CHAPTER-1

GEOGRAPHICAL BACKGROUND

PHYSICAL SETTING :

The physical setting presents a platform for the human activities. The influence of physical environment upon the nature and distribution of human activities is a special field to study in geography. Since its components, viz. the physiography, climate, soil, water etc. affect human activities, so the study of these elements in respect of the area under study becomes essential for developmental work and planning purposes.

LOCATION AND EXTENT :

The Belthra Road Tahsil, lying in the almost northern portion of Ballia district in Eastern Uttar Pradesh. It extends between 25°52'30" to 26°11'N latitude and 83°35' to 83°55'10"E longitude in the middle Ganga plain covering an area of 365.47 Km². It is bounded on the north by Deoria district, by Mau district in the west, In the south it is bounded by Mau district and Rasra Tahsil of Ballia district. In the East it is bounded by Sikandarpur Tahsil of Ballia district. Its maximum length from north to south is 23 Km., while its width
TAHSIL BELTHRA ROAD

LOCATION, BOUNDARIES AND EXTENT

STUDY AREA

FIG. NO. 1.1
approximately is 26 Km. from east to west.

Administratively the Belthra Road Tahsil comprises of two blocks i.e. Siar block and Nagra blocks and one Urban centres in Siar block i.e. Siar town. Siar blocks include 15 nyaypanchayats whereas Nagra blocks consists of 10 nyaypanchayats. The other nyaypanchayats of Nagra block are included in the Rasra Tahsil so such nyaypanchayats do not come in our study area.

GEOLOGY:

The geological formation of Belthra Road Tahsil is composed of alluvial deposits. The younger alluvial soil exists along the river GHAGHARA and the older alluvial deposits with Kankar are prevalent in the Bhangar Zone (Burrad, S. 1916. P. 47) As we move away from the river Ghaghra, Younger alluvial deposit i.e. Khadar lands decreases and the older alluvial deposit i.e. Bhangar Zone increases. During the pleistocene to such recent, alluvial deposits of the Indo-Gangetic system have completely surrounded the old land surface to the depth of over 5000 feet, entirely burying all the past geological formations.

Every where in this gangetic plain, the alluvium consists of interbedded deposits of sand, clay and gravels. The thickness of the alluvial sediments varies from place to place. According to Oldhæm it is between 4000-6000m deep. The recent finding of Geological
survey of India show's that the alluvial sediments are found in 4000M. thickness from the land surface and 3050 metre thickness from Sea-level. (Oldham, L.D. 1917, P. 86)

**PHYSIOGRAPHIC DIVISION**:

On the basis of minor differences in relief and geology the area can be divided into three physiographic divisions. These are:

a) Khadar

b) Bhangar and

c) Central lowlands

a) Khadar Lands:

This regions includes the area along the Ghaghara River like Haldirampur, Belthra Bazar, Karimganj, Kakraso, Koria, Baijnath, Turtipar, Khaira Khas, Majhwalia, Majhowa, Bahorwa, Ubhaon, Indauli etc. These are lowlands and their slope is from north west to south east. This region is often affected by floods during rainy season. Around 25 percent of the area comes under this region.

b) Bhangar Lands:

Rest of the 70 percent of the area comes under this region. They are uplands and their slope is from northwest to south-east. This
region is less frequently affected with floods. This region includes many Tals, important are sukhal Tal, Tulsi Tal etc.

c) Central Low lands:

This region lies between village Piprauli in the west and Haldirampur in the east, Ghaghra river in north and Bhanptur in south. Previously Ghaghra river flow through this region but now the path of river is to the north of this region. Some remnants of this river in form of Tals can be seen. During rainy season this region suffer's from water-logging. Around 5 percent of Belthra Road Tahsil comes under this region.

WATER RESOURCES:

Of all the earth resources non is more fundamental to life than water. The properties of water in its three physical states make it by far the most useful of all compounds. We can breath it, drink it, bath in it, travel on it, see beauty in its different forms. It is simultaneously a raw material, source of power, waste disposal agent, solvent, medium for heat transfer or coolent as the needs of modern technology may require. Its availability at different times and places is a function of weather and climate. The restless atmosphere is the most active agent in the constant redistribution of water on the earth surface. Water is thus most fundamental, most universal and most versatile of all resources. It is the natures greatest gift to mankind and
its purity, adequacy and availability symbolizes the life styles of modern human societies. (Singh, S.P., 1977)

**DRAINAGE SYSTEM:**

The drainage lines affect the topography of the plain. They also govern the human occupancy. River cause devastation of life and property, floods and changes in their courses. The Belthra Road Tahsil can be divided into two drainage systems:

a) Ghaghra River system and

b) Tals and Drains

a) Ghaghra River system:

In Belthra Road Tahsil Ghaghra river exists from Arazi Gulaura to Haldi Rampur from Arazi Gulaura to Belthra Bazar the width of Ghaghra river is almost constant. But from the Belthra Bazar to Haldirampur the width increases and the level of river-bed is risen and so this area play's an active part in floods.

b) Tals and Drains:

The important drains which also service as irrigational purposes are chanda Nala drain, Koylimohan Tal drain, Sumraulia drain, Gauri Tal drain, Farhi drain, Sukhail Tal etc. Some important
are discussed below-

**Chand Nala drain:**

It originates from Suraj Kund and drains to Koylimohan Tal of Siar block. The length of the drain is 11 Km., and discharge capacity of water is 7.40 cusec which serves the area of 1416 hectares.

**Koylimohan Tal drain:**

The length of the drain is 3.20 Km. and discharge capacity of water is 6.48 cusec and the area irrigated are 1274.8 hectares. This drain originates from koylimohan drain and drains to Ghaghra river, in Siar block.

**Sumrail drain:**

This drain originates from Sumraila drain and drains to Koylimohan Tal of Siar block. The length of this drain is 6.80 Km. and it serves 845.8 hectares of land.

**Gauri Tal drain:**

This drain originates from Gauri Tal drain and falls to Ghaghra river in the Siar block. The length of this drain is 5.20 Km. and 231.9 hectares of area are irrigated.
CLIMATIC CHARACTERISTICS:

The study region lies in the northern interior of subtropical climatic belt but the monsoon with all its rhythm & extremes, reigns supreme and combs intricately almost every detail of the occupancy pattern and socio-economic development. The rhythm of temperature is attuned to that of the middle Ganga valley monsoonal regime and is expressed in hot summer. Thus to understand better the year may be divided in three seasons:

1) The rainy season

2) The cold season, and

3) The hot season.

Cloud burst of the south-west monsoon, starts the rainy season. The regular monsoon starts in the third week of June with sudden rise of relative humidity from 52 percent to 68 percent and fall of temperature from daily range of 7.9°C to 5.6°C and sudden reversal of wind direction from north-westerly to south easterly. More than 85 percent of the rainfall occurs during this period. By the end of September on first week of October, monsoon generally starts retreating.

The cold season starts from November. Both the temperature and relative humidity fall and easterly winds are replaced
TAHSIL BELTHRA ROAD

ELEMENTS OF CLIMATE

TEMPERATURE (IN DEGREE CENTIGRADE)

MAX TEMPERATURE

AVG TEMPERATURE

MIN TEMPERATURE

MONTH

RELATIVE HUMIDITY (IN PERCENT)

FIG. NO. 1.3
by the dry north-westerly winds. January is the typical cold month which has a minimum temperature 5.5°C.

The hot season starts by the end of February when temperature gradually starts to increase. Generally the typical hot weather season occurs between mid-April and before mid-June and is characterized by hot sun over the long days with hot westerly wind locally called 'loo' which may be occasionally accompanied with dust-storms or thunder-storms.

**TEMPERATURE:**

The mean annual temperature of the area is 25.14°C, but the highest rise in mean monthly temperature is during the months of May and June (31.9 and 33.85 respectively). In these months, continental air masses are frequently prevalent over the study area. Therefore, the scorching heat of the Sun, with fast blowing hot westerly winds which is common feature of the hot summer months becomes unbearable. The minimum mean temperature in winter season is around 16.05°C.
### TABLE 1.1

**TEMPERATURE OF BELTHRA ROAD TAHSIL IN 2001**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of month</th>
<th>Maximum(°C)</th>
<th>Minimum(°C)</th>
<th>Average(°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>January</td>
<td>26.6</td>
<td>5.5</td>
<td>16.05</td>
</tr>
<tr>
<td>2.</td>
<td>February</td>
<td>32.8</td>
<td>6.00</td>
<td>19.4</td>
</tr>
<tr>
<td>3.</td>
<td>March</td>
<td>34.7</td>
<td>11.6</td>
<td>23.15</td>
</tr>
<tr>
<td>4.</td>
<td>April</td>
<td>39.9</td>
<td>13.8</td>
<td>26.85</td>
</tr>
<tr>
<td>5.</td>
<td>May</td>
<td>46.0</td>
<td>17.8</td>
<td>31.90</td>
</tr>
<tr>
<td>6.</td>
<td>June</td>
<td>47.7</td>
<td>20.0</td>
<td>33.85</td>
</tr>
<tr>
<td>7.</td>
<td>July</td>
<td>39.6</td>
<td>20.3</td>
<td>29.95</td>
</tr>
<tr>
<td>8.</td>
<td>August</td>
<td>36.5</td>
<td>21.7</td>
<td>29.1</td>
</tr>
<tr>
<td>9.</td>
<td>September</td>
<td>34.6</td>
<td>20.0</td>
<td>27.3</td>
</tr>
<tr>
<td>10.</td>
<td>October</td>
<td>34.5</td>
<td>15.7</td>
<td>25.1</td>
</tr>
<tr>
<td>11.</td>
<td>November</td>
<td>33.7</td>
<td>8.6</td>
<td>21.15</td>
</tr>
<tr>
<td>12.</td>
<td>December</td>
<td>27.8</td>
<td>8.00</td>
<td>17.1</td>
</tr>
</tbody>
</table>

*Source - Tahsil Mukhyalaya Belthra Road Tahsil*

**PRESSURE:**

The coldest months of the December and January experience an average atmospheric pressure of about 994mb. During November (992mb) and February (991 mb) less intensive pressure conditions prevail. The trough of low pressure seems to be dominant during the hot summer months and as a result, the area suffers from
low atmospheric pressure. So the low pressure is observed in the months of June (976 mb) and July (976mb)

**WIND DIRECTION AND VELOCITY:**

During the cold seasons westerly and northwesterly winds are common, but in summer rainy season these winds are replaced by the easterly or south-easterly winds. The greater part of the year enjoys almost gentle to moderate winds. In the summer, hot season winds blow at faster rate, sometimes 30-40Km./h, locally called 'loo' which occur generally in the afternoon. Usually local in incidence, and temporary in character, dust-storm know as 'Andhi', and thunderstorms are often associated with depressions. When there is absence of sufficient moisture in the atmosphere, a dust-storm takes place but the occurrence of thunder-storms takes place when there is enough moisture in the air.

**RELATIVE HUMIDITY:**

Generally, the rainy months experience the highest relative humidity in the year. It is highest in the month of August and September (87 Percent). In the month of October and November the relative humidity is as high as 75 and 76 respectively. Due to the north-westerly disturbances, the humidity is again high in the months, of December
(82 percent). Lowest humidity is marked in the month of April, (54 percent)

**TABLE 1.2**

**RELATIVE HUMIDITY OF BELTHRA ROAD**

**TAHSIL IN 2001**

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Name of months</th>
<th>Relative Humidity (%age)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>January</td>
<td>75</td>
</tr>
<tr>
<td>2.</td>
<td>February</td>
<td>68</td>
</tr>
<tr>
<td>3.</td>
<td>March</td>
<td>61</td>
</tr>
<tr>
<td>4.</td>
<td>April</td>
<td>54</td>
</tr>
<tr>
<td>5.</td>
<td>May</td>
<td>58</td>
</tr>
<tr>
<td>6.</td>
<td>June</td>
<td>61</td>
</tr>
<tr>
<td>7.</td>
<td>July</td>
<td>82</td>
</tr>
<tr>
<td>8.</td>
<td>August</td>
<td>87</td>
</tr>
<tr>
<td>9.</td>
<td>September</td>
<td>87</td>
</tr>
<tr>
<td>10.</td>
<td>October</td>
<td>75</td>
</tr>
<tr>
<td>11.</td>
<td>November</td>
<td>76</td>
</tr>
<tr>
<td>12.</td>
<td>December</td>
<td>82</td>
</tr>
</tbody>
</table>

*Source - Tahsil Mukhyalaya Belthra Road.*
PRECIPITATION:

Rainfall, a basic input parameter in hydrological studies has been analyzed most intensively, but as an isolated event. Even there exist a single emphasis either on data network or on its temporal and seasonal behaviour (Ahlawat, Ritu and Thakur, B., 1999, P. 72)

Rainfall starts abruptly with the bursting of the summer monsoon usually by the third week of June. It is accompanied by a considerable rise in relative humidity, sudden fall of temperature and change of wind direction from north-west to east or south-east. The study area receives an average rainfall of about 15.02, 20.53, 20.30 and 19.46 cm in June, July, August and September respectively. More than 85 percent occurs during the rainy season from 15 June to September. July and August are the wettest months. Although the amount received in the month of January is small but it is very beneficial for the rabi crops.
TABLE 1.3

PRECIPITATION OF BELTHRA ROAD TAHSIL IN 2001

<table>
<thead>
<tr>
<th>Serials No.</th>
<th>Name of Months</th>
<th>Average Precipitation (cm.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>January</td>
<td>1.55</td>
</tr>
<tr>
<td>2.</td>
<td>February</td>
<td>1.81</td>
</tr>
<tr>
<td>3.</td>
<td>March</td>
<td>0.67</td>
</tr>
<tr>
<td>4.</td>
<td>April</td>
<td>0.64</td>
</tr>
<tr>
<td>5.</td>
<td>May</td>
<td>2.02</td>
</tr>
<tr>
<td>6.</td>
<td>June</td>
<td>15.02</td>
</tr>
<tr>
<td>7.</td>
<td>July</td>
<td>20.53</td>
</tr>
<tr>
<td>8.</td>
<td>August</td>
<td>20.30</td>
</tr>
<tr>
<td>9.</td>
<td>September</td>
<td>19.46</td>
</tr>
<tr>
<td>10.</td>
<td>October</td>
<td>8.15</td>
</tr>
<tr>
<td>11.</td>
<td>November</td>
<td>0.51</td>
</tr>
<tr>
<td>12.</td>
<td>December</td>
<td>0.45</td>
</tr>
</tbody>
</table>

*Source - Tahsil Mukhyayalay Belthra Road.*

FLOODS:

The peculiar nature of India's climate, dominated by monsoons, causes situation, where drought and floods may effect different pockets at the same time of the year. The main reasons for floods are listed below.
1. Heavy and concentrated rainfall leads to flood because monsoon rains come at a time when the summer season is well set and snow-fed rivers of the Himalayas already have an excess of water due to greater melting of snow in the mountains. This situation reduces the capacity of rivers to accept any more surface run-off due to rains. As a result, plains of Belthra road Tahsil, where river velocity is already reduced, are particularly vulnerable to flooding.

2. Indiscriminate deforestation in catchment areas of the study areas, results in soil erosion and consequent silting of river courses which again reduces their capacity to absorb more water.

3. Unscientific farming practices like shifting cultivation results in loss of vegetation cover and consequent soil erosion, and silting of river-beds and causes floods.

There are 26 villages which are effected by floods which covers an area of 12.6 square kilometre. The most important villages are Tangunia, Turtipar, Karimganj, Belthra Bazar, Piprauli and Haldirampur which are severely effected by floods. These study areas are severely effected by floods in 1948, 1967, 1971 and recently 1998

Government has made the plan to help the local people during floods. They have decided to rehabilitate the most effected
settlements to other peaceful places. Table below shows such rehabilitation plan.

**TABLE 1.4**

**REHABILITATION PLAN DURING FLOODS IN**

**BELTHRA ROAD TAHSIL**

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Name of the Settlements from where the people are rehabilitated</th>
<th>Secured places where people are rehabilitated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Karimganj</td>
<td>Junior High School, Siar</td>
</tr>
<tr>
<td>2.</td>
<td>Belthra Bazar</td>
<td>Primary School, Ubhaon</td>
</tr>
<tr>
<td>3.</td>
<td>Haldirampur</td>
<td>Junior High School, Rampur</td>
</tr>
</tbody>
</table>

*Source: District Flood Handbook.*

Government has also made some thana's and their chowki's responsible to convey message regarding floods and help local people. These thana's and chowki's are listed below in the table.

**TABLE 1.5**

**NAME OF THANA'S AND CHOWKI'S RESPONSIBLE FOR FLOOD AFFECTED AREAS**

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Name of Thana's</th>
<th>Names of Flood related Chowki's</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Ubhaon</td>
<td>1. Turtipar regulator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Tanguina Regulator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Haldirampur</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Telma jamaaluddinpur</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Chainpur Guloura</td>
</tr>
<tr>
<td>2.</td>
<td>Bhimpura No.1</td>
<td>1. Kidiharapur</td>
</tr>
</tbody>
</table>

*Source: District Flood Handbook.*
Government is using huge amount to help the flood affected areas and people which is ultimately unproductive investment. But at the same time if government make a dam and start the project of generating electricity on Ghaghra river for atleast during rainy season that will be the productive investment. So, there is a need of such permanent productive investment.

**Soils -**

In real sense soils are our basic resource. Out of the long list of nature's gift, none is perhaps so essential to human life as soil. Soil support the garment of vegetation which provides sustenance for man and animals (Katiyar, R.K., 1998, P. 36). The soil is very important resource in the region as the economy is mainly agro-based. It is nutritive element for the plants growth. The role of soil constituents i.e. water, nitrogen, calcium etc. in plants growth and crop production are much more important. The soil of Tahsil can be classified into three types. (Mehrotra, C.L., 1968, PP. 8-20)

1) Entisols

2) Alfisols and

3) Aridisols
1) Entisols -

About 20% of the Belthra Road Tahsil is covered with this soil type. This type of soil includes younger alluvial soil, along river Ghaghara. These are weakly developed soils with no horizon.

2) Alfisols -

About 75% of the tahsil is covered with this type of soil. This type includes older alluvial soil, in the central and western part of the tahsil. These soils are moist soils with B horizon of clay accumulation and water available to plants for at least three consecutive months.

3) Aridisols -

About 5% of the tahsil is covered by this type of soil. This is a saline and alkaline soils having low organic matter lying in the South-Western margin of the tahsil. Important villages which have such soils are Jhampur, Siohauna, Ragho Manda, Tirlok Manda & Kara Baso Patti.

**NATURAL VEGETATION:**

The human occupancy based on plough and pastoral culture from the long past and direct cutting and burning have destroyed the forest entirely. There is almost a total absence of the forested land
in the study area. Dhak groves to be found more or less in all parts of the area, along the courses of river Ghaghra and some minor canals, on waste lands, and some parts of railway line. In the Ghaghra Khadar tract of Siar block babul is fairly abundant and trees like tar or palmyra varieties occur in large number. Bamboo clumps are also grown around the settlement and are of great local importance as they are used for building materials. There are some naturally growing trees like mahuwa, pipal, banyan, neem etc. on village wastelands or vacant places. There are also Jamun, mango, guava, jackfruit, plums, lemons etc. and timber trees like shisham have been also found in the area (Srivastava, Dilip Kumar, 1992 P. 18)

To conclude, the region primarily derives its resources from the fertile soils and surface and ground water resources. The region is well-drained and experiences monsoon climate with an year round growing season and adequate annual rainfall with these facilities, it can grow a variety of food crops as well as industrial crops with additional ground and surface water resources to be stored and channelized in the rain-deficient months or seasons. The rich ground-water reservoir is only inadequately utilized by indigenous systems and requires tubewells and pumping sets for full utilization.

Jamun, babul, bamboo, mahuwa, mango etc. are grown which are used in making furnitures, containers and agricultural
equipments for the local use. Floods and droughts however, cause great damage to the economy of the study area because of soil erosion and lack of scientific management of land. Though the study area has essentially agricultural and agro-industrial economy and generally all the characteristics of the under-development is an acute forms, it can be made viable and healthy, with the scientific management and well-planned economy.
REFERENCES

1. 1916, Burrad, S., The Origin of Himalaya, (Survey of India), Presidential Address to the Indian Science Congress, Lucknow, P. 19


