

VIBRANT GANGA



भारतीय वन्यजीव संस्थान  
Wildlife Institute of India



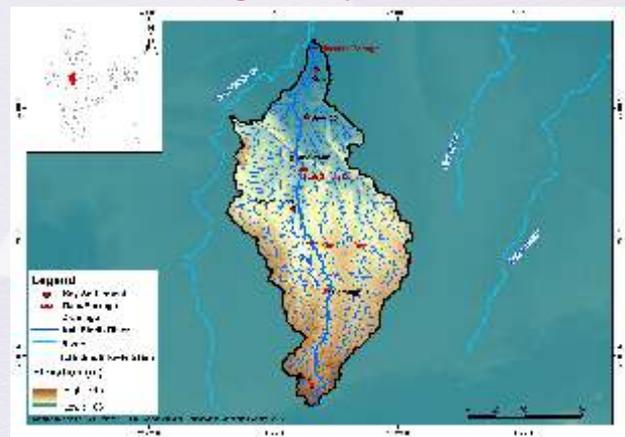
*Kali Sindh*

## GENERAL INFORMATION

- Kali Sindh River, a tributary of the Chambal River, originates in Bagli Tehsil, Dewas district, Madhya Pradesh, and flows for 405 km through the districts of Dewas, Shajapur and Rajgarh in Madhya Pradesh, and Jhalawar, Kota and Baran in Rajasthan.
- Kali Sindh joins the Chambal River near Kharwan village in Kota district.
- Kali Sindh River basin spans an area of 24,850 km<sup>2</sup> (Figure 1).
- The basin falls in the Semi-Arid (Gujarat Rajputana – 4B) biogeographic zone.
- The basin primarily experiences a subtropical monsoon climate, with hot semi-arid steppe climate near its confluence with the Chambal River.
- Kali Sindh originates in the Vindhyan Range, drains the Malwa Plateau, and exhibits a predominantly dendritic to sub-dendritic drainage pattern.
- Key tributaries of the Kali Sindh are the Parwan, Lakhundar, Ahu and Chandrabhaga rivers.
- The population density along the river is 243.60 persons/km<sup>2</sup>.

- Decadal LULC transitions in the Kali Sindh basin (2008-09 to 2018-19) recorded a significant increase in area under double/triple crop (22.56%), and decrease in kharif crop (-12.1%), current fallow (-9.37%) and wasteland (-1.94%), indicating a shift towards agricultural intensification in the basin due to improved irrigation. Marginal changes were noted in waterbodies (0.67%), built-up (0.15%), rabi crop (0.02%), evergreen forest (0.01%), and grassland (-0.01%). Deciduous and scrub forests remained constant (Figures 2a and 2b).

Figure 1: Map of Kali Sindh River basin



## BIODIVERSITY VALUE

- Kali Sindh basin is dominated by non-forest areas (92.99%), followed by open forest (4.33%), scrubland (1.47%), and moderately dense forest (1.21%) (Figure 3).
- Kali Sindh basin is predominantly characterised by Southern Tropical Dry Deciduous Forest type. The upper stretch (Malwa Plateau) supports dry deciduous forests dominated by *Tectona grandis* and *Anogeissus latifolia*. The middle stretch (Chambal ravine landscape) is characterised by *Anogeissus pendula*-dominated dry forests, tropical thorn scrub, and ravine vegetation. The lower stretch (open alluvial tracts and floodplain grasslands) is dominated by *Saccharum spontaneum*, *Chrysopogon fulvus*, and *Heteropogon contortus*.
- Kali Sindh River passes through the Darrah Wildlife Sanctuary, a part of the Mukundara Hills Tiger Reserve, which hosts 29 mammalian species (8 orders, 19 families), including the Endangered tiger (*Panthera tigris*), dhole (*Cuon* *alpinus*) and Indian pangolin (*Manis crassicaudata*); and Vulnerable fishing cat (*Prionailurus viverrinus*), smooth-coated otter (*Lutrogale perspicillata*) and Indian wolf (*Canis lupus ssp. pallipes*).
- 179, 108 and 78 bird species have been documented from the Jhalawar Forest Division, Mukundara Hills Tiger Reserve, and Shergarh Wildlife Sanctuary, respectively. Threatened species include the Critically Endangered white-rumped vulture (*Gyps bengalensis*), Indian vulture (*Gyps indicus*), slender-billed vulture (*Gyps tenuirostris*) and red-headed vulture (*Sarcogyps calvus*).
- Mugger (*Crocodylus palustris*) has been recorded only near the Chambal-Kali Sindh confluence.
- 31 fish species (7 orders, 11 families) have been recorded from the river, including the Vulnerable *Wallago attu* and kolus barb (*Hypselobarbus kolus*).

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

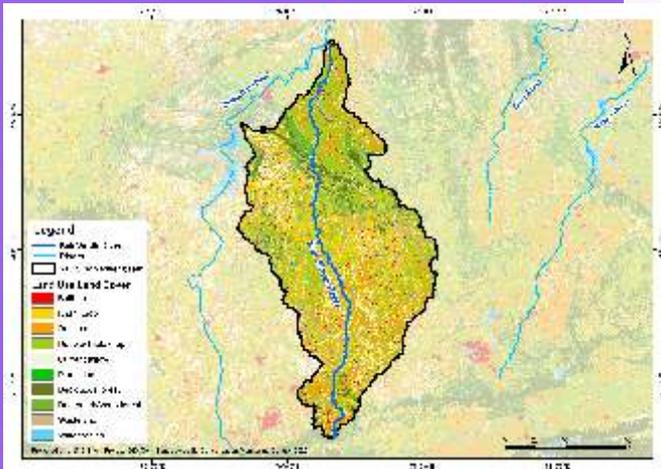


Figure 2b: LULC map of Kali Sindh River basin (2018-19)

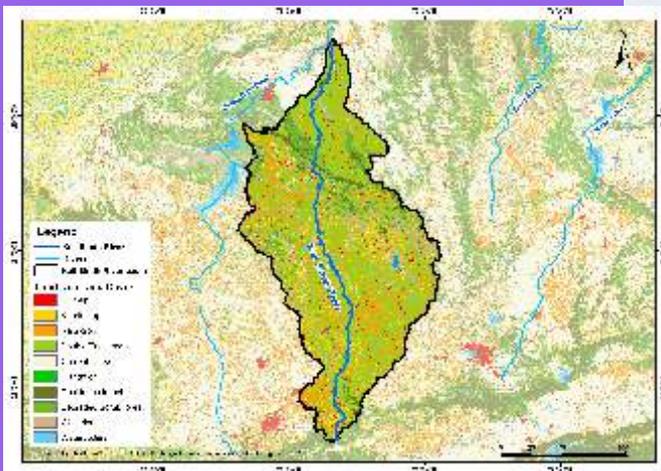
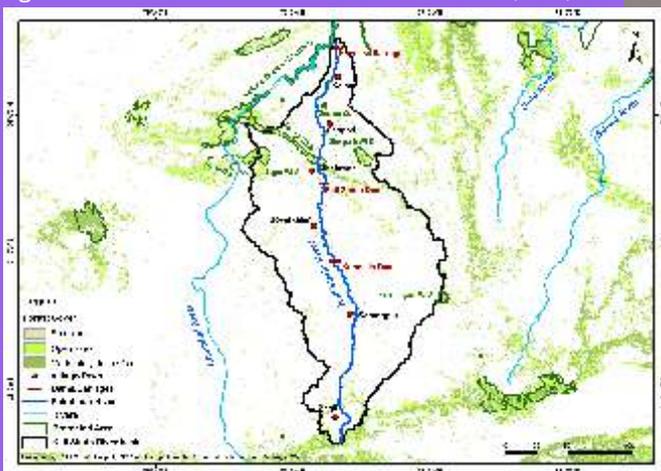


Figure 3: Forest cover of Kali Sindh River basin (2019)



## CONSERVATION SIGNIFICANCE

### Endangered

#### Avifauna

Black-bellied tern *Sterna acuticauda* (Gray, 1832)

Egyptian vulture *Neophron percnopterus* (Linnaeus, 1758)

### Vulnerable

#### Avifauna

Common pochard *Aythya ferina* (Linnaeus, 1758)

River tern *Sterna aurantia* (Gray, 1831)

Sarus crane *Grus antigone* (Linnaeus, 1758)

Eastern imperial eagle *Aquila heliaca* (Savigny, 1809)

### Reptile

Mugger *Crocodylus palustris* (Lesson, 1831)

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

### Fish

Wallago attu (Bloch and Schneider, 1801)

Kolus barb *Hypselobarbus kolus* (Sykes, 1839)

### Key Protected Areas

Darrah Wildlife Sanctuary

Shergarh Wildlife Sanctuary

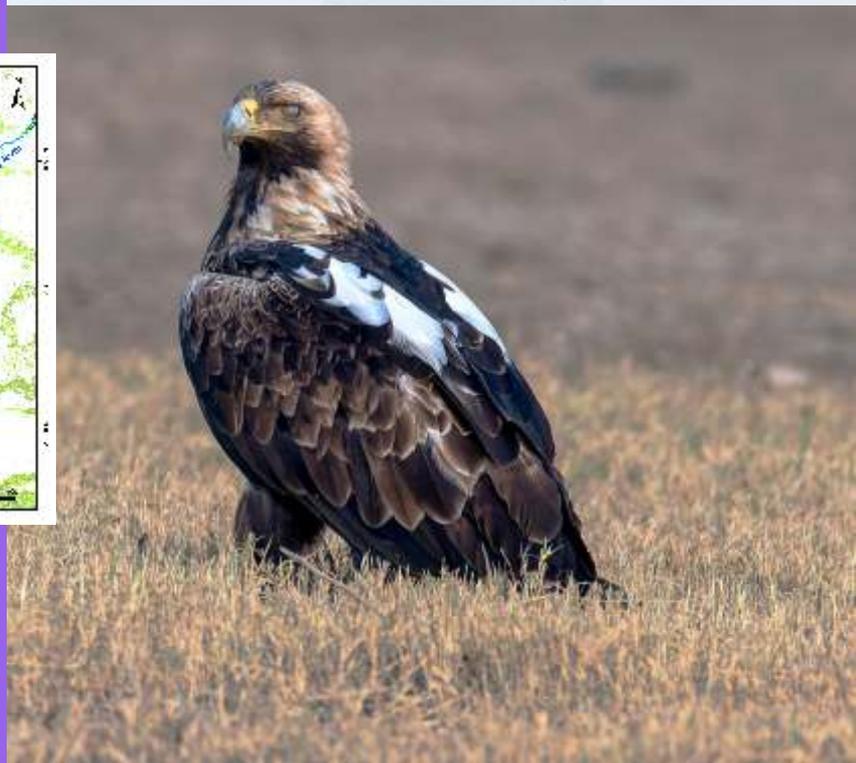
Gandhi Sagar Wildlife Sanctuary

National Chambal Wildlife Sanctuary

Narsingharh Wildlife Sanctuary

Sorsan Conservation Reserve

Eastern imperial eagle (*Aquila heliaca*) | ©Hetal Parekh



## DRIVERS OF RIVERSCAPE CHANGE

- Major infrastructure projects on the Kali Sindh mainstem, namely the Kalisindh Dam (Jhalawar), Kundalia Dam (Rajgarh), and Navnera Barrage, together with numerous stop dams/check dams/anicuts and tributary impoundments, have substantially regulated the river's natural flow regime, reduced downstream discharge, and altered sediment transport and channel dynamics, thereby impacting riverine ecology and biodiversity. Additionally, the proposed 'Ramjal Setu Link Project', the integration of the Parbati-Kalisindh-Chambal Link Project and the Eastern Rajasthan Canal Project, will further transform the natural hydrological and ecological regimes of the Kali Sindh basin.
- Agricultural runoff and the discharge of untreated sewage from Jhalawar (the only urban centre along the river), and rural riverside settlements constitute the primary sources of water pollution, adversely affecting water quality.
- Agricultural expansion and rising anthropogenic water demand have resulted in declining water availability and increased stress on the river's natural flow regime.
- Intense soil erosion in ravine-dissected and barren areas of the Kali Sindh catchment contributes high sediment loads that alter channel morphology and sediment dynamics within the river system.

## INTERESTING FACTS

- Gagrion Fort, a 12<sup>th</sup> century river-protected fort located just downstream of the Kali Sindh-Ahu confluence in the Vindhyan Range, is surrounded by the Kali Sindh and Ahu rivers on three sides and is one of the six Hill Forts of Rajasthan designated as a UNESCO World Heritage Site. It represents a notable example of Rajput defensive planning and has witnessed 14 battles, including a siege by Alauddin Khilji in 1234 CE, which was successfully repelled by Raja Jait Singh.
- Jhalawar city, named after the Jhala Rajputs, was established by Jhala Zalim Singh, Dewan of the princely state of Kota, in 1791 CE as a strategically located military cantonment known as Chaoni Umedpura. The princely state of Jhalawar was carved out of Kota in 1838 CE.
- Jhalrapatan, known as the 'City of Bells', is a historic town situated on the banks of the Chandrabhaga River that contains several heritage structures, including the 7<sup>th</sup> century Chandrabhaga Temple Complex, 10<sup>th</sup> century Padmanabha (Sun) Temple, 11<sup>th</sup> century Shantinath Jain Temple, 18<sup>th</sup> century Dwarkadhish Temple, and 19<sup>th</sup> century Navlakha Fort.
- Gandhi Sagar Wildlife Sanctuary is the second cheetah (*Acinonyx jubatus*) reintroduction site under Project Cheetah, launched by India in 2022, which is the world's first inter-continental translocation of a large wild carnivore.
- Sorsan (Baran district) has been identified as the site for a conservation breeding centre for the Critically Endangered lesser florican (*Sypheotides indicus*), an agro-grassland species and the smallest member of the bustard family, under the Great Indian Bustard Recovery Programme. The area was historically inhabited by the Critically Endangered Great Indian Bustard (*Ardeotis nigriceps*), now locally extinct.



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