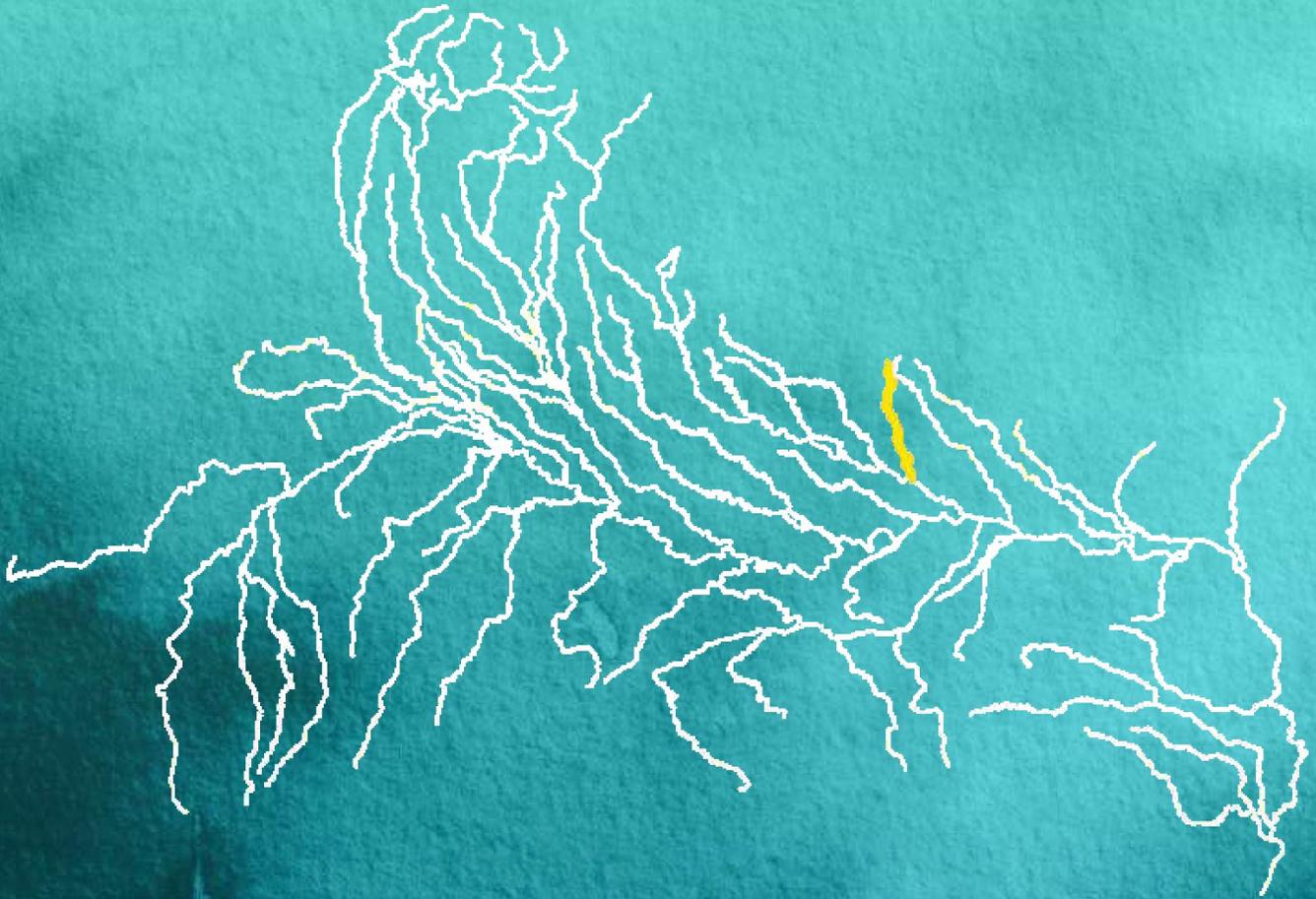


VIBRANT GANGA



भारतीय वन्यजीव संस्थान  
Wildlife Institute of India



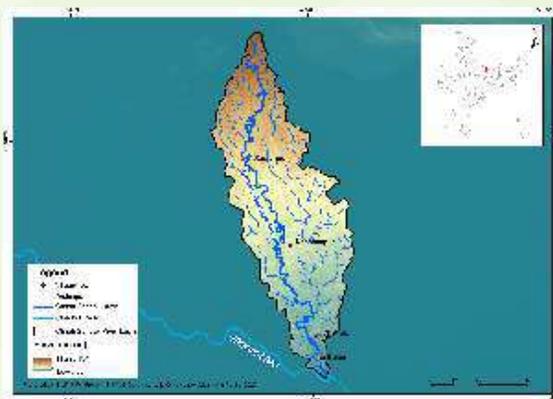
# *Chhoti Gandak*

## GENERAL INFORMATION

- Chhoti Gandak River, a meandering groundwater-fed river, is a tributary of the Ghaghra River and originates in the Terai region in Maharajganj district, Uttar Pradesh.
- The river flows for 250 km through the Maharajganj, Kushinagar and Deoria districts in Uttar Pradesh and meets the Ghaghra River near Gothani in the Siwan district of Bihar.
- Chhoti Gandak River basin spans an area of around 3,565 km<sup>2</sup> (Figure 1).
- The basin falls under the Gangetic Plain (Upper Gangetic Plains – 7A) biogeographic zone.
- The basin has a subtropical monsoon climate with hot summers, heavy monsoon rainfall causing frequent floods in the lower basin, and dry winters.
- Chhoti Gandak River is characterized by point bars, natural levees, terraces, meander cut-offs, abandoned floodplains, and oxbow lakes, reflecting the river's depositional processes and channel metamorphosis.
- Major tributaries of the Chhoti Gandak River include the Khekhra, Hirna, Maun, Kanchi, Koilar, and Khanua.

- The population density along the river is 1,198.15 persons/km<sup>2</sup>.
- Decadal LULC transitions in the Chhoti Gandak basin (2008–09 to 2018–19) recorded increases in double/triple crop by 22.88%, built-up areas by 1.84%, and plantations by 0.01%, while rabi crop decreased by 9.25%, current fallow land by 6.62%, kharif crop by 5.9%, wastelands by 2.56%, and waterbodies by 0.4%, indicating a shift in land-use patterns (Figure 2a and 2b).

Figure 1: Map of Chhoti Gandak River basin



## BIODIVERSITY VALUE

- Chhoti Gandak basin is dominated by non-forest areas (97.79%), followed by open forest (1.3%), moderately dense forest (0.52%), very dense forest (0.38%) and scrubland (0.01%) (Figure 3).
- Chhoti Gandak River, flowing through the Terai–Gangetic alluvial plains of eastern Uttar Pradesh, supports Northern Tropical Moist Deciduous Forests and Northern Tropical Wet Grasslands. Riverine and floodplain vegetation occurs along its course, with scattered trees such as *Dalbergia sissoo*, *Syzygium cumini*, *Terminalia arjuna*, *Ficus religiosa*, and *Barringtonia acutangula* along the banks. The floodplains are dominated by tall grasses including *Saccharum spontaneum*, *Saccharum bengalense*, *Phragmites karka*, and *Typha angustifolia*, along with sedges (*Cyperus* spp.).
- Sohagi Barwa Wildlife Sanctuary's eastern boundary directly borders Valmiki Tiger Reserve in Bihar, forming a crucial ecological corridor for the Endangered tiger (*Panthera tigris*) and other species moving between the protected areas.
- From the Laxmipur and North Chowk ranges of the Sohagi Barwa Wildlife Sanctuary, the Vulnerable sarus crane (*Grus antigone*), and Near Threatened lesser adjutant (*Leptoptilos javanicus*) and grey-headed fish-eagle (*Ichthyophaga ichhyaetus*) have been recorded.
- 55 spider species belonging to 39 genera and 16 families have been documented from the Sohagi Barwa Wildlife Sanctuary.
- 12 species of butterflies have been recorded from the Sohagi Barwa Wildlife Sanctuary.
- Only one species belonging to the order Cypriniformes and family Cobitidae, *Canthophrys gongota* has been documented from the river.

Figure 2a: LULC map of Chhoti Gandak River basin (2008-09)

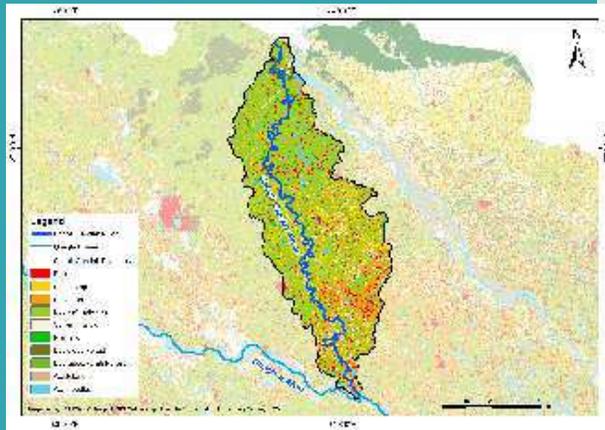


Figure 2b: LULC map of Chhoti Gandak River basin (2018-19)

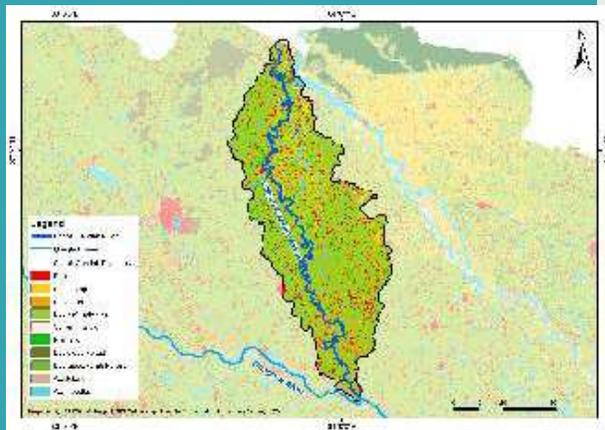
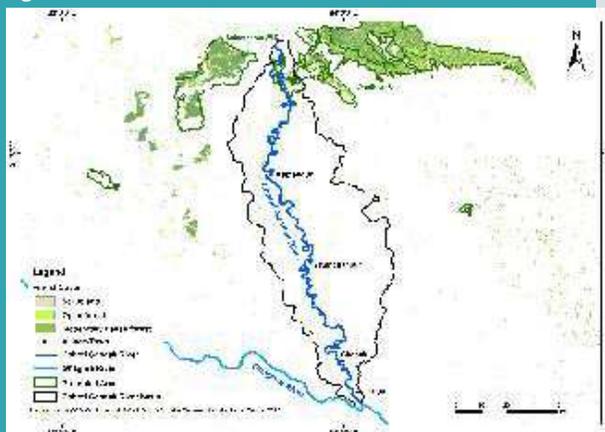


Figure 3: Forest cover of Chhoti Gandak River basin (2019)



## CONSERVATION SIGNIFICANCE

### VULNERABLE

#### Avifauna

Sarus crane *Grus antigone* (Linnaeus, 1758)

### NEAR THREATENED

#### Avifauna

Lesser adjutant *Leptoptilos javanicus* (Horsfield, 1821)

Grey-headed fish-eagle *Ichthyophaga ichhyaetus* (Horsfield, 1821)

### KEY PROTECTED AREAS

Sohagi Barwa Wildlife Sanctuary

Grey-headed fish-eagle (*Ichthyophaga ichhyaetus*) | ©Shubhankar Patra



## DRIVERS OF RIVERSCAPE CHANGE

- Extensive sugarcane cultivation in the Chhoti Gandak basin is placing significant stress on its groundwater resources. In addition, sugar mills, particularly in Deoria and Kushinagar districts, discharge untreated effluents into the river, degrading water quality and aquatic habitats.
- Overextraction of resources, uncontrolled discharge of domestic and industrial effluents, rapid population growth, unplanned urbanization, and industrial activities are increasing pressure on the Chhoti Gandak River, leading to elevated pollution, groundwater depletion, flooding, waterlogging, and the spread of alkaline soils.
- During high discharge periods (monsoon), the basin is frequently affected by distal flooding. Conversely, during low discharge periods, the river undergoes significant lateral erosion, leading to bank instability and river channel shifting.
- Extensive sand mining, particularly around Ranipur and Manjova villages in Deoria district, has altered the riverbed, destroyed fish spawning grounds, and accelerated bank erosion.

## INTERESTING FACTS

- Gautama Buddha attained *Mahaparinirvana* (Great Final Nirvana) in the 5<sup>th</sup> century BCE at Kushinagar, at the site now marked by the Mahaparinirvana Temple, located along the modern Chhoti Gandak River (ancient Hiranyavati). Consequently, Kushinagar is a major Buddhist pilgrimage centre, where the river's water is regarded as sacred and is used in ritual practices at the temple.
- Kushinagar is mentioned in the ancient Indian epic *Ramayana* as Kushavati, named after Kusha, one of the sons of Lord Rama, the chief protagonist of the epic and an incarnation of Lord Vishnu.
- Lehda Devi Temple (Maharajganj district) is a major pilgrimage site rooted in forest-based worship traditions, historically associated with the ancient Adraavan forest and the now-seasonal Pah stream. Known earlier as Adaruna Devi Than, the shrine is locally linked to the ancient Indian epic *Mahabharata*, with traditions holding that Arjuna worshipped Goddess Vanadevi here during the Pandavas' exile and subsequently established the temple through divine intervention.
- Siwan is the birthplace of Dr. Rajendra Prasad, India's first President.



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