and injection gneisses to extremely massive granites and c
e) **Cuddapah or Vindhya**

Uncomfortably overlying the rocks of the eastern ghat groups, there is a less deformed and metamorphosed rock sequence with characteristic argillaceous, arnecious and calcareous member of the platform faces. Here they are considered to represent the cuddapah although there are possibilities of their being co-related to the Vindhayan. The boundaries of these rocks with the other rock units of the area are usually marked by surbokosic quartzite, purple shale and other quartzite. These occur as detached and discontinuous outcrops. They are exposed between Amhani and Khariar Plateau almost following Orissa and Madhya Pradesh boundary.

f) **Gondwana Group**

Along the Kalahandi and Bolangir boundary, confined to southern bank of the Tel river, occurs small and detached outcrops of gritty and pebbly sandstone lithologically similar to the rocks of the Talcher group of Gondwana sequence. The sandstone is unfossiliferous, coarse grained ands contain pebble of gneiss.

**Drainage**

The Tel and Indravati, which form tributaries of large rivers, like the Mahanadi and Godavari may be mentioned among the principal rivers of Kalahandi. Besides, the Tel receives a large number of affluent in the district (see figure 2.5).
Most of the hill streams of the district are perennial. The rivers in the open country seldom carry a large flow of water in the hot weather. The Tel, Sagada, Hati, Ret and Utei are almost reduced to tiny streams in their lower reaches from February to June. On the other hand, the Raul throughout its whole length, most of which lies inside the forest holds a fair flow of water found even in the month of May. The sagada, Ret, Indravati, Bada Nala and many others carry a strong stream of perennial water in the upper and middle reaches and only loose it in their sandy beds when they descend to the plain.

These rivers are scarcely subjected to high floods. The Hati occasionally overtops its low banks and spreads out into the surrounding plains and generally cause formation of sand deposits. The Tel also sometimes deposit sand on the fertile agricultural land along its course. These rivers are scarcely navigable as they dry up in the plain country during the summer.

a) The Tel

The Tel is the longest and most important river in the district. Rising in the north of Nowarangpur subdivision, it enters Kalahandi district a few kilometre west of Dharamgarh and flow through an alluvial tract. It instantly takes a more northern direction after its junction with Sagada, untill it meets Udanti on its left bank. About eight kilometres from this point of confluence, it runs almost north-east and forms the boundary between Bolangir and this district for a fairly long distance and enters Bolangir north of Kumbharpa. The bed of this river is sandy. It is more observable from breadth than depth and its water though decreases very much during the hot
season does not entirely dry up. The important feeder in its right bank are the Moter, Hati, Sagada, BuketRet, Utei and Raul.

b) **Indravati**

Unlike other tributaries of the Tel on its right, all following north, the Indravati rising about two kilometres above the village Thuamal in Thumul-Rampur range at an altitude of 915m. quickly gather volume and even in February roars and rushes with its copious flow down its hilly southern course in seething cataract in its wild rush to the plains. Its catchment area is fairly well wooded. Running for a short distance on the south western border of the district it receives Golagad Nala and then flows in a very winding course across the Koraput district.

c) **Udanti**

The Udanti or Udet takes its origin in the hills of Madhya Pradesh and enters the district 3 km to the west of the village Chitrama in the Sinapaii Police Station and flowing in an almost easterly direction ultimately join Tel about 10 kms from the village Borda.

**Other Water Bodies**

Tanks occur in almost every village. Apart from the private tanks a large number of tanks are in the possession of the Government. These tank vary from less than a hectare to about 40 hectares in area. They are generally classified as Kata, Sagar, Bandh and Sara. Dharamgarh Tehsils seems to have largest number of tanks
compared to other tehsils. Purusotam, Suratarangini and Ram sagar are the important tanks located in the head quarters town of Bhawanipatna.

The district has a number of springs and waterfalls. Important waterfall in the district is Phurli Jharan. It is situated in Bhawanipatna block and 13 kilometers away from Bhawanipatna town by road. It is a waterfall about 60 feet high surrounded evergreen forest of Karlapat reserved forest.

Climate

The climate of this district which is the north-eastern corner of the Deccan Plateau is in many respect similar to that of the main Deccan Plateau. The year may be divided into four seasons; a) the hot season from March to May is followed by (b) south-west monsoon season from June to September (c) post-monsoon season from October to November and (d) the cold season from December to February.

(a) Temperature

The hot season commences by about the beginning of March when temperature begins to rise. May is the hottest month when the mean daily minimum temperature is about 26 degree C (see figure 2.6). The individual days maximum temperature may reach 47 Degree C. With the onset of the south-west monsoon by about third week of June, temperature drops appreciably and throughout the monsoon season, the weather is generally cool. December is the coldest month with the mean daily at about 13 Degree C. The highest temperature ever recorded is 48.5 Degree C on the 24th of January 1973 at the Bhawanipatna meteorological station.

(b) Rainfall

Records of rainfall are available for sufficiently long period. The details of
rainfall for the last ten years are given in the table (refer Table No. 2.1). The average annual rainfall in the district is 1378.2 m.m.. The variation in annual rainfall from year to year is not large except in the year 1988 (the lowest rainfall during the last fifteen years). The highest annual rainfall occurred in 1990 when it amounted to 2214 m.m., which is 160% of the normal rainfall. 1988 was the only year during this period when the rainfall is below 80 percent (70.97%). On an average there are 65 rainy days (i.e. days with rainfall of 2.5 m.m. or more).

Table No.2.1
Showing Normal and Actual Rainfall in Kalahandi District 1985-95

<table>
<thead>
<tr>
<th>Year</th>
<th>Normal rainfall (In mm.)</th>
<th>Actual Rainfall (In mm.)</th>
<th>Deviation (In mm.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>1378.2</td>
<td>1755.2</td>
<td>(+) 377.0</td>
</tr>
<tr>
<td>1986</td>
<td>1378.2</td>
<td>1362.0</td>
<td>(-) 16.2</td>
</tr>
<tr>
<td>1987</td>
<td>1378.2</td>
<td>1048.7</td>
<td>(-) 329.5</td>
</tr>
<tr>
<td>1988</td>
<td>1378.2</td>
<td>978.0</td>
<td>(-) 400.2</td>
</tr>
<tr>
<td>1989</td>
<td>1378.2</td>
<td>1072.0</td>
<td>(-) 306.0</td>
</tr>
<tr>
<td>1990</td>
<td>1378.2</td>
<td>2214.0</td>
<td>(+) 836.0</td>
</tr>
<tr>
<td>1991</td>
<td>1378.2</td>
<td>1516.0</td>
<td>(+) 137.8</td>
</tr>
<tr>
<td>1992</td>
<td>1378.2</td>
<td>1716.4</td>
<td>(+) 348.2</td>
</tr>
<tr>
<td>1993</td>
<td>1378.2</td>
<td>1553.8</td>
<td>(+) 175.6</td>
</tr>
<tr>
<td>1994</td>
<td>1378.2</td>
<td>2045.3</td>
<td>(+) 667.1</td>
</tr>
<tr>
<td>1995</td>
<td>1378.2</td>
<td>1580.4</td>
<td>(+) 202.2</td>
</tr>
</tbody>
</table>

Source: District Meteorological Observation Centre, Bhawanipatna, Kalahandi
(c) **Humidity**

The relative humidity is high during the south-west monsoon and post-monsoon month. The air becomes gradually drier thereafter. The summer is the driest part of the year with the relative humidity particularly in the afternoon often going down below 30 Degree C.

(c) **Winds**

The winds are generally light to moderate with some increase in force during the summer and monsoon seasons. The winds are mostly from the directions between south-west and north-west in the monsoon seasons. In the post-monsoon and cold-seasons, they blow from the directions between west and north-west. In the summer months, the winds are variable in direction.

(d) **Special Weather Phenomena**

The storms and depressions originating in the Bay of Bengal affect the district in the monsoon season and in October causing high winds and widespread heavy rain. Thunderstorms, mostly in the afternoons occur in the summer month in October. Rain during the south-west monsoon season is also often associated with thunder.

Evapo-transpiration and evaporation of the district is calculated for each and every month of the year which are presented in the following table. (Refer Table No. 2.2). It shows maximum evaporation takes place in the month of June which is one of the hottest months and minimum in the month of December which is the coldest month.
KALAHANDI DISTRICT
RAINFALL & TEMPERATURE
(Recorded at Bhawanipatna, the Distt. Hd. Qr.)

Figure 2.7
Table No. 2.2
Monthwise Estimated Evaporation and Evapo-Transpiration in the District of Kalahandi

<table>
<thead>
<tr>
<th>Month</th>
<th>Estimated Evaporation and Evapo-transpiration</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>05.62</td>
</tr>
<tr>
<td>February</td>
<td>09.51</td>
</tr>
<tr>
<td>March</td>
<td>18.70</td>
</tr>
<tr>
<td>April</td>
<td>18.10</td>
</tr>
<tr>
<td>May</td>
<td>19.84</td>
</tr>
<tr>
<td>June</td>
<td>23.74</td>
</tr>
<tr>
<td>July</td>
<td>13.66</td>
</tr>
<tr>
<td>August</td>
<td>15.57</td>
</tr>
<tr>
<td>September</td>
<td>14.84</td>
</tr>
<tr>
<td>October</td>
<td>10.90</td>
</tr>
<tr>
<td>November</td>
<td>05.43</td>
</tr>
<tr>
<td>December</td>
<td>03.60</td>
</tr>
</tbody>
</table>

Source: District Meteorological Observation Centre, Bhawanipatna, Kalahandi

Soil

No proper soil survey has been undertaken in the districts. The district has mainly the following three types of soil. These are (a) red laterite soil (b) black soil and (c) sandy loamy soil. Except these three major soil, there are some patches of alluvial which is mostly sandy or sandy loam soil (see figure 2.8). The percentagewise distributions of these soils are as follows:
Table No. 2.3
Percentage wise Soil Distribution in Kalahandi District

<table>
<thead>
<tr>
<th>Types of Soil</th>
<th>Percentages (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Laterite Soil</td>
<td>45</td>
</tr>
<tr>
<td>Red and Yellow Soil</td>
<td>27</td>
</tr>
<tr>
<td>Black and Red and Black Soil</td>
<td>22</td>
</tr>
<tr>
<td>Alluvial Soil</td>
<td>06</td>
</tr>
</tbody>
</table>

Source: Department of Soil Conservation, Bhawanipatna, Kalahandi.

a) Red and Laterite Soil

This soil is extensively found all over the district. It covers 45% of the total Geographical area. It is deficient in Phosphorus and Nitrogen. So from agricultural point of view this soil is least productive.

b) Black and Red and Black Soil

This soil covers 22% area of the district. It is mostly found in Bhawanipatna, and Dharamgarh Tehsils. It is rich in Potassium and Magnesium but poor in Nitrogen and Phosphorous. It is best suited for the cultivation of paddy, cotton, chillies and tobacco and Rabi crops like pulses and wheat.

Soil Erosion

The problems of soil erosion is acute in the district particularly in the hilly tract due to undulating topography, intense rainfall and harmful practice of shifting cultivation prevalent in the hilly tracts. Rapid loss of soils through serious erosion creates numerous rills and gullies and wasteland devoid of any vegetation which posses serious problems for the entire area. Hence the need for soil conservation measures is felt all over the uplands, on the hills, in the degraded forests and the degenerated grazing grounds etc.

The state governments have taken a number of anti-erosion measures, such as contour bonding, leveling, gully control, conservation farming and plantation of economic species etc. The uncultivable wastelands which are the major foci of soil erosion are being put under miscellaneous fruit tree plantation with species like cashew nut, mango, jackfruit and tamarind etc. Sisal plantation has been undertaken on
Figure 2.8

SOIL TYPES

- Entisols
- Deep Black
- Medium Black
- Inceptisols
- Red sandy Loamy
- Red Earth
- Histosols

KALAHANDI DISTRICT
SOILS

MADHYA PRADESH
a large scale to check soil erosion. Coffee plantations in Thuamul-Rampur areas has been under taken as an anti-erosion measure. The soil conservation departments has also undertaken land reclamation and land development work in the lands allotted to the landless persons in this area.

**Vegetation**

The geology, topography, climate and the soil all have a close bearing on the nature of vegetation. Above all mans influence on the flora is no less important. The one time densely wooded tracts on the high hills of Kalahandi is reduced to mere bamboo and dry mixed scrub in no time through denudation brought about by shifting cultivation. On the basis of altitude, the flora is divided under five regional types

1) **The outer slope of plateau (330-650 Metres)**

The forest found on the outer slope of the plateau is essentially a dry mixed deciduous forest. Chelinthes Tenuifolia is the common form at this altitude. This type of mixed forest changes to Sal.

2) **Open valley of main plateau (680-1000 Metre):**

These valleys are cultivated but in almost all area a stream with trees flows down the centre of each valley. Solanum Porvum is remarkably common on the highlands of Mahulipatna. The Mahua tree (Madhuca Indica) is absent on the southern plateau in ThaumulRampur. Xyllia ,Xylocarpa is most abundant in the north and west in Karlapat. ThuamulRampur and Mahulpatna and on the Sumitjhenka hill(1200m),Cosmas Cudatus and Bidens Pilosa are two weeds introduced on the following field after shifting cultivation.

3) **The Ravines (800 to 1100M):**

The moist evergreen types of vegetation ,they bes\lar does not extend for on either side of the stream.

4) **Upper slopes of higher hills:**

Covered with a moist type of vegetation, constant felling and burning for shifting cultivation leaves the area denuded of evergreen species and the vegetation assumes a xeropusllaces aspect. A typical hill Sal is seen in Goyal Khos.

5) **High Plateau (1100 to 1200m)**

Karlapat and Jerka hills are wooded with salt at 1300mm. Kendu, Babus, Custard apple, Neem, Nagphani, Dharui are common trees in this