

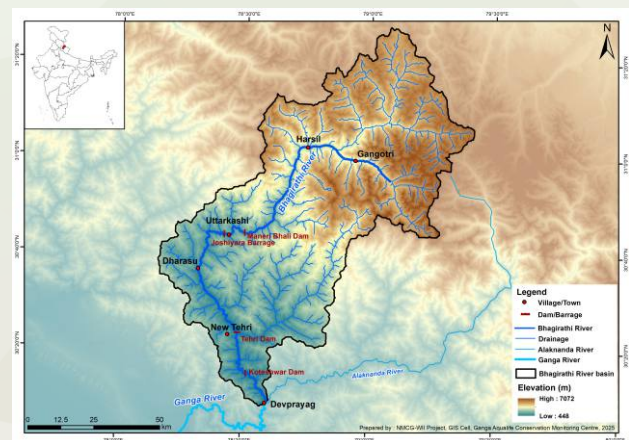
# Bhagirathi

## GENERAL INFORMATION

- Bhagirathi River originates at Gaumukh (3,892 m asl), the snout of the Gangotri Glacier, and flows through a broad U-shaped valley for about 205 km, in the Uttarkashi and Tehri Garhwal districts of Uttarakhand.
- It meets the Alaknanda River at Devprayag (Tehri Garhwal district), from whence the river is known as 'Ganga'.
- Bhagirathi River basin spans an area of about 7,586 km<sup>2</sup> (Figure 1).
- The basin falls under the Himalaya (West Himalaya – 2B) and Gangetic Plain (Upper Gangetic Plains – 7A) biogeographic zones.
- The climate of the Bhagirathi River basin ranges from subtropical at lower elevations to alpine at higher altitudes, with significant variation due to elevation and topography.
- The basin features rugged, mountainous terrain with deep river gorges, glaciated valleys.
- Major tributaries joining the Bhagirathi include the Kedar Ganga, Jadh Ganga, Jalandhari Gad, Aasi Ganga, and Bhilangana.
- The population density along the river is 81.40 persons/km<sup>2</sup>.

- Over the decade (2008-09 to 2018-19), the Bhagirathi basin experienced an increase in kharif crop by 1.38%, double/triple crop by 2.09%, grassland by 0.49%, wasteland by 1.15%, waterbodies by 0.24%, builtup area by 0.01%, and scrub forest by 0.01%, while fallow land decreased by 2.07%, evergreen forest by 0.03%, deciduous forest by 0.04%, and snow cover by 3.23%, indicating a notable shift in land use patterns (Figures 2a and 2b).

Figure 1: Map of Bhagirathi River basin



## BIODIVERSITY VALUE

- Bhagirathi basin is dominated by non-forest areas (64.77%), followed by moderately dense forest (19.75%), open forest (8.49%), very dense forest (5.91%), and scrubland (1.08%) (Figure 3).
- At higher elevations (3,500–5,000 m asl), the Bhagirathi River basin supports alpine and subalpine forests dominated by *Rhododendron* spp., Himalayan birch (*Betula utilis*), and alpine herbs and forbs. Mid-elevation temperate forests (2,000–3,500 m asl) feature brown oak (*Quercus semecarpifolia*), green oak (*Q. floribunda*), west Himalayan fir (*Abies pindrow*), deodar (*Cedrus deodara*), and Himalayan white pine (*Pinus wallichiana*), while lower-elevation subtropical deciduous forests (500–2,000 m asl) are characterized by chir pine (*Pinus roxburghii*). Threatened species include Endangered west Himalayan yew (*Taxus contorta*) and Vulnerable caterpillar fungus (*Ophiocordyceps sinensis*), found in Upper Bhagirathi basin.
- 40 mammalian species have been recorded from the Bhagirathi basin. The upper basin hosts the Vulnerable snow leopard (*Panthera uncia*) with key prey species such as blue sheep (*Pseudois nayaur*) and Himalayan tahr (*Hemitragus jemlahicus*), along with Himalayan brown bear (*Ursus arctos isabellinus*) and Himalayan muskdeer (*Moschus leucogaster*). The sub-alpine forests supports the Endangered dhole (*Cuon alpinus*) and Vulnerable leopard (*Panthera pardus*). Near Threatened Eurasian otter (*Lutra lutra*), an aquatic mammal, is found in the temperate region.
- 237 bird species have been recorded from the Bhagirathi River, including 31 water and water-associated birds. The higher elevations host iconic birds such as the Himalayan monal (*Lophophorus impejanus*), the state bird of Uttarakhand, and the Vulnerable cheer pheasant (*Catreus wallichii*). The basin also supports three vulture species, viz. Endangered Egyptian vulture (*Neophron percnopterus*), and Near Threatened Himalayan griffon (*Gyps himalayensis*) and bearded vulture (*Gypaetus barbatus*).
- 85 fish species (7 orders and 19 families) have been documented from the river. Representative species include golden mahseer (*Tor putitora*) and snowtrout (*Schizothorax richardsonii*).



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

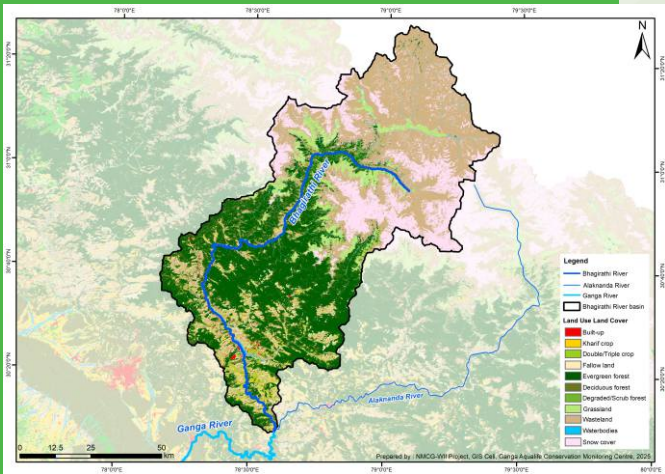


Figure 2b: LULC map of Bhagirathi River basin (2018-19)

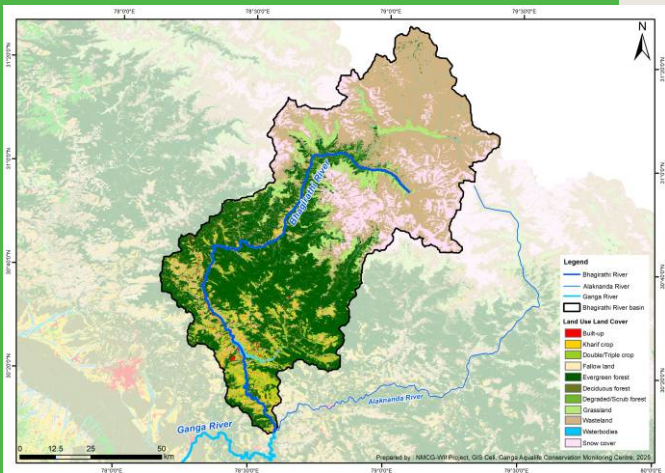
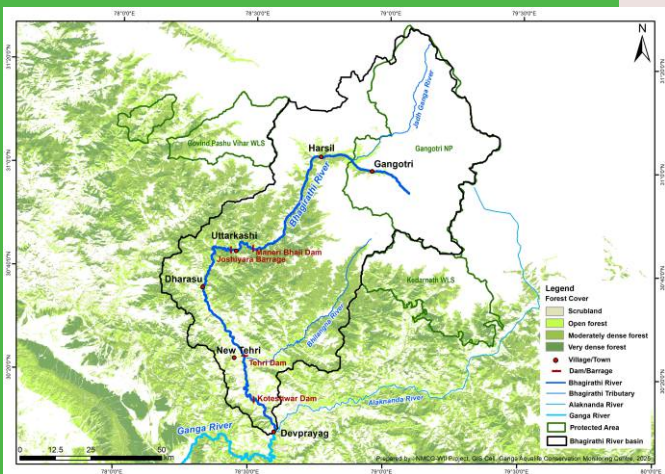


Figure 3: Forest cover of Bhagirathi River basin (2019)



CONSERVATION SIGNIFICANCE

ENDANGERED

Avifauna

Egyptian vulture *Neophron percnopterus* (Linnaeus, 1758)

Pallas's fish-eagle *Haliaeetus leucoryphus* (Pallas, 1771)

Fish

Golden mahseer *Tor putitora* (Hamilton, 1822)

*Clarias magur* (Hamilton, 1822)

*Glyptothorax madraspatanus* (Day, 1873)

VULNERABLE

Avifauna

Common pochard *Aythya ferina* (Linnaeus, 1758)

Fish

Dark mahseer *Naziritor chelynoides* (McClelland, 1839)

Chirruh snowtrout *Schizothorax esocinus* (Heckel, 1838)

Hill trout *Schizothorax plagiostomus* (Heckel, 1838)

Snowtrout *Schizothorax richardsonii* (Gray, 1832)

Goonch *Bagarius bagarius* (Hamilton, 1822)

KEY PROTECTED AREAS

Gangotri National Park

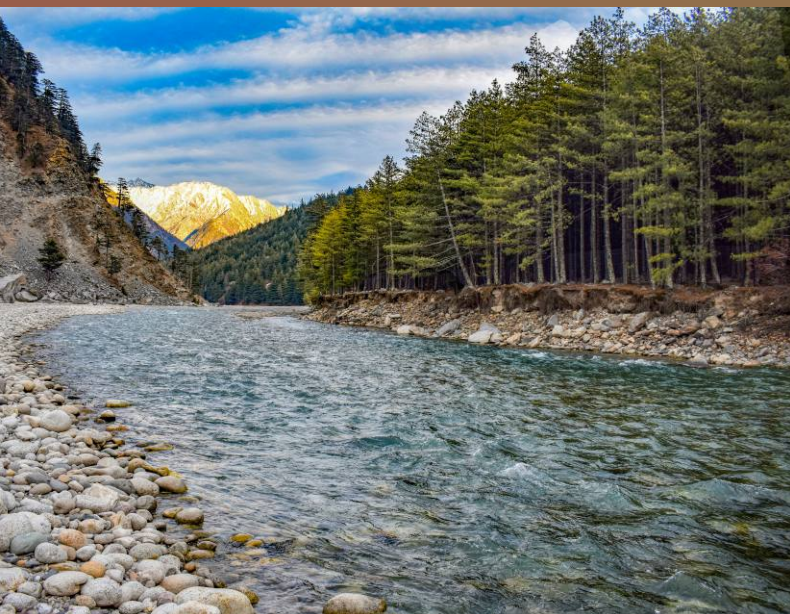
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## DRIVERS OF RIVERSCAPE CHANGE

- Climate change has accelerated glacier retreat in the Gangotri Glacier and other upstream glaciers, releasing increased debris and meltwater that alter river morphology and sediment load.
- Intense rainfall and flash floods are major natural drivers of rapid river course changes in the Bhagirathi basin. The 2025 Dharali flash flood is a recent example of such extreme events reshaping the river landscape.
- There are 11 dams in the Bhagirathi basin, of which three are on Bhagirathi River, namely Maneri Bhali I and II, and Tehri Dam. These structures modify flow regimes, sediment transport and downstream river dynamics.
- Anthropogenic pressures such as deforestation, expansion of agriculture, and urbanization further alter the riverscape. The development of Char Dham pilgrimage routes and associated road networks has intensified land-use changes, slope destabilization, and soil erosion within the basin.



## INTERESTING FACTS

- Bhagirathi River derives its name from King Bhagiratha, who, according to Hindu mythology, brought the celestial Ganga to Earth through his intense penance to free his ancestors. Lord Shiva intercepted the descending Ganga in his matted locks, from which the Bhagirathi emerged—a river deeply revered for its sanctity and widely regarded as the principal source stream of the Ganga.
- Each year on *Akshaya Tritiya*, the idol of Goddess Ganga is carried in a palanquin procession from her winter abode in Mukhba village (Uttarkashi district) to Gangotri Dham, marking the start of the summer pilgrimage season. Gangotri Dham serves as her summer seat and is one of Uttarakhand's *Char Dhams*. With the onset of winter, beginning on *Bhai Dooj*, the idol is brought back to Mukhba in a similar procession, where the Goddess resides until the next season.
- West Himalayan yew has high medicinal value and is often illegally harvested or overexploited for extracting the anticancer drug 'Taxol'.
- Caterpillar fungus, locally known as *Keeda Jodi*, found in the alpine meadows of the Bhagirathi basin, is a highly valued medicinal plant used in traditional Chinese medicine for boosting immunity and improving sexual function. The region has witnessed a prolific illegal trade in the species, threatening its existence.
- Tehri Dam, located on the Bhagirathi River in Uttarakhand, is the tallest dam in India, standing at 260.55 m and is among the highest dams in the world.



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