

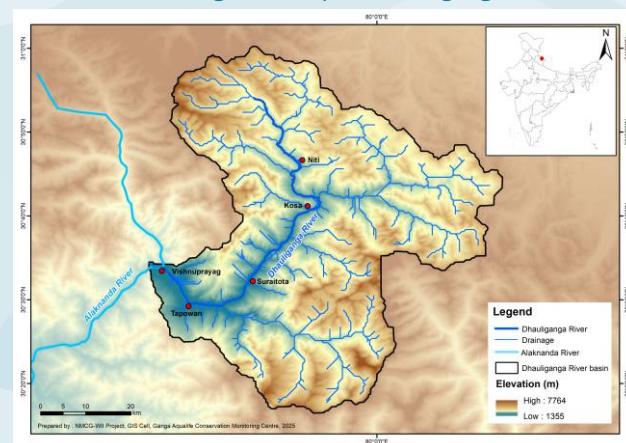
Dhauliganga

GENERAL INFORMATION

- Dhauliganga River, a tributary of the Alaknanda River, originates from Vasundhara Tal (approx. 4700 m asl), a proglacial lake situated at the terminus of the Raikhana and Kamet glaciers, and traverses for 92 km through the Chamoli district in Uttarakhand.
- It meets the Alaknanda River at Vishnuprayag (Chamoli district).
- Dhauliganga River basin spans an area of around 3,028 km² (Figure 1).
- The basin lies in the Himalaya (West Himalaya – 2B) biogeographic zone.
- The climate in the basin varies significantly with altitude, from cold alpine in the north to subtropical in the south.
- The basin is characterized by high relief, rugged mountainous terrain of the higher Himalaya, heavily influenced by glacial, fluvial and tectonic processes. “V” shaped valleys, deep gorges, waterfalls, and river terraces are common landscapes found in this region.
- Rishiganga and Girthiganga are the major tributaries of Dhauliganga.
- The population density along the river is 48.77 persons/km².

- Decadal LULC transitions in the Dhauliganga basin (2008-09 to 2018-19) are primarily stable with marginal increases in snow cover (3.09%), grassland (1.1%), water bodies (0.03%) and built-up area (0.03%), and marginal decline in wasteland (-3.98%), kharif crop (-0.14%), double/triple crop (-0.11%), evergreen forest (-0.01%), and scrub forest (-0.01%). No changes were observed in deciduous forest and current fallow (Figures 2a and 2b).

Figure 1: Map of Dhauliganga River basin

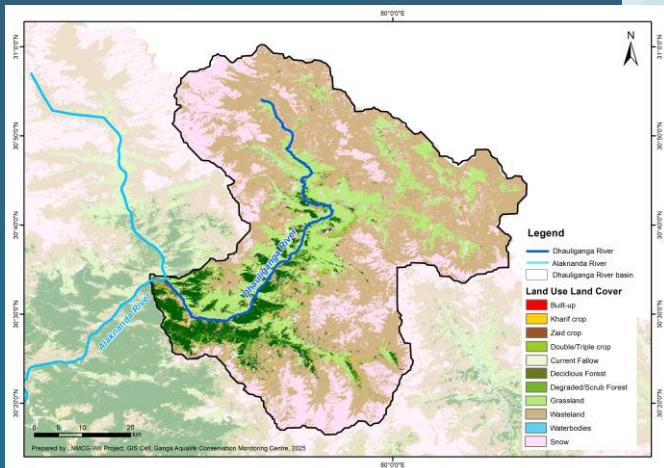


BIODIVERSITY VALUE

- Dhauliganga basin predominantly comprises non-forest areas (92.77%), followed by moderately dense forest (5.91%), open forest (0.88%), very dense forest (0.4%), and scrubland (0.04%) (Figure 3).
- The upper basin is dominated by sub-alpine forests, characterised by Himalayan birch (*Betula utilis*) and rhododendron (*Rhododendron campanulatum*); while the lower basin is represented by Himalayan moist temperate forests, represented by oaks (*Quercus semecarpifolia*, *Quercus floribunda*), deodar (*Cedrus deodara*), and west Himalayan fir (*Abies pindrow*).
- The river flows near the western periphery of the Nanda Devi National Park, through the buffer zone of the Nanda Devi Biosphere Reserve (designated by UNESCO under its Man and the Biosphere Programme), which falls within the Western Himalayas Endemic Bird Area.

- Nanda Devi National Park and its surrounding areas in the Chamoli district hosts 27 mammalian species (2 orders and 5 families) including the Endangered Himalayan musk deer (*Moschus leucogaster*), Vulnerable snow leopard (*Panthera uncia*) and Asiatic black bear (*Ursus thibetanus*), and Near Threatened Himalayan tahr (*Hemitragus jemlahicus*).
- 154 avifaunal species (9 orders and 29 families) have been documented from the Nanda Devi National Park and its surrounding areas in the Chamoli district, including the Vulnerable cheer pheasant (*Catreus wallichii*) and western tragopan (*Tragopan melanocephalus*).
- 8 fish species (2 orders and 2 families) were recorded from the river.
- 11 macroinvertebrates taxa, represented by Ephemeroptera (mayflies), Plecoptera (stone flies), Trichoptera (caddis flies) and Diptera, have been recorded from Dhauliganga.

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



CONSERVATION SIGNIFICANCE

VULNERABLE

Fish

Dark mahseer *Naziritor chelynooides* (McClelland, 1839)

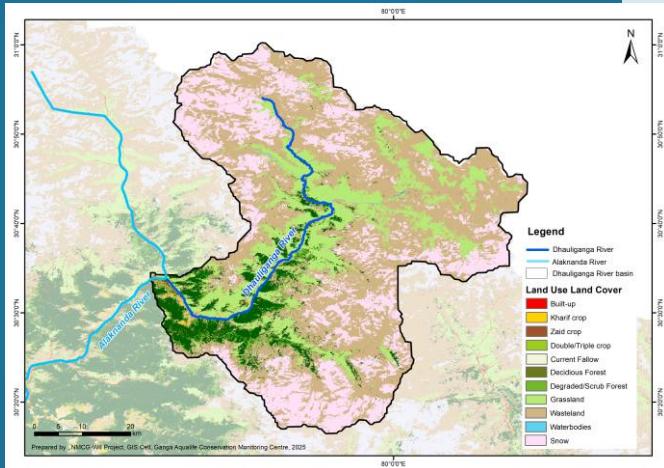
Snowtrout *Schizothorax richardsonii* (Gray, 1832)

Chirruh snowtrout *Schizothorax esocinus* (Heckel, 1838)

KEY PROTECTED AREAS

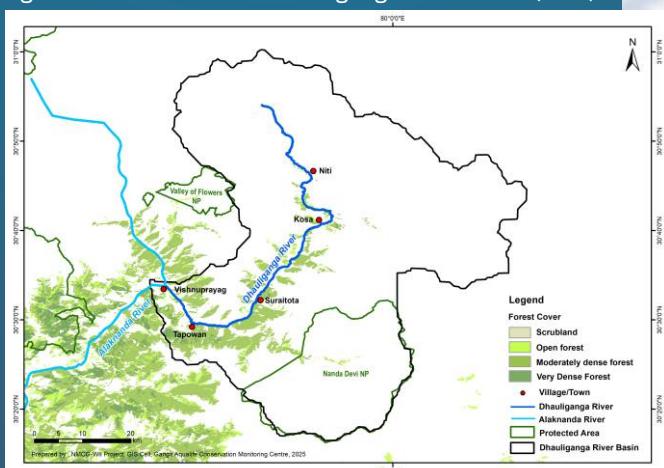
Nanda Devi National Park

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



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



DRIVERS OF RIVERSCAPE CHANGE

- Dhauliganga basin lies in a highly tectonically active zone and is of glacial origin. Processes such as glacial retreat, permafrost thaw, and the formation of unstable glacial lakes significantly influence changes in the riverscape.
- Most streams in the basin are in a youthful stage, resulting in high rates of vertical erosion. This has led to the development of narrow, V-shaped valleys and deep gorges.
- Climate change increases the frequency and intensity of glacial lake outburst floods (GLOFs), which trigger high-magnitude flood events that rapidly alter river geomorphology and sediment dynamics. Vasundhara Tal is considered a high-risk glacial lake as the lake's size has significantly increased due to glacial retreat, which increases the risk of GLOF.
- Dam construction in this tectonically sensitive region disrupts natural river flow and sediment transport, increasing the risk of flash floods and landslides. Tunnelling associated with the Tapovan-Vishnugad HEP (520 MW) has been reported as a contributing factor to land subsidence in Joshimath. The Lata Tapovan HEP (171 MW) is another project currently under construction on the river.

INTERESTING FACTS

- Vishnuprayag, the confluence of Alaknanda and Dhauliganga, is the first of the five sacred confluences in Hindu mythology along the Alaknanda River, termed as 'Panch Prayag'. The site is named after a key Hindu deity, Lord Vishnu.
- According to local belief, Sage Narad meditated here and was blessed by Lord Vishnu. A small temple, 2 km from the Prayag, marks this story.
- A unique octagonal (eight-sided) temple built in 1889 stands near the Alaknanda-Dhauliganga confluence.
- Rishiganga, the main tributary of the Dhauliganga, drains the Nanda Devi National Park, which is named after the second highest peak in India, Nanda Devi (7,817 m asl).
- White water rafting is a popular adventure sport on the Dhauliganga River.



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