



# RARA KHATYAD

## WATERSHED BRIEFER

### Community Vision:

To a future in Rara Khatyad with well-managed lakes and rich biodiversity as the foundation of a thriving eco-tourism sector with inclusive and equitable benefit sharing for all.



# THE RARA KHATYAD WATERSHED

The Rara Khatyad Watershed falls within the Karnali River Basin and includes parts of the Mugu district in western Nepal. Rara Lake and Rara National Park, two popular tourist destinations and important biodiversity areas.

The main waterway, Khatyad Khola, originates in Rara Lake and is nourished by several tributaries that are both snow and rain fed. While many households depend on the river for irrigation and other daily water needs, flow in recent years has been negatively affected by deforestation, road construction, climate change, intensive agriculture, and steep slope cultivation. Each of these factors has increased the likelihood and incidence of landslides in the watershed, exacerbated increasingly by intense rainfall and prolonged periods of no rain that impact communities and aquatic habitats.

Rara Lake is of special importance to the watershed not only for the resources and ecosystem services it provides to the communities surrounding it, but also for its biodiversity and recreation potential. The lake and its tributaries provide three unique and endemic fish species including a wide range of fish that are crucial to local nutritional diets and attractive to sport fishing groups – although fishing is currently banned in the lake and only permitted on rivers.

## RARA KHATYAD BY NUMBERS

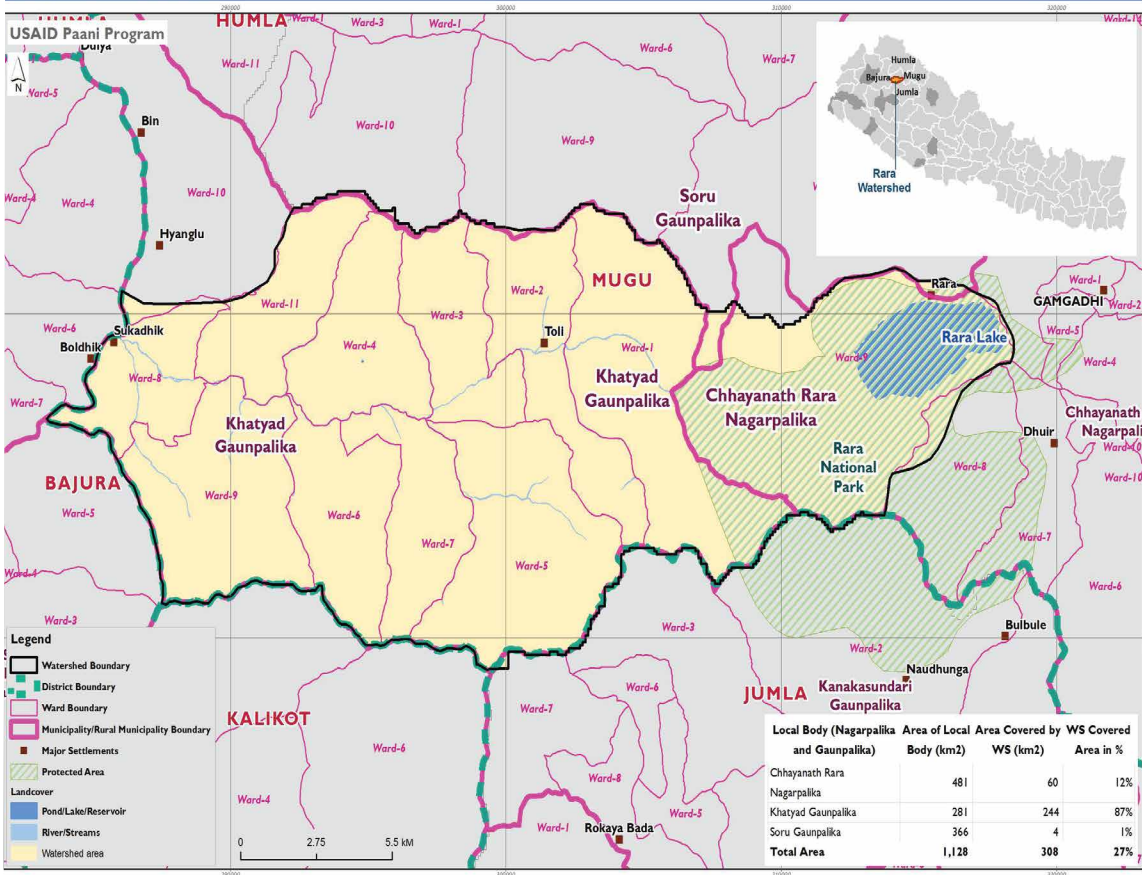
WATERSHED	Rara Khatyad
PROVINCE	Number 6
TOTAL WATERSHED AREA	308 km <sup>2</sup>
PHYSIOGRAPHIC ZONE	High mountain (100%)
MAJOR RIVERS	Khatyad, Missichaur, Kawa, Thado, Bihani, Nakharji, Kahka, and Nauli
LAKES AND WETLANDS	Rara Lake, Bagad Jiula, Khesma, Chhote, Gamtha, Nilasain Daha, Mani Daha, Mauli Daha, Rig Daha
LAND USE	Forest - (49.2%), grazing - (25%), agriculture - (20.3%), barren land - (3%), water bodies - (2.5%)
TOTAL DRAINAGE LENGTH	963 km
MUNICIPALITIES	Soru GP, Khatyad GP, and Chhayanath Rara NP
POPULATION	16,919 (49.5% female; 50.5% male)
POPULATION DENSITY	55 person/km <sup>2</sup>
ETHNIC GROUPS	Brahmin (9.6%), Chhetri (66.2%), Janajati (8.8%), and Dalit (15.2)

# Location Map

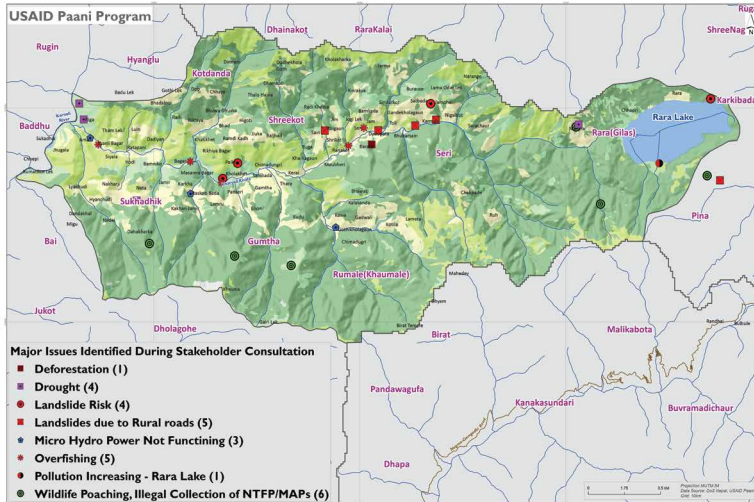
## Watershed Name: Rara Khatyad

River Basin: Karnali

Watershed Code: 999

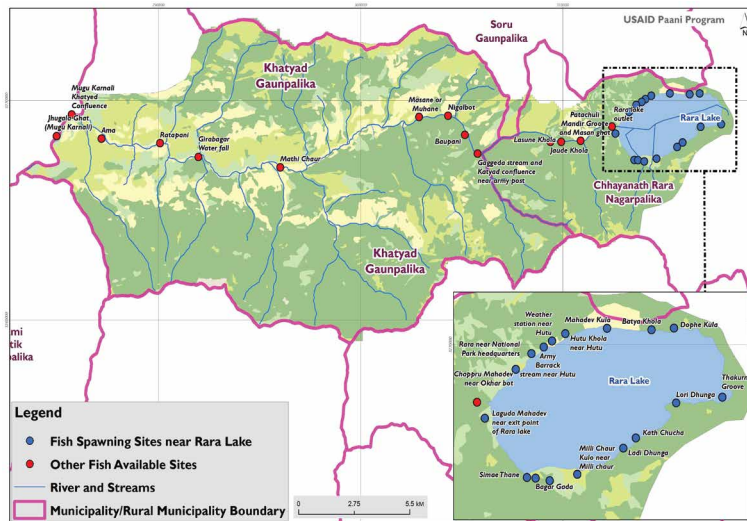


# ENVIRONMENTAL ISSUES IN THE RARA KHATYAD WATERSHED



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 RARA KHATYAD 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 RARA KHATYAD 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 Rara Khatyad 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 and fertility
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# WAYS FORWARD IN THE RARA KHATYAD 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 Rara Khatyad that provide remediation or improvements for all groups in the watershed.

ISSUE	ACTION/RECOMMENDATIONS
<b>IMPROPER ROAD CONSTRUCTION</b>	<ul style="list-style-type: none"> <li>• Raise awareness and build capacity of local government and contractors about the Environment Friendly Local Governance framework;</li> <li>• Enforce existing road construction guidelines to protect areas within the national park; and</li> <li>• Form committees of concerned citizens to advocate for environmentally friendly road construction.</li> </ul>
<b>DECLINING FISH NUMBERS</b>	<ul style="list-style-type: none"> <li>• Establish a fish hatchery in the watershed along the Khatyad Khola;</li> <li>• Discourage recreation fishing in Rara Lake;</li> <li>• Establish fish sanctuaries on feeder streams and the tail water of Rara Lake to replenish fish stocks as needed; and</li> <li>• Promote eco-friendly tourism around Rara Lake to take advantage of the pristine wilderness of the area including the biologically significant endemic fish species.</li> </ul>
<b>DRYING WATER SOURCES, REDUCED SNOWFALL</b>	<ul style="list-style-type: none"> <li>• Raise awareness about multiple use of water technologies – such as sprinkler irrigation and drip irrigation – that maximize water use efficiency;</li> <li>• Plant trees and shrubs in the springshed and on barren land in the community to retain more rainwater and reduce run-off that can recharge natural springs;</li> <li>• Initiate mapping of spring sources and implement springshed management related activities; and</li> <li>• Facilitate construction of snow and rainwater harvesting ponds in the watershed area.</li> </ul>
<b>SOLID WASTE MANAGEMENT</b>	<ul style="list-style-type: none"> <li>• Provide training to the community to increase awareness about solid waste management, including the need to segregate degradable and non-degradable solid waste;</li> <li>• Install dustbins along the popular footpaths around Rara Lake and coordinate disposal of this waste with local communities; and</li> <li>• Initiate a garbage accounting system at the entry and exit points of Rara National Park.</li> </ul>
<b>HUMAN AND WILDLIFE CONFLICTS</b>	<ul style="list-style-type: none"> <li>• Improve communication between the buffer zone communities and the National Park to establish more flexible policies for benefit sharing of local natural resources;</li> <li>• Simplify the compensation system for the families of wildlife victims and farms impacted by wildlife encroachment; and</li> <li>• Support buffer zone communities by mobilizing funds from the National Park earmarked for this purpose.</li> </ul>
<b>WILDLIFE POACHING, EXCESSIVE GRAZING, AND ILLEGAL HARVESTING OF NTFPS</b>	<ul style="list-style-type: none"> <li>• Establish a community-based anti-poaching group to monitor illegal fishing activity and animal and NTFP poaching;</li> <li>• Prepare guidelines for community-based anti-poaching groups to reference and enforce; and</li> <li>• Promote alternative livelihood options of local communities linked to eco-tourism</li> </ul>