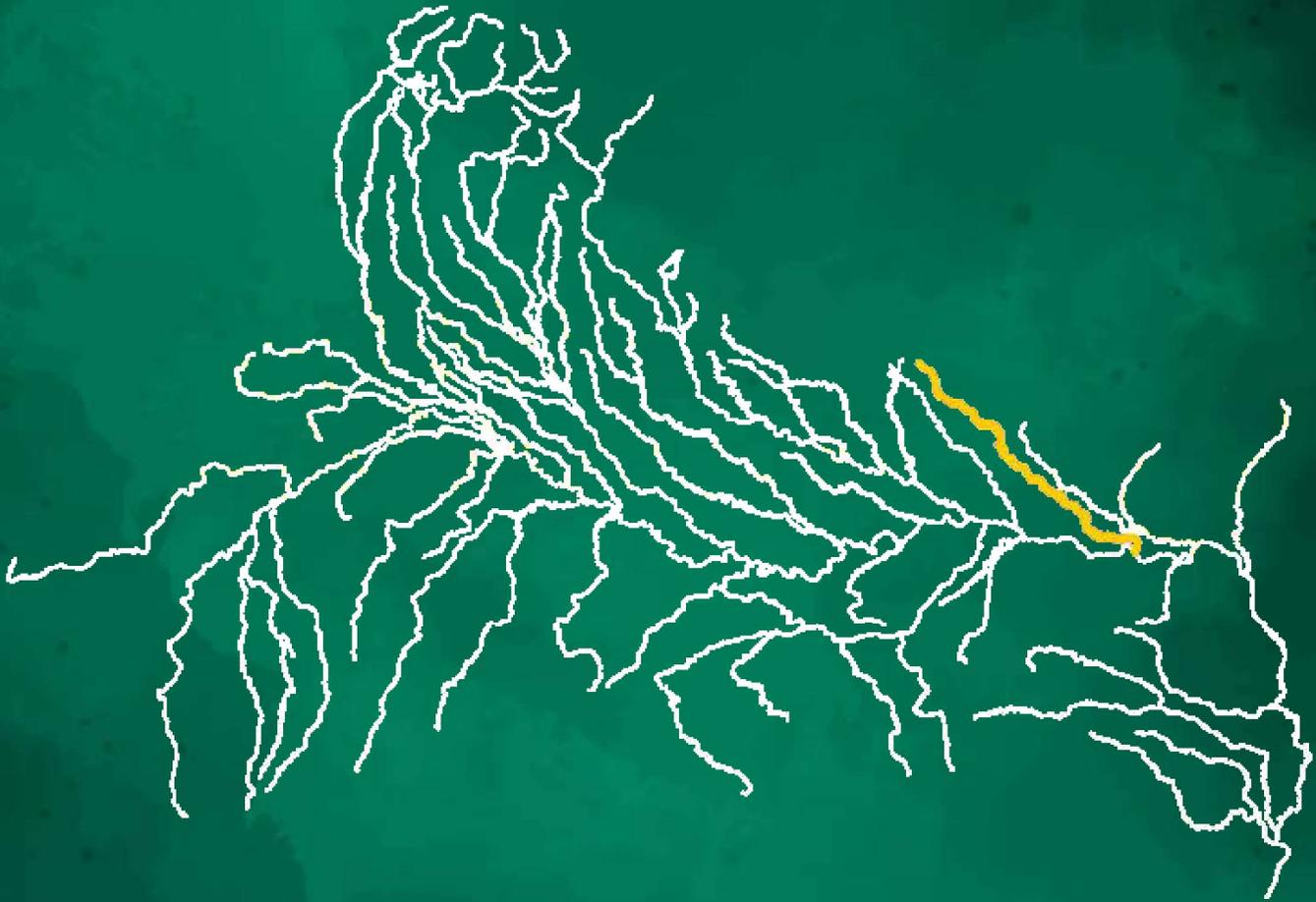


VIBRANT GANGA



भारतीय वन्यजीव संस्थान
Wildlife Institute of India



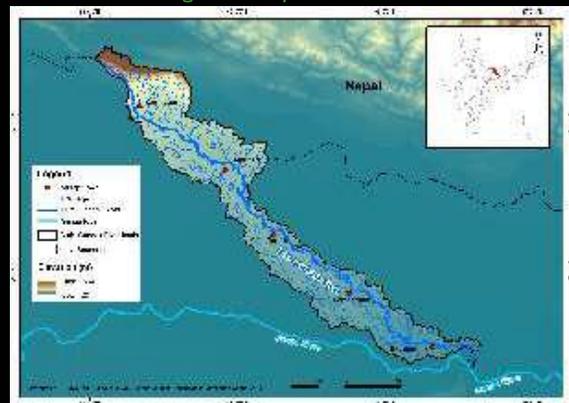
Burhi Gandak

GENERAL INFORMATION

- Burhi Gandak, a left-bank tributary of the Ganga River, originates from Someshwar hills (West Champaran district, Bihar), and flows for 320 km through West Champaran, East Champaran, Muzaffarpur, Samastipur, Begusarai, and Khagaria districts in Bihar.
- It joins the Ganga River near Gogri Jamalpur in Khagaria district.
- Burhi Gandak River basin spans an area of around 10,150 km² (Figure 1).
- The basin falls under the Gangetic Plain (Lower Gangetic Plains – 7B) biogeographic zone.
- The basin has a sub tropical monsoon climate with hot summers, heavy monsoon rainfall causing frequent floods, and mild dry winters.
- Burhi Gandak is characterized by meanders with point bars, oxbow lakes, meander scars, and abandoned channels.
- Major tributaries of the Burhi Gandak are the Ramrekha, Singha, Pandai, Urai, Konhra, Parah, Gadh, Tiar, Jamni, Dhanauti, Nuna, Kedana, Baler, Sikta, Tilawe, Manjhar, Hawa, Dudharwa, and Dera.
- The population density along the river is 1217.30 persons/km².

- Decadal LULC changes in the Burhi Gandak basin (2008-09 to 2018-19) recorded a decrease in built-up areas by 0.12%, rabi crop by 8.39%, and current fallow land by 11.89%, along with a marginal decline in deciduous forests (0.01%). In contrast, kharif crop increased by 7.74% and double/triple crop by 14.77%, with slight increases in plantations (0.03%) and evergreen forests (0.01%). Wasteland and waterbodies declined by 0.71% and 1.43%, respectively, while scrub forests and grasslands remained stable (Figures 2a and 2b).

Figure 1: Map of Burhi Gandak River basin



BIODIVERSITY VALUE

- Burhi Gandak basin is dominated by non-forest areas (90.77%), followed by moderately dense forest (5.37%), open forest (2.67%), very dense forest (1.18%) and scrubland (0.01%) (Figure 3).
- The basin predominantly supports West Gangetic Moist Mixed Deciduous Forest, represented by *Dalbergia sissoo*, *Terminalia arjuna*, and *Bombax ceiba*. This is complemented by Riverine Forests dominated by *Salix tetrasperma*, and *Tamarix dioica*. Additionally, localized patches of Swamp Forest occur in low-lying floodplain areas, supporting *Pongamia pinnata*, *Syzygium cumini*, and grasses such as *Saccharum spontaneum*, and *Phragmites karka*.
- Burhi Gandak River flows through the Valmiki Tiger Reserve, in the upstream Terai region, while downstream it serves as the primary water source for the Kanwar Lake Bird Sanctuary, an oxbow lake formed by the river.
- 58 species of mammals have been documented from the Valmiki Tiger Reserve, including the Endangered tiger (*Panthera tigris*) and dhole (*Cuon alpinus*), and Vulnerable Indian gaur (*Bos gaurus*), and fishing cat (*Prionailurus viverrinus*).
- 140, 221 and 58 bird species have been recorded from the Valmiki Tiger Reserve, Kanwar Lake Bird Sanctuary and Baraila Lake Salim Ali Jubba Sahni Bird Sanctuary, respectively. Critically Endangered Baer's pochard (*Aythya baeri*) and sociable lapwing (*Vanellus gregarius*), Endangered steppe eagle (*Aquila nipalensis*) and saker falcon (*Falco cherrug*), are reported from the basin.
- River supports the Vulnerable Indian flapshell turtle (*Lissemys punctata*).
- 79 fish species (12 orders, 30 families) have been recorded from the Burhi Gandak River, including the Endangered wagur (*Clarius magur*), and Vulnerable *Wallago attu*.

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

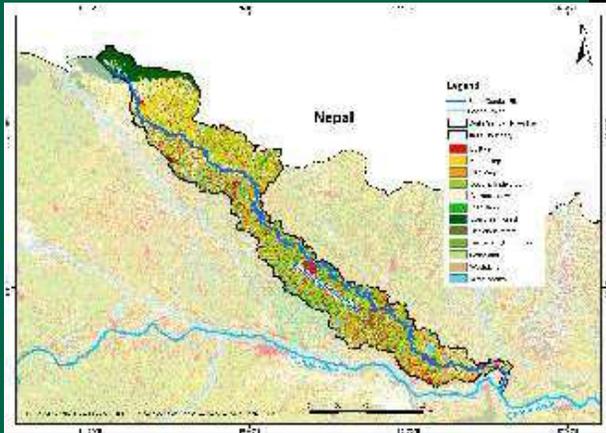


Figure 2b: LULC map of Burhi Gandak River basin (2018-19)

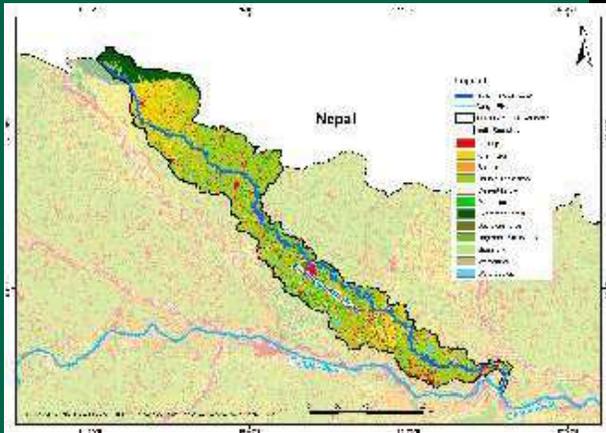
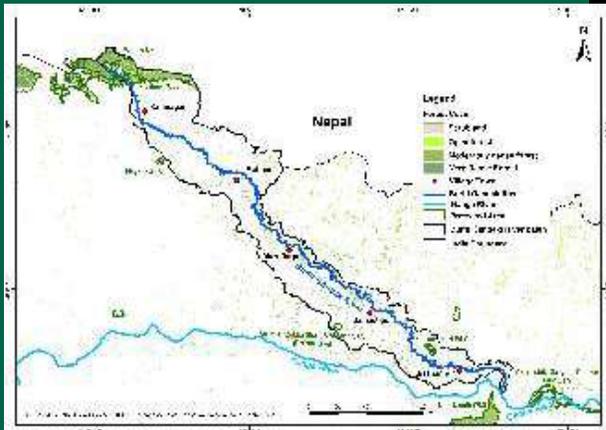


Figure 3: Forest cover of Burhi Gandak River basin (2019)



CONSERVATION SIGNIFICANCE

CRITICALLY ENDANGERED

Avifauna

Baer's pochard *Aythya baeri* (Radde, 1863)

Sociable lapwing *Vanellus gregarius* (Pallas, 1771)

ENDANGERED

Avifauna

Steppe eagle *Aquila nipalensis* (Hodgson, 1833)

Saker falcon *Falco cherrug* (Gray, 1834)

Egyptian vulture *Neophron percnopterus* (Linnaeus, 1758)

Fish

Wagur *Clarias magur* (Hamilton, 1822)

VULNERABLE

Avifauna

River tern *Sterna aurantia* (Gray, 1831)

Reptiles

Indian flapshell turtle *Lissemys punctata* (Lacépède, 1788)

Fish

Wallago attu (Bloch and Schneider, 1801)

KEY PROTECTED AREAS

Valmiki Wildlife Sanctuary

Kanwar Lake Bird Sanctuary

Baraila Lake Salim Ali Jubba Sahni Bird Sanctuary

Sociable lapwing (*Vanellus gregarius*) | ©Vishal Lokare



DRIVERS OF RIVERSCAPE CHANGE

- Untreated effluents from local sugar mills, especially in Lauria (West Champaran district) and Sugauli (East Champaran district), are directly discharged into the river, significantly deteriorating water quality.
- The rapidly urbanizing cities along the river like Muzaffarpur and Samastipur, significantly contribute to the discharge of untreated or partially treated domestic wastewater into the river, degrading water quality and aquatic habitats.
- Fertilizers and pesticides from agricultural runoff are a significant source of nitrates and phosphates in the river.
- Encroachment by farmers and settlers has converted much of the Kanwar Lake and Baraila Lake bed into farmland, causing rapid habitat loss.
- Closely spaced embankments in the Samastipur, Begusarai and Khagaria districts have narrowed the river's natural width, causing increased erosion and channel instability.
- The channel that connects Kanwar Lake to Burhi Gandak is choked with free-floating and rooted emergent macrophytes, primarily *Pontederia crassipes* and *Ipomoea aquatica*.

INTERESTING FACTS

- Valmiki Wildlife Sanctuary, located in West Champaran district, is a part of the Valmiki Tiger Reserve. Named after Sage Valmiki, author of the Ramayana, it holds both ecological and spiritual significance within Bihar's only tiger reserve in the Eastern Terai Arc Landscape.
- Motihari, located in the basin, is historically significant as the birthplace of George Orwell (Author of the iconic books 1984 and Animal Farm) and the site of Mahatma Gandhi's Champaran Satyagraha (1917). The city also contains the Ashokan Pillar at Lauria Areraj and the Kesaria Stupa, one of the world's largest Buddhist stupas, highlighting its rich cultural and Buddhist heritage.
- Vaishali, in Bihar, is one of the world's earliest republics and a major centre of Buddhism and Jainism, associated with Buddha's last sermon, the Second Buddhist Council, and the birthplace of Lord Mahavira, the 24th and final Tirthankara in Jainism.
- Kanwar Lake Bird Sanctuary, in Begusarai district, is Asia's largest freshwater oxbow lake, formed by the meandering of the Burhi Gandak River. It is Bihar's first Ramsar site and an important stopover for migratory birds along the Central Asian Flyway.
- Jaimangala Garh is located atop a mound on the edge of the Kanwar lake. It is a rare water-associated temple, with archaeological remains dating to the 5th century BCE and links to the Mithila Shaktipeeth tradition.
- Baraila Lake, designated as the Baraila Lake Salim Ali Jubba Sahni Bird Sanctuary, is named after the pioneering Indian ornithologist Dr. Salim Ali, renowned for laying the foundation of modern ornithology in India, and the Indian freedom fighter Jubba Sahni.



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