



LOWER MAHAKALI

WATERSHED BRIEFER

Community Vision:

A resilient, healthy and sustainable Lower Mahakali Watershed with ensured easy access to clean and safe water for all creatures by 2030.



THE LOWER MAHAKALI WATERSHED

The Lower Mahakali Watershed is located within Kanchanpur District of southwestern Nepal and borders India to the west and south. Administratively, the watershed is divided into three zones. The Bhim Datt municipality occupies the northern portion of the watershed, the Mahakali Municipality lies to the west, and Shuklaphanta National Park occupies the southern portion of the watershed. The vast majority of the watershed area is characterized as Tarai plain, which is predominately flat, alluvial plain topography with a small portion in the Churia/Siwalik hills to the north.

The Lower Mahakali River is a braided stream that consists of networks of channels within the main channel that runs north-south through the middle of the watershed. As is typical of rivers in the Tarai, there are constant changes in the pattern of networks and the extent of the floodplains, which have historically delivered rich sediment that has supported high biodiversity and agricultural development while also contributing to high flood risk for adjacent human settlements. Eighty percent of the rainfall takes place during the summer monsoon in the June to September timeframe, with the river dry much of the year.

The majority of livelihoods are dependent upon agriculture and wage labor. Increasing numbers of people are engaged in seasonal and foreign migration, as well as gravel mining. The Lower Mahakali was traditionally inhabited by the Tharus, but diversification began in the 1960s as Hindu castes migrated to the area. Today, Chhetris for the dominant social group.

At the watershed level, the Lower Mahakali has been identified as a biodiversity hotspot because it supports a number of endemic bird and fish species, such as the endangered Sahar fish. Sizable populations of commercially valuable species such as Mahseer, Katile and Buhari fish also occur within the watershed, although local fisher folk report that fish populations have declined significantly over the last 20 years due to poor fisheries management and habitat degradation.

LOWER MAHAKALI BY NUMBERS

WATERSHED	Lower Mahakali
PROVINCE	Number 7
TOTAL DRAINAGE AREA	311 km ²
NO. OF STREAMS	16
MAJOR RIVERS	Kamikate, Gahatadi, Jogbudha, Malariya Bhunikhola, Bangaukhola, Bangekhola, Bhingrigaad, Bhumethala Khola, Chaudhar Nadi, Gandha Khola, Machhetrikhola
LAKES AND WETLANDS	21 natural lakes, of which Rani Tal (10 hectares) is the most ecologically significant
LAND USE	Agricultural land - 35%; forests - 29%; shrubs and grassland - 24%; Rivers, streams and ponds - 12%
MUNICIPALITIES	Bhimdutta, Mahakali
POPULATION	83,580 (48% male; 52% female)
ETHNIC GROUPS	Brahmin, Chhetri, Thakuri (53.2%), Janajati (15.2%), Dalit (26.3%), Newar (0.5%), Others (4.8%)

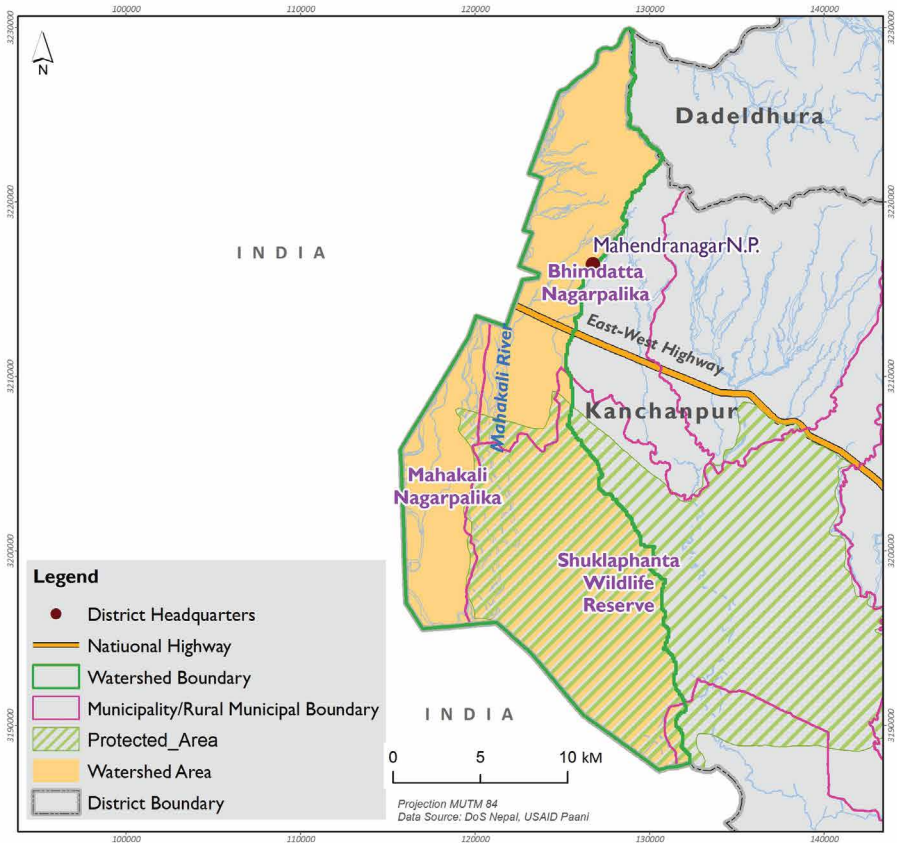
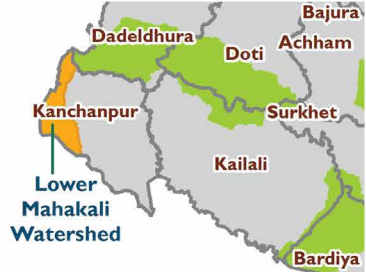
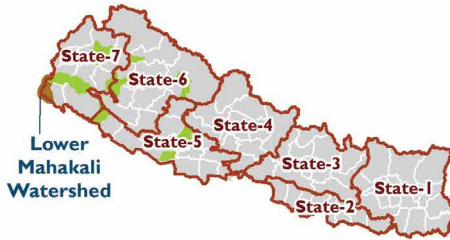
Location Map

Watershed Name: Lower Mahakali

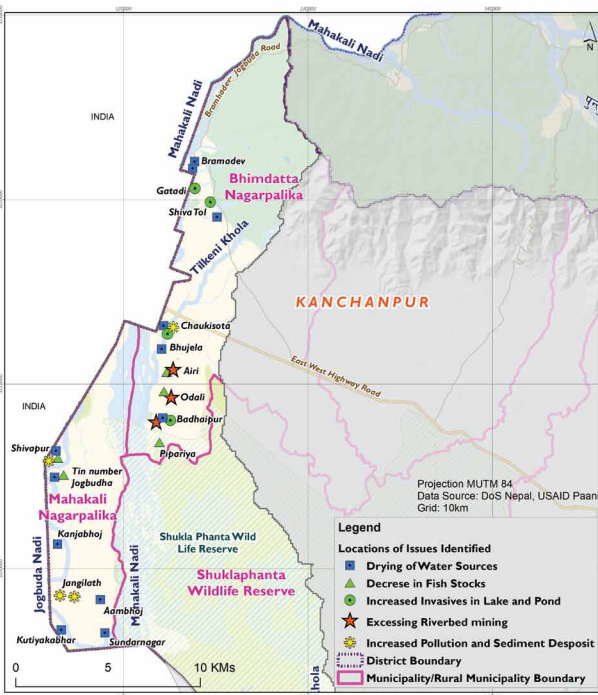
River Basin: Mahakali

Watershed Code: 248

USAID Paani Program



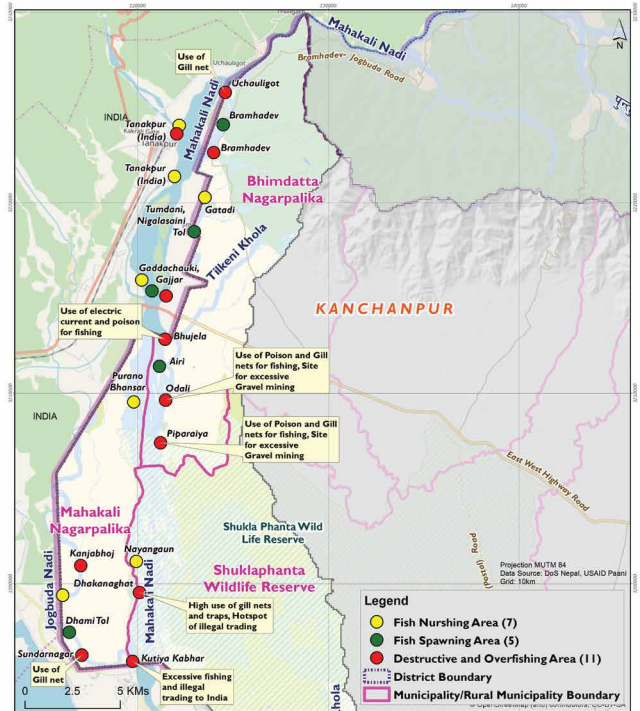
ENVIRONMENTAL ISSUES IN THE LOWER MAHAKALI WATERSHED



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 MAHAKALI 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 MAHAKALI 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 Mahakali and 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 resources	
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
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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 accessibility	Water quality
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SUSTAINABLE AGRICULTURE

Agricultural productivity	Climate and physiography	Soil management
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WAYS FORWARD IN THE LOWER MAHAKALI 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 Mahakali that provide remediation or improvements for all groups in the watershed.

ISSUE	ACTION/RECOMMENDATIONS
TRANSBOUNDARY WATER MANAGEMENT	<ul style="list-style-type: none"> • Strengthen cross-border coordination committee; and • Establish communication system with barrage management.
FLOODS CREATING INUNDATION, RIVER CUTTING, AND LANDSLIDES	<ul style="list-style-type: none"> • Provide training and support for low cost stabilization techniques for slopes and river banks, such as bioengineering and river bank planting; • Support better control of runoff water to reduce soil erosion and protect agriculture land in upstream areas; • Strengthen the early warning system; • Construct raised taps and toilet; • Produce and disseminate behavior change and communication materials and radio programs on watershed management best practices; • Improve implementation of disaster risk management plans; and • Relocate or raise infrastructure out of the floodplain and other vulnerable areas.
RIVERBED MINING	<ul style="list-style-type: none"> • Promote regulated gravel mining and excavation; • Promote stronger enforcement of IEE and EIA provisions; and • Encourage enforcement of existing laws and regulations related to watershed issues.
DECLINE IN FISH STOCKS AND UNSUSTAINABLE FISHING PRACTICES	<ul style="list-style-type: none"> • Form fisher groups to facilitate dialogue about fish numbers; • Develop and endorse capture fisheries guidelines; • Initiate dialogues with provincial government to create communication channels between government bodies; • Conduct a capture fisheries survey; • Promote fishing-focused ecotourism; and • Mobilize Community Based Anti-poaching Units to combat destructive fishing.