

## Drainage pattern of Gopalganj District: A Geographical Study

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Gopalganj district, the study area is lying between 26°12' and 26°39' North latitude and 83°54' and 84°55' East longitude with an area of 2033 square kilometers. It covers 2.2 % of the total areas of the state of Bihar. This district comes under Indo-Gangetic plain covering plain and Gandak-Ghaghra sub-basin. There are 14 development blocks with two sub-basins. The district is bounded on the east by Purbra Champaran and Muzaffarpur, on the south by state of Uttar Pradesh, Siwan and Saran on the west by State of Uttar Pradesh and on the north by State of Uttar Pradesh and Pashchim Champaran.

**DRAINAGE PATTERN**-The district is mainly drained by Gandak river that has taken the present course, which forms the eastern and north eastern boundary of the district. The Gandak river flows in south eastern direction with an average gradient of 0.28 m/km. The river brings a lot of silt, which is deposited in the river bed resulting in oscillation of course.

The Gandak river enters in india Bhainsalotan (Balmiki nagar) of west champaran district in Bihar. There is a barrage near bhaisalotan from where four canals are emerging, two in east and two in west for Nepal and india. Great Gandak flows southeast for about 300 km in the alluvial plain through west champaran, east champaran, muzaffarpur, gopalganj, siwan, saran, and vaishali districts of Bihar state and maharajganj and kushinagar districts in Uttarpradesh. It eventually joins with the Ganga downstream of Hajipur in front of Patna at an elevation of about 44m. Near the confluence of Ganga and gandak rivers a big diara known as Raghapur diara is fromed where about 50 villages are situated. Apart from this main rivers there are numerous ephemeral

streams flowing in the district namely Jharbi, Dahe, Khanua, Ghoghli, Kedanjot, Sona etc. They all emerge near Gandak embankments which are locally known as Chaur and Tal. In course of time these beds get silted and their course start shifting. During the process of shifting of course there streams leave behind abandoned channels and a number of marques locally known as Chaus. These Chaus are also responsible for water logging in the area by spreading their span with the onset of monsoon and become localize during summer. Most of the ephemeral streams have their flow direction in north south district of the middle Ganga plain is characterized by uniform surface with gentle slope, fertile alluvial soils and monsoon climate with temperature ranging from 42° F to 112° F and normal rainfall of about 112° cm.

**DRAINAGE SYSTEM**:-The drainage of the Gopalganj district is determined by the river Gandak, Daha, Jharahi and Khanua. The river Ghaghara is also known as Saryu or Dewha. It rises in the lower Himalayas and winding its course through the eastern districts of Uttarpradesh flows along the south-western boundaries of the Saran plain for about 90 kilometers from Guthani to its confluence with the Ganga. This river remains navigable throughout the year. It after adopted a braided course and presents a vast sandy bed coupled with 'Diara' lands after the rains.

Tributaries of the river Ghaghara generally flow from north to south and discharge the surplus water into the Ghaghara. But when the Ghaghra itself remains in high flood, its tributaries also create flood. Important tributaries of the river Ghaghra are the Khauna, the Jharhi, and the Daha. The river Khauna is a tributary of the chhoti Gandak. The river Jharhi Joins the river Ghaghra near Dauroli. The river Daha is an important tributary of river Ghaghra and joins the river Ghaghra near Tajpur.

The river Gandak, originating from the lower Himalayan ranges and forming the natural boundary between the states of Bihar and Uttar-Pradesh in its earlier reaches, where it is also called Narayani, touches the region under study at Khargauli in the north eastern corner of the district it runs for about 82 kilometers along the north-eastern boundary of the district Sonpur where it joins the river Ganga. The embankment running almost along the entire length of the river protects the region from the floods of the Gandak. It actually flows at a higher level than the adjoining plains and before the erection of the embankment it

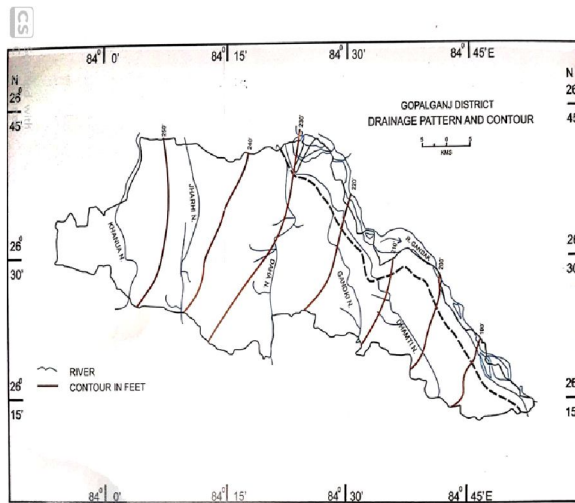
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inundated the region annually which incidentally raised the fertility of the area enormously.

The river Gandak is remarkable for changing courses. The river Gandak is navigable by country boats throughout the year. It is not as braided as the Ghaghara and the Ganga. Only a few portions of the region in the north-east corner, specially in the Anchals of Gopalganj and Barauli are flood creating a swampy land where a number of smaller streams and rivulets take their birth. Gopalganj district is liable to frequent heavy floods specially due to the overflow of its rivers. Area adjoining the river Gandak in the east, Daha, in the Central part and the Jharahi in the west experience flood almost every year. It is true that minor flood occurs almost every year but major floods occur after some gap.



During post-independence years attempts have been made to protect the area from the damaging floods. For this purpose construction of Bandhs and embankments and draining of water logged areas through artificial canals have been adopted. Virtually flood protection measures have been taken a few hundred years earlier. The Gandak embankment from the village Matihania in the north to Sonpur in the south west first constructed by Dhausi Ram the Nabi of Md. Kassim khan, Subedar of to 1880. The canals were used for the first time in the area of 1897, but they were found of little use and were closed after irrigation a little over 500 acres<sup>9</sup>.

The old Saran canal was not repaired and developed because of the development of Gandak canal which started in the year 1959 when the construction of barrage started. The western enables some irrigation in few districts of eastern Uttar-Pradesh and Gopalganj district.

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3. Dayal, P (1953): Bihar in Mape, Patna.
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5. 'Aharas' are the natural water reservoirs.
6. Roy Choudhary, P.C. (1960) District Gazetteer, Saran, p.6.
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11. Dayal, P: op. cit. p.11.
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