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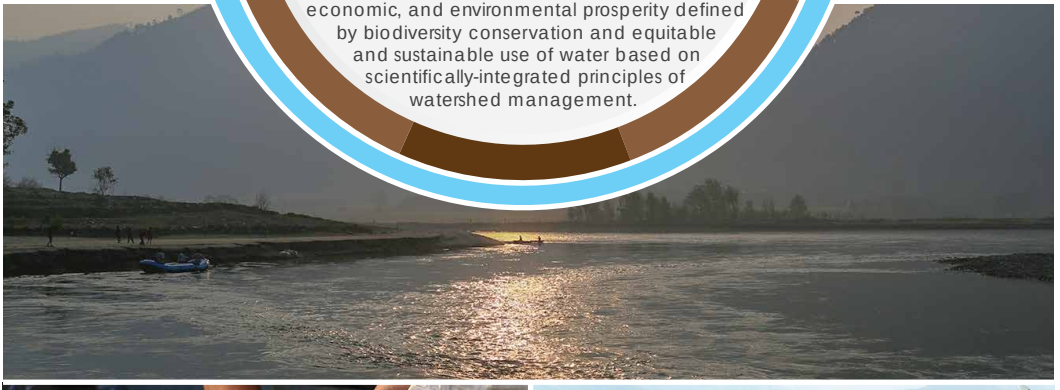
MIDDLE KARNALI

WATERSHED BRIEFER

Community Vision:

For a Middle Karnali watershed that aspires to social, economic, and environmental prosperity defined by biodiversity conservation and equitable and sustainable use of water based on scientifically-integrated principles of watershed management.



THE MIDDLE KARNALI WATERSHED

The Middle Karnali watershed falls within the Karnali River Basin and includes parts of Dailekh, Achham and Kalikot districts of western Nepal. The major topography of the Middle Karnali watershed consists of middle hills (approximately 80% of the watershed area) and the rest is considered high mountain.

The Karnali river is primarily a snow fed river enriched with several tributaries that are both snow and rain fed. The major factors affecting hydrological flow from this watershed are deforestation, rural road construction, climate change, intensive agriculture, steep slope cultivation, landslides and sedimentation around river bank areas. Frequent landslides in the watershed are induced by intense and erratic rainfall as well as extended dry/hot periods that severely affect riverbeds, and consequently, degrade fish habitats in confluence areas that are important for fish breeding.

Perhaps of greatest significance at this point in time is the Upper Karnali Hydroelectric Project, a proposed 900MW run-of-river dam to be built on the Karali River between Dailekh and Surkhet. The project, when built, will create a diversion channel that will lower water volume along a 52 km stretch of river. While the project promises impressive benefits for the region and the nation, the local impact on biodiversity and livelihoods will require vigilance on the part of local residents, the government, and civil society organizations.

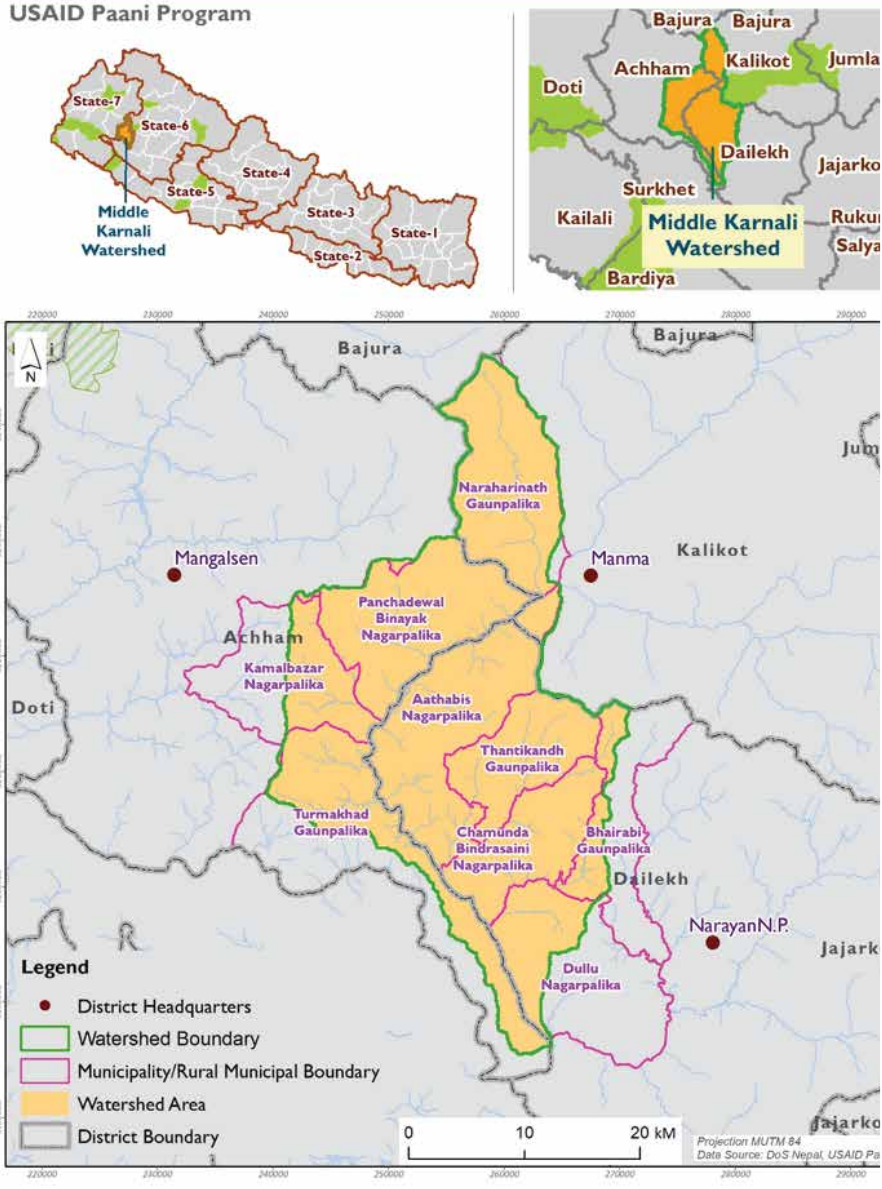
MIDDLE KARNALI BY NUMBERS

RIVER BASIN	Karnali
PROVINCES	Numbers 6 and 7
TOTAL WATERSHED AREA	903.66 km2
NO. OF STREAMS	160
MAJOR RIVERS	KGunat Khola, Barale Khola, Belkhet Khola, Chinne Khola, Ramghat Khola, Khidkijyula Khola, Rakam Karnali, Dogade Khola, Paduka Khola, Ghatte Khola, Pulletala Khola, Lodegaad
LAKES AND WETLANDS	None
LAND USE	Forest - 52%; agriculture - 30%; grazing land -13%; rivers and streams - 3%; scrub land -1%; and other - 1%.
MUNICIPALITIES	Aathbish, Chamunda Bindrasaini, Dullu, Kamalbazar and Panchadeval Binayak
RURAL MUNICIPALITIES	Thantikandh, Bhairabi, Naraharinath and Turmakhad
POPULATION	171,856 (49% male; 51% female) (CBS, 2015)
ETHNIC GROUPS	Brahmin/Chhetri/Thakuri 59%; Janajati 10% (Tharu, 71%); Dalit 30% (57% Kami), Others 1%

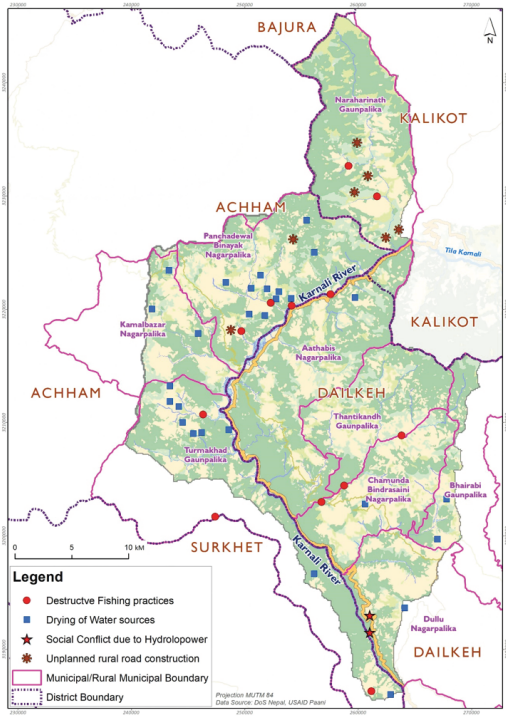
Location Map

Watershed Name: Middle Karnali

River Basin: Karnali **Watershed Code: 333**



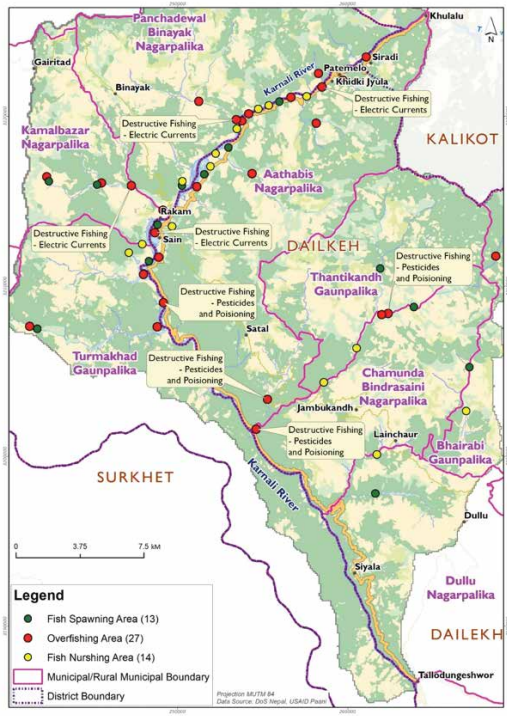
ENVIRONMENTAL ISSUES IN THE MIDDLE KARNALI WATERSHED



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 MIDDLE 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 MIDDLE 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 Middle Karnali 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

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 MIDDLE 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 commitments seek to address environmental issues in Middle Karnali that provide remediations and improvements to serve all groups in the watershed.

ISSUE	ACTION/RECOMMENDATIONS
DRYING WATER SOURCES	• Raise awareness about multiple uses of water technologies that maximize water use efficiency, such as sprinkler irrigation and drip irrigation; • Plant trees and shrubs in the springshed and on barren land in the community to retain more rainwater and recharge natural springs; and • Create water source maps for community to monitor water levels.
DECLINING FISH POPULATIONS AND AQUATIC BIODIVERSITY	• Form fishing community groups to advocate collectively for better representation in local communities and government; • Initiate dialogue with government agencies to promote stronger fishing guideline enforcement; • Promote ecotourism in the watershed as another livelihood option for traditional fishing communities; and • Support local governments to develop necessary laws for river system co-management and improved conservation of fish and aquatic life by handing over stretches of river (2-4 kms) to local communities.
BUILDING SUSTAINABLE HYDROPOWER WITH MINIMAL ENVIRONMENTAL IMPACT	• Encourage participation of downstream stakeholders in public participation hearings to ensure their opinions are heard; and • Continue assessing the environmental impacts of the Upper Karnali Hydropower Project to determine the short- and long-term effects on the watershed, and to develop appropriate benefit sharing mechanisms.
CONSTRUCTION OF IMPROPERLY DESIGNED RURAL ROADS	• Raise awareness and build capacity in local government and contractors about the Equality Framework for Local Governance; • Provide training and support for low-cost stabilization techniques for slopes and river banks using bioengineering methods and river bank planting; and • Form committees of concerned citizens to advocate for environmentally-friendly road construction.
FOREST DEGRADATION	• Raise awareness about forest health and management and the effects of open grazing; • Plant community forest on available bare lands; • Create incentives for communities to limit over extraction of forest resources; • Adopt technologies that enhance forest health: hedge row planting, agro-forestry, and others; and • Adopt scientifically proven interventions to minimize forest fire potential and impact (e.g., fireline construction).
WATER POLLUTION	• Raise awareness about water pollution, pollutions sources, and the need for locally-devised pollution control measures; • Raise awareness for managing degradable, non-degradable, and toxic wastes in urban areas.