CHAPTER - 1

A BRIEF GEOGRAPHICAL OUTLINE
TARAI DISTRICTS OF UTTAR PRADESH
(ADMINISTRATIVE DIVISION)
(Source- Census of India, New Delhi, 1991)

Figure 1.1
Location:

The Tarai districts of Uttar Pradesh is typically a narrow tract of the vast Ganga plain adjuacent to the Himalayan foot hills south of Bhabar. The term Tarai signifies a moist land or low marshy area. It lies between 27°7" north and 29° 29" north latitudes and 78°38" east and 83°57" east longitudes. It extends 375 miles in length and on an average 60 miles in width covering an area of about 62995 sq.miles. This region is bounded by Nepal and Uttranchal in the north, Bihar in the east and river Ghaghra separating it from rest of Uttar Pradesh in the south and west.

Origin and Relief:

The geological evolution of the Ganga Plain is a matter of discussion. Eduard Suess, an Austrian geologist considered that the plain was a ‘fore-deep’ between the Himalayas in the north and the Peninsular India in the south. It was gradually filled up by the sediments eroded by the Himalayan rivers in the north and Peninsular rivers in the south. According to this belief this depression was a synclinorium, out of which, the plain came into existence.


Burrard, on the basis of physical and geodetic considerations, hold a totally different view. He postulated the origin of this depression similar to that of the Great Rift Valley of Africa and probably of the same age. He considers that the plain occupies a deep rift valley bounded by parallel faults on its two sides, with a maximum down thrown of 32 km. The formation of this great crack, 2400 km long and several thousand metres deep, was intimately related to the evolution of the Himalayan chain and was in fact the prime event in the whole series of physiographical changes that took place at this period in the earth's history. This hypothesis has got a few geological facts in its support. The geologists consider that the depression is only of moderate depth, and that its conversion into the flat plains is due to the process of alluviation. The rivers rising from the mountains during a period of great gradational activity, deposited the detritus brought down by them in their long journey and in this way the plains were formed.

A third and more recent view regards this region as a 'sag' in the crust formed between the northward drifting Indian continent in the south and the
comparatively soft sediments accumulated in the Tethyan sea as well as in the connected basins in the north. As the sediments in the Tethyan sea was being crumpled up and lifted up into a mountain system, the rivers were filling up this 'sag' and finally the plain came into existence.

However, the major fact that emerges from this discussion is that the depression, perhaps, began to form in the upper Eocene and attained its greatest development during the third Himalayan upheaval in Middle Miocene. Since then it has been gradually filled up by sediments to form a level plain with a very gentle seaward slope.4

The Tarai tract of the Ganga plain is actually a piedmont plain which was formed as a result of deposition of coarser materials along the foot hills of siwaliks. When young stream debouching from the hills on to the plain find their gradients abruptly reduced. In consequence they deposit their load of debris along the foot hills in the form of alluvial fans which coalesce together to give the continuous appearance of a rolling plain.
As the texture and build of the Tarai landscape is geologically almost monotonous. On a micro-pattern, it is a low-lying level plain with slight undulations here and there. The Dundwa Range like the Sumesar Range north of the Champaran Tarai (Bihar) is the only outlier that approaches the northern Gonda-Bahraich frontier for a few miles. The main divide of the region lies in Pilibhit District, east of which rivers flow in a south-westerly direction. The general slope from north-west to south-east is very slight, hardly 1-5 feet to the mile. However, the transverse section (south-north) reveals a slope of 8-20 feet to the mile and below for the Ganga plains 2-6 feet.

The Tarai region, particularly its western parts, is dotted with springs, marshes, bogs, lakes and tals which vary greatly in dimensions. However, the surfaces of the swamps themselves are usually quite flat, although small elevations and depression are also associated with them. The little Gandak, the Burhi Rapti, the Sardar, the Deooha, the Bahgule, the Kosi, the Dhela and the Phika etc., are associated with large swamps and ox-bow lakes.
Figure 1.3
Drainage:

Four river systems, viz., the Gandak, the Ghagra, the Gomati and the Ramganga, all being major affluents of the Ganga, account for the drainage of the Tarai region. They have hundreds of tributary streams of unstable character, many of them originating in the upper “spring-belt”, others, particularly the major ones, viz., the Rapti, the Sarda, the Deoha, the Kailas, the Gola, the Kosi and the Phika, coming into the Tarai through the Bhabar from the hills. But the little Gandak reappears from an old channel of the Great Gandak and the Burhi Rapti, that of the Rapti, while the Gomati and its tributaries originate in the Pilibhit Tarai swamps. The drainage system of the Tarai has been aptly likened to the reticulations of a leaf, the streamlets on the edge of the moist country uniting to form larger channels which again feed the arterial lines of drainage and all eventually join the great mid-rib stream⁵ and thus manifests a characteristic dendritic plan.

Climate:

The Tarai region has been notorious for its unhealthy climate. It has been popularly known as a
"Penalsettlement" because of its malerial climate, which in characterised by excessive heat and humidity, particularly during the rainy season. The debilitating climatic factor has surely stood in its way of progress and has been responsible for its under developed economy and socio-cultural stagnation.

The climate of Tarai districts may be divided into following season:

1. Cold weather (mid Dec. to Feb.)
2. Hot weather (March to mid June)
3. General Rain (mid June to mid Sept.)
4. Retreating Mansoon (mid Sept. to mid Dec.)

The temperature of Tarai is relatively high throughout the year ranging between 50°F (Jan.) and 86°F (May or June) with an annual amplitude of about 36°F. But the warm season prolonged for about nine months when the mean monthly temperature remains about 64°F. During the summer the absolute maximum diurnal temperature may shoot up to 112-5°F (Rupdrapur ' May 20-1954). But the minimum temperature (April-Oct.) seldom goes below 68°F. During winter the absolute minimum diurnal temperature may go up as high as
94.8°F (Ruprapur Feb. 28, 1954) but mean diurnal minimum seldom drops below 44.1°F. The Tarai region enjoys a moderately heavy rainfall because of the proximity of the northern hills which vertically guide the westward course of the monsoon current from bay of Bengal and also act as precipitation agent. The patches of forest join hand with the hills and they augment a further increase in precipitation.

The month of July and August are rainiest months of the year receiving more than half of the total rainfall. Rainfall normally decreases in September and longer interval prevails. The amount of rainfall in the month of July and August varies between 25 inches and 50 inches.

**Soil:**

The soils of the Tarai region of Uttar Pradesh offer a striking contrast to those of many found in other parts of India. They are quite immature and youthful. Their immaturity being quite clear in the substantial proportion of undecomposed plants residue and their youthfulness in the high proportion of coarse sands which is as high as 26 percent in the fourth layer. It
shows that the process of disintegration has not been completed and that overlying layer has been laid out on the coarse materials.

The soils of the Tarai region are young and fertile, but their satisfactory yields year after years are possible only through good soil management and favourable weather condition. It is a vital necessity that the productivity of good soil is maintained and of the poor ones built up to higher levels before satisfactory crop yields can be expected over number of years.

The soils of Tarai region may be classified into following types:

(A) Soils of a Lowlying Riverine Topography (between the Great Gandak and the Little Gandak in Padrauna Tehsil of Deoria). This type comprises the soils of the tract lying between the Great Gandak and the little Gandak at Laxmiganj, Ramkola, Tamkohi, Chhitauni and towards the eastern side of Siswabazar. It is a very low-lying region and is frequently subjected to inundations during floods or even heavy downpours. The water-table is very high, average being 1-2 feet during rains and 5-6 feet during dry summers.
The texture of these soils can best be described as silty or sandy according to the preponderance of either silt or fine sands which together constitute 80 per cent of the total, considered free from calcium carbonate. They are fairly well-drained and good for tilling purpose. This soil group is comparable with the Matkota clay-loam. These soils appear greyish purple with an occasional blue tinge. They have been aptly terms as "calcium soils with a large reserve of lime" but they are locally known as the "bhat" soils. They are highly calcareous being very rich in calcium carbonate which is present in a finely precipitated from throughout the profile. This is responsible for their alkaline reaction and also for a good moisture-holding capacity. Available phosphate is not much, but potash adequately found in these soils.

(B) Soils of a Sloping Topography (Barhni Zone of Sidharth Nagar). This type comprises the soils of the northern Tarai in Barhni Zone on the banks of the Burhi Rapti. The water-table is very high, being about 2-3 feet during the rainy season and 12 during the dry summer.
The texture of these soils may be described as clayey loam. Silt and fine sand constitute over 90 per cent of the total soil considered free from calcium carbonate. That they are well-drained is a foregone conclusion. Ploughing is also not very difficult and they are suitable for sugarcane cultivation.

(C) Soil of a Flat but Slightly Elevated Topography (tehsil Baheri, of Barielly district). These soils are only a topographical type of the wet-land soils of the Tarai and are found at slightly elevated levels of the north-western portions of tehsil Baheri adjoining the areas occupied by the clayey "Mar" soil-type. These soils are locally known as "des" soils. They are grey in colour, the sub-soils tending to be light yellow to olive yellow in shade. They are clayey at the surface, but the lower layers show loamy texture resting on predominantly sandy sub-soils. The youthfulness of these soils is more clearly seen in the high proportions of coarse sands which easily claims a percentage of 2 per cent in the fourth layer a manifestation of incomplete disintegration. This fortunately affords better
drainage but the nature of the clay being fluctuated its migration to lower depths is somewhat restricted. The surface clayey layers have high values of water-holding capacity and moisture equivalents. The soils are neutral in reaction and have aqeuate organic matter, although there is an adrupt decrease of organic matter in the lower layers. The same trend is exhibited by the total nitrogen contents. Calcium which is conspicuously rich in clayey soil type described above has been found to be absent from this comparatively elevated soil type.

Population Density:

Tarai region is one of the most densely populated region of Uttar Pradesh. According to 1991 census, its total population was 348 crores and its density 554 person per sq.km., which accounts for 25% of the total population of the state of Uttar Pradesh. If we compare the population density of the study area to that of Uttar Pradesh, as a whole it was 473 person per sq. km. Thus, the density of the Tarai region of Uttar Pradesh is much higher than the density of Uttar Pradesh. There were also considerable spatial variations in population density within the region. The most
Figure 1.4

TARAI DISTRICTS OF UTTAR PRADESH

POPULATION DENSITY
(1990-91)

INDEX VALUE

HIGH  648.34-815.00
MEDIUM  481.68-648.34
LOW  315.00-481.68
### Table 1.1


<table>
<thead>
<tr>
<th>Districts</th>
<th>Total Population</th>
<th>Density of Population Person/Sq. Km.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bijnore</td>
<td>24,54,521</td>
<td>538</td>
</tr>
<tr>
<td>Moradabad</td>
<td>41,21,035</td>
<td>691</td>
</tr>
<tr>
<td>Rampur</td>
<td>15,02,141</td>
<td>635</td>
</tr>
<tr>
<td>Barielly</td>
<td>28,34,616</td>
<td>688</td>
</tr>
<tr>
<td>Shahjahanpur</td>
<td>19,87,395</td>
<td>434</td>
</tr>
<tr>
<td>Pilibhit</td>
<td>12,83,103</td>
<td>367</td>
</tr>
<tr>
<td>Gorakhpur</td>
<td>30,66,002</td>
<td>756</td>
</tr>
<tr>
<td>Deoria</td>
<td>44,40,024</td>
<td>815</td>
</tr>
<tr>
<td>Basti</td>
<td>27,38,522</td>
<td>734</td>
</tr>
<tr>
<td>Sidharth Nagar</td>
<td>17,07,885</td>
<td>489</td>
</tr>
<tr>
<td>Kheri</td>
<td>24,19,234</td>
<td>315</td>
</tr>
<tr>
<td>Gonda</td>
<td>35,73,075</td>
<td>486</td>
</tr>
<tr>
<td>Bahraich</td>
<td>27,63,750</td>
<td>402</td>
</tr>
</tbody>
</table>

| Total              | 3,48,91,303      | 553.87                               |

**Sources:** Statistical Abstract 1991, Economic & Statistics Division, State Planning Institute, Lucknow, Uttar Pradesh.
densely populated district were Moradabad, Barielly, Gorakhpur, Deoria and Basti, where population density was above 648 person sq.km. Moderately populated districts were Bijnore, Rampur, Sidharth Nagar and Gonda where density was found between 481 and 648 persons per sq. km. Districts having low concentration of population less than 481 person per sq. km. were Shahjahanpur, Pilibhit, Kheri and Bahriach.
REFERENCE:


10. District Gazateers (Gorakhpur), Vol. XXXI, p. 3.