

*Sind*

## GENERAL INFORMATION

- Sind (Sindh) River, a tributary of the Yamuna River, originates from the Malwa Plateau in Vidisha district, Madhya Pradesh, and flows for about 470 km, in a southeast to northeast direction, through Vidisha, Guna, Ashoknagar, Shivpuri, Datia, Gwalior and Bhind districts in Madhya Pradesh, and Etawah and Jalaun districts in Uttar Pradesh.
- It meets the Yamuna River at Pachnada in Jalaun district, Uttar Pradesh.
- Sind River basin spans an area of about 26,699 km<sup>2</sup> (Figure 1).
- The basin falls in the Semi-Arid (Gujarat Rajputana – 4B) biogeographic zone.
- The climate of the basin is predominantly subtropical monsoon.
- Geologically, the basin transitions from an upland plateau terrain to the alluvial plains of the Gangetic basin.
- Major tributaries of Sind are the Parbati, Pahuj, Kwari (Kunwari), and Mahuar.
- The population density along the river is 276.23 persons/km<sup>2</sup>.

- Decadal LULC transitions in the Sind basin (2008-09 to 2018-19) show a major rise in double/triple cropping (16.27%) and minor increases in built-up area (0.05%) and waterbodies (0.21%). In contrast, kharif (-1.03%) and rabi crops (-6.30%), current fallow (-4.91%), and wasteland (-4.26%) declined, while deciduous forest (-0.03%) and scrub forest remained nearly stable (Figures 2a and 2b).

Figure 1: Map of Sind River basin



## BIODIVERSITY VALUE

- Sind basin is dominated by non-forest areas (81.37%), followed by open forest (11.24%), moderately dense forest (3.97%), scrubland (3.38%) and very dense forest (0.05%) (Figure 3).
- The basin supports Tropical Dry Deciduous Forest characterized by Indian gum Arabic tree (*Acacia nilotica*), kachu (*Acacia catechu*) and Indian frankincense (*Boswellia serrata*), and Tropical Thorn Forest represented by mesquite (*Prosopis juliflora*), gum Arabic tree (*Senegalia senegal*), kair (*Capparis decidua*) and ber (*Ziziphus mauritiana*).
- 94 species of plants have been documented in the Sind riverscape.
- The basin harbours predator species such as the Vulnerable leopard (*Panthera pardus*) and sloth bear (*Melursus ursinus*), Near Threatened striped hyena (*Hyaena hyaena*), and golden jackal (*Canis aureus*), and prey species like the Vulnerable sambar (*Rusa unicolor*) and four-horned antelope (*Tetracerus quadricornis*), chinkara (*Gazella bennettii*), and chital (*Axis axis*).
- Key aquatic fauna in the basin includes the Critically Endangered gharial (*Gavialis gangeticus*), Endangered Gangetic dolphin (*Platanista gangetica*) and Indian softshell turtle (*Nilssonia gangetica*), and Vulnerable Indian flapshell turtle (*Lissemys punctata*) and mugger (*Crocodylus palustris*).
- 40 avifaunal species have been recorded along the river, including winter migratory waterbirds (15% of the species), and the Near-threatened Asian woollyneck (*Ciconia episcopus*), great thick-knee (*Esacus recurvirostris*) and river lapwing (*Vanellus duvaucelii*).
- Madhav National Park harbours 227 bird species, including 73 waterbirds and the Critically Endangered white-rumped vulture (*Gyps bengalensis*), red-headed vulture (*Sarcogyps calvus*), Endangered Indian skimmer (*Rynchops albicollis*) and Vulnerable river tern (*Sterna aurantia*).
- 29 fish species (7 orders and 12 families) have been recorded from the river, including Near Threatened butter catfish (*Ompok bimaculatus*).

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

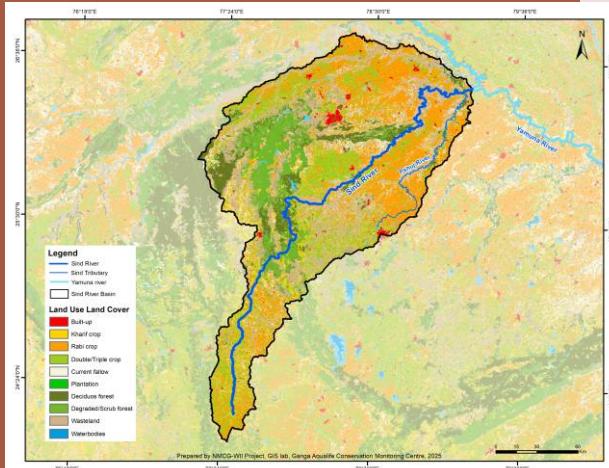


Figure 2b: LULC map of Sind River basin (2018-19)

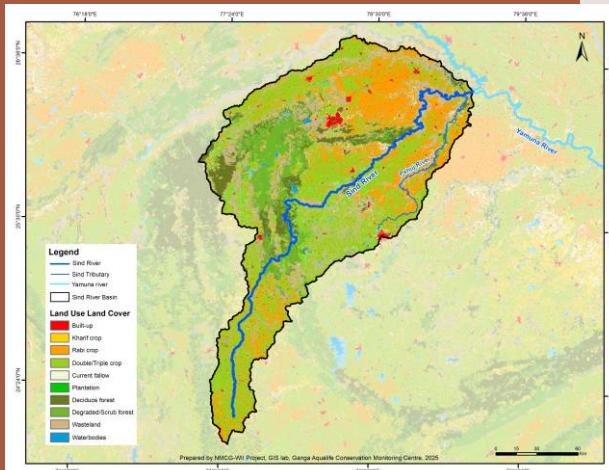
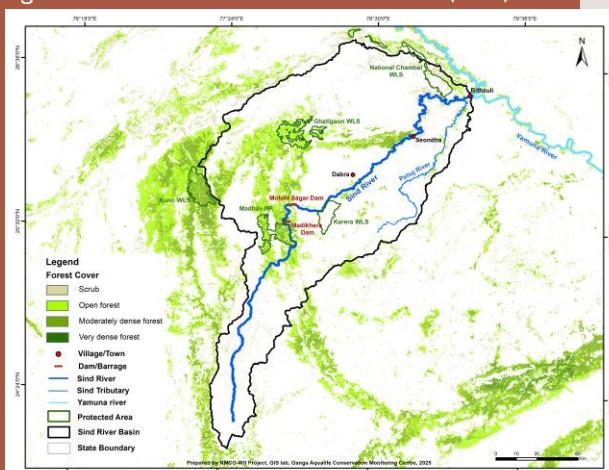


Figure 3: Forest cover of Sind River basin (2019)



## SIND RIVER CAN BE DIVIDED INTO THREE ZONES:



## CONSERVATION SIGNIFICANCE

### CRITICALLY ENDANGERED

#### Reptile

Gharial *Gavialis gangeticus* (Gmelin in Linnaeus, 1789)

### ENDANGERED

#### Mammal

Gangetic dolphin *Platanista gangetica* (Lebeck, 1801)

#### Reptile

Indian softshell turtle *Nilssonia gangetica* (Cuvier, 1825)

### VULNERABLE

#### Reptile

Mugger *Crocodylus palustris* (Lesson, 1831)

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

#### Fish

Wallago attu (Bloch and Schneider, 1801)

## KEY PROTECTED AREAS

Madhav National Park

Karera Wildlife Sanctuary

National Chambal Wildlife Sanctuary



## INTERESTING FACTS

- Pachnada, the confluence of five rivers, viz. Yamuna, Chambal, Sind, Kunwari, and Pahuj, in Etawah and Jalaun districts of Uttar Pradesh, is a place of immense religious and historical significance in the region.
- Karera Wildlife Sanctuary was notified as a Protected Area to conserve the great Indian bustard (*Ardeotis nigriceps*) in 1981. However, the sanctuary may be denotified due to the local extinction of the species.
- Madhav National Park, once the royal hunting grounds for the Mughal Emperors and the Maharajas of Gwalior, was declared as the 58<sup>th</sup> Tiger Reserve of India (March 2025).

## DRIVERS OF RIVERSCAPE CHANGE

- Heavy sand mining in the upper stretch with use of excavators, loaders and trucks for transportation causes disturbances to the nesting sites of birds and turtles.
- Two dams, namely Atal Sagar Dam (or Madikheda Dam) and Mohini Sagar Dam, have been constructed on the Sind River. Given that it is a relatively narrow channel, the development of more dams could further obstruct its flow, and adversely affect downstream ecosystems.
- While the river as a whole has been categorised as a clean river by the Central Pollution Control Board, water quality in select stretches like Dabra is poor.



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