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# SUSTAINABLE, JUST, AND PRODUCTIVE WATER RESOURCES DEVELOPMENT IN WESTERN NEPAL

## PROJECT OVERVIEW

This project focuses on the urgent need for addressing water resources management and development in western Nepal, a region which is lagging in economic growth but has high potential for water resources development, has high prevalence of biodiversity hotspots, and is extremely vulnerable to climate change impacts.

The overall goal of this research project is to promote sustainable water resource development in Western Nepal by engaging with relevant stakeholders and producing knowledge that supports decision makers in developing policies and plans that balance economic growth, social justice, and healthy, resilient ecosystems.

The geographic focus of this project are the basins and sub-basins within the mid-western and far-western development regions of Nepal. It includes a particular focus on the Karnali Basin, including the Mahana sub-basin in the Terai and the Mahakali Basin. Research and assessments will be conducted using a multi-tiered approach, i.e., at the national level, basin/regional level and local level.

## SNAPSHOT

**LIFE OF PROJECT:** April 2016 – March 2019

**GOAL:** to promote sustainable water resources development in Western Nepal through balancing economic growth, social justice and healthy, resilient ecosystems.

**IMPLEMENTING PARTNERS:** International Water Management Institute, Duke University and Nepal University

**GEOGRAPHIC FOCUS:** Karnali and Mahakali River Basins in Terai, and the Mahakali Basin located in the mid-western and far-western development regions of Nepal

**TOTAL PROJECT AMOUNT:** \$2.5M

## **OBJECTIVES**

### **CONSTRUCTION OF A SOUND KNOWLEDGE BASE**

The database will include a sound knowledge base which provides water accounting in terms of the available renewable water resources in time and space, present water demands, and water-related risks. Furthermore, the database will include the natural characteristics, accompanying ecosystem services, and all water-related physical infrastructure and modifications of the study area. This includes groundwater aquifers, wetlands, protected biodiversity areas, and river and lake networks and their connectivity. Projected impacts of climate change will also be assessed. This objective will help establish key knowledge and information gaps, and provide datasets that will be useable for a diverse array of analyses and planning purposes in the future.

The database will also include a political economy analysis and comprehensive assessment of the water governance decision-making structure and processes across different scales (including water-related development master plans, power trade agreements and environmental impact assessments). Additionally, it will take into account Nepal's federal water governance systems and the transboundary considerations of India. Furthermore, the database will comprehensively review policy and institutions across scales (from mapping government policies and key stakeholders at national/subnational level to understanding local institutional arrangements), focusing on the intersection of land-water-energy and the environment, and incorporating gender and indigenous communities' issues.

### **DEVELOPMENT AND APPLICATION OF TOOLS, MODELS, AND APPROACHES**

Tools will be developed in consultation with relevant stakeholders to identify the water flows necessary to maintain the integrity of ecosystems and their services. This information will then be used for hydro-economic modelling at the basin scale to explore water allocation and resulting trade-offs under future development and climate change scenarios. At the sub-basin scale, innovative water management interventions and stakeholder dialogues will be initiated. Pilot projects will be explored at the community level to better manage water and governance issues that are inclusive and sustainable.

### **CREATION OF INTEGRATED POLICY AND MANAGEMENT GUIDELINES**

Guidelines will be designed to promote best practices in water-related infrastructure development (e.g., hydropower, irrigation, managed aquifer recharge, and water storage) at different scales, supporting local communities, and protecting ecosystem resilience. The above mentioned knowledge base, tools, models and approaches will be integrated into these guidelines, which will be developed with input from the government and community stakeholders, as well as donors and investors. During the overall project period, researchers will ensure that gender issues are adequately considered and that the research activities, dialogues and policy recommendations support a transformative approach to gender in the region.

## METHODS AND OUTCOMES

These objectives will be achieved through six core work packages:

- Basin characterization
- Environmental flow assessment
- Basin-scale development scenarios
- Watershed/village water management and governance
- Gender and social Inclusion
- Integrated policy and practice guidelines

Through the implementation of these work packages, four main outcomes are targeted:

1. Formation and utilization of a basin-wide ecosystem and environmental flows database, which informs water resource planning and decision-making by varied stakeholders throughout Nepal.
2. A full and transparent exploration of environmental, social, and economic trade-offs resulting from different water resource development pathways.
3. Adaption of practical technologies and land/water management approaches by local communities, increasing adaptive capacities to future climatic shock. Achieved through improved water flows, protected ecosystems, and more equitable local water governance.
4. Increased knowledge among government and development partners on how to create just, economical, and environmentally sustainable and resilient policies and infrastructure.

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