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LOWER KARNALI

WATERSHED BRIEFER

Community Vision:

For an equitable Lower Karnali Watershed with regard to natural resources, biodiversity conservation, and sustainable use.

THE LOWER KARNALI WATERSHED

The Lower Karnali Watershed stretches across parts of 10 municipalities in Bardiya, Kailali and Surkhet districts, including a protected area – Bardiya National Park.

The Karnali River originates north of Nepal in China at Mansarovar Lake and Kailash Mountain and carves a spectacular gorge at Chisapani known for its diversity of trans-Himalayan and sub-Himalayan fish species. In all, 74 species of fish have been found in the Karnali, making it a valuable biodiversity hotspot.

The bottom of the Karnali River is strewn with boulders in the northern reaches, but turns sandy in the south. Due to its sharp descent and the fragile geology in which it is embedded, the Karnali carries a high sediment load. Downstream from Chisapani, the Karnali splits into two channels: Geruwa to the west and Karnali to the right.

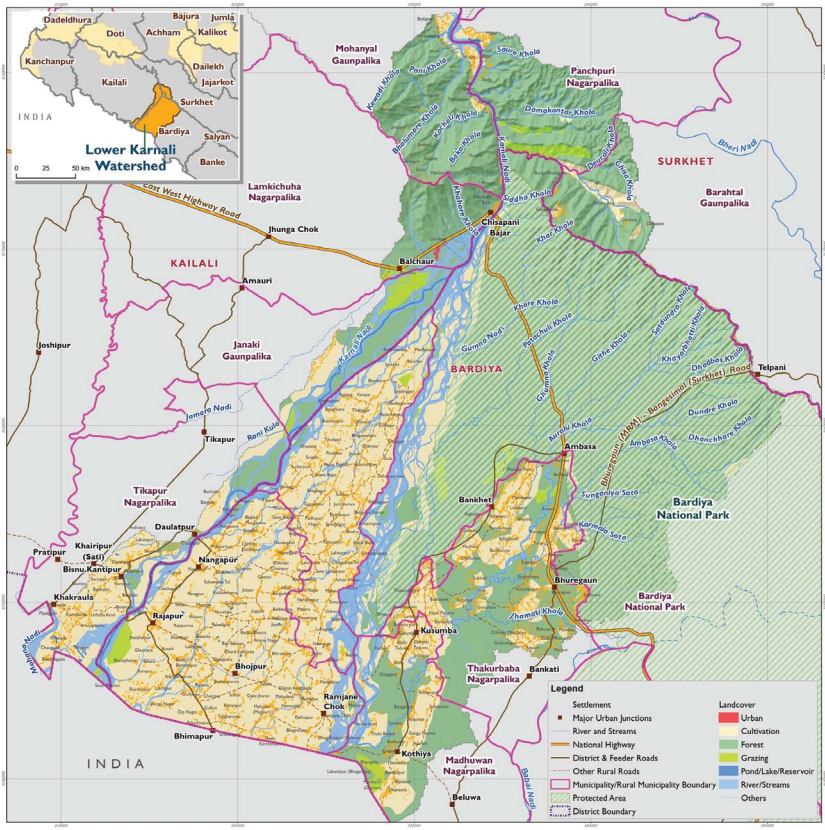
Historically, the Lower Karnali watershed has been occupied by Janajati groups, mostly Tharu. But the eradication of malaria in the 1960s opened the area to significant migration from the hill regions of the country seeking land and more opportunity. Among the Janajati are numerous traditional fishing groups who are disproportionately vulnerable to environmental impacts that complicate their reliance on the river for resources and settlement.

LOWER KARNALI BY NUMBERS

RIVER BASIN	Lower Karnali
PROVINCE	Number 5 and 6
TOTAL DRAINAGE AREA	875.32 km2
NUMBER OF STREAMS	59
MAJOR RIVERS	Karnali, Geruwa, Aaurahi
LAKES AND WETLANDS	Tara, Bahraiya, Bhagaraiya, Babai, Orahi
LAND USE	Forest - 55%; agricultural land -34%; rivers and streams -12%; grazing land - 2%;
MUNICIPALITIES	Geruwa Rural Municipality, Rajapur, Thakurbaba, Madhuwan Municipality, Tikapur Municipality, Janaki and Mohanyal Rural Municipality, Panchapuri and Barahatal Rural Municipality.
POPULATION	171,943 (48% male; 52% female) (CBS, 2015)
ETHNIC GROUPS	Brahmin and Chhetri 26%, Janajati 61% (Tharu 89%), Dalit 8%, Others 5%

Location Map

Watershed Name: Lower Karnali

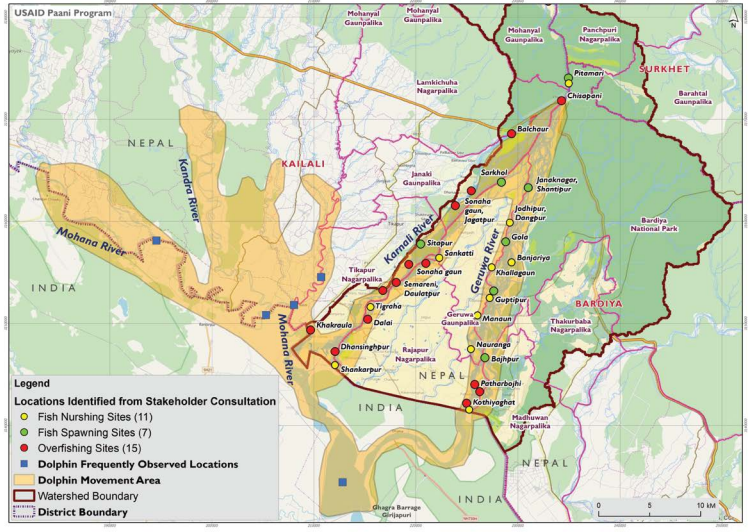


ENVIRONMENTAL ISSUES IN THE LOWER KARNALI WATERSHED

The environmental issues identified in this map were provided by watershed stakeholders who participated in Paani-sponsored entry and exit workshops. By identifying these issue "hotspots," it is hoped local governments and constituencies will be able to draw on this information to make short- and long-term plans to insure clean water, robust biodiversity, and sustainable use of natural resources.

THREATS TO AQUATIC BIODIVERSITY IN THE LOWER KARNALI WATERSHED

This aquatic biodiversity map was constructed with the assistance of various stakeholders who helped to locate places where they noted challenges specifically related to aquatic habitats and biodiversity. Combining GIS and ground-truthed data to create reference maps such as this one will be helpful in developing effective strategies to protect aquatic health in the watershed.



ENVIRONMENTAL REPORT CARD
FOR THE LOWER KARNALI WATERSHED

This health report card illustrates watershed health conditions measured against a set of pre-defined indicators chosen through a multi-stakeholder consultation process. These indicators show the current health status of Lower Karnali using a color code for the threats, opportunities, and challenges facing the watershed.

WATERSHED HEALTH CONDITIONS

GOOD | FAIR | POOR

GOVERNANCE AND EQUITY

- Households engaged in local level planning
- Community active in NRM groups
- Conflicts over NRM
- Women and marginalized groups in leadership positions
- Equitable access and benefit sharing with natural resourcces
- People comply with environmental laws and regulations
- Government enforces laws and regulations
- Coordination between local and provincial government

SUSTAINABLE INFRASTRUCTURE

- Hydropower
- Roads
- Gravel mining
- Irrigation

CLIMATE RESILIENCE AND DISASTER RISK REDUCTION

- Areas vulnerable to landslides, floods and landslides
- Use of climate resilience adaptation practices
- Households with access to early warning systems

BIODIVERSITY AND HABITAT

- Household sanitation
- Quantity of fish
- Fishing Practices
- Land use and land cover
- Solid waste disposal
- Invasive species
- Species diversity

WATER

- Water availability
- Water acccessibility
- Water quality

WAYS FORWARD IN THE LOWER KARNALI WATERSHED

Numerous stakeholders from the watershed formulated these recommendations that represent a variety of viewpoints, from government officials to local business owners and residents. In that way, these actions and commitments seek to address environmental issues in Lower Karnali that provide remediation or improvements for all groups in the watershed.

ISSUE	ACTION/RECOMMENDATIONS
THE SONAHA COMMUNITY (TRADITIONAL FISHING GROUP)	• Identify biodiversity hotspots in local rivers and hand over management to local fishery groups to manage and sustain fish stocks; • Build capacity for local residents to improve capture fishing while eliminating the use of destructive fishing practices such as poison and electric current; • Tailor the Aquatic Biodiversity Conservation Act to harmonize more closely with local norms, values, and standards adopted by river dependent communities; and • Support the establishment of eco-tourism as a means to improve livelihood options for Sonaha.
THE SONAHA COMMUNITY (TRADITIONAL FISHING GROUP) DECLINING FISH NUMBERS AND AQUATIC BIODIVERSITY	• Discourage destructive fishing practices (e.g., poison, electric current) and overfishing through the introduction of regulatory fishing practices and awareness building programs; • Introduce mitigation measures (e.g., green coverage) for reducing agricultural runoff and soil erosion in upstream areas; • Support development of inclusive and progressive capture fishery policies and guidelines by providing relevant information for local decision-makers; • Regulate gravel mining and strengthen cross-border coordination with Indian counterparts on issues related to gravel mining as they impact aquatic biodiversity; • Develop restoration initiatives for Bhagariya Lake, including invasive species removal (e.g., water hyacinth); and • Strengthen the capacity of local lake and wetland committees to manage water resources, and increase the capacity of local communities to seek government and non-government funds for this work.
SHRINKING PONDS, LAKES, AND WETLANDS	• Form and strengthen wetland conservation committees to ensure that future interventions will have minimal impacts on water bodies while promoting aquatic biodiversity protection and conservation; • Strengthen the local capacity of lake management committees to manage water resources, and increase the capacity of local communities to seek government and non-government funds for this work. • Develop restoration initiatives for Bhagariya Lake, including invasive species removal (e.g., water hyacinth); • Conduct research on aquatic biodiversity including wetland bird species; • Increase collaboration with local stakeholders to minimize the effects of floods through improved soil conservation measures; and • Promote coordination between watershed residents and government agencies to ensure effective knowledge sharing and investment.
INCREASING CLIMATE-INDUCED NATURAL HAZARDS	• Improve river bank stabilization by using available bio-engineering technologies; • Install early warning systems throughout the watershed to disseminate information on impending floods; • Promote watershed management practices that are affordable, climate-smart, and eco-friendly; • Strengthen the adaptive capacity of marginalized communities who are dependent on water and other natural resources for maintaining their livelihoods; • Form and strengthen local networks for promoting conservation initiatives between upstream and downstream communities.