# IWMI IN NEPAL

A water-secure world

IWMI
International
Water Management
Institute

# INNOVATIVE SOLUTIONS FOR SUSTAINABLE WATER RESOURCE MANAGEMENT

**Nepal is a water-rich country, with a large number of rivers and rivulets of varying size flowing across its diverse geographic regions – mountains, hills, and Terai plains. Yet, many Nepalese struggle to access safe water for drinking and agriculture. Climate change, population growth, male out-migration (leading to the "feminization" of agricultural work), and inequitable land ownership pose major challenges for water resource management, as do norms surrounding ethnicity, caste and gender. Water governance depends on customary practices and statutory laws, principally the Canal, Electricity and Water Resources Act of 1967 and the Irrigation Policy of 1992 (revised in 2013). The recent change to a federal governance system also has significant implications for water management.**

**The International Water Management Institute (IWMI) and its partners address these challenges through a diverse portfolio of research-for-development projects. Our team has three decades of experience in researching the country's water and land resources and a firm grasp of its water governance issues.**

Following are highlights from recent research for water sector development in Nepal:

### Characterizing river basins for informed policies and planning

IWMI is developing hydrological and hydro-economic models for the Karnali and Mahakali river basins through a project referred to as Digo Jal Bikas (or "Sustainable Water Project"), with support from the United States Agency for International Development (USAID). The model provides a basis for characterizing hydrology and analyzing trade-offs between different pathways for water infrastructure development. Researchers are also making projections of the future climate and assessing climate change impacts on water availability. Nepal's Department of Water Resources and Irrigation is incorporating the modeling results into its irrigation master plan. IWMI has also provided input into the new National Water Resources Policy and Water Resources Act, drafted by the Water and Energy Commission Secretariat (WECS).

### Analyzing policy and institutional landscapes

IWMI experts have generated a large body of knowledge on past and present water governance in Nepal. This should prove especially valuable as the country implements its new federal system. Under the Digo Jal Bikas

*A drip irrigation system*

*Solar-powered irrigation at Kanakpatti village in Nepal's lowland Saptari District*

project, IWMI has conducted a thorough review of the policy and institutional landscape of Nepal's water sector.

### Mainstreaming gender in the water sector

Gender and power dynamics – intersecting with class, caste, ethnicity, and other factors – affect water management in ways that are complex and context specific. IWMI is working on several fronts to mainstream gender in the water sector. Our researchers embarked recently, for example, on a new project funded by the Australian government to assess how gender affects the functionality of the country's water supply systems.

### Uncovering the connections between migration, water, and agriculture

Several years ago, IWMI and various partners launched a network referred to as MARIS (Migration, Agriculture and Resilience: Initiative for Sustainability), with the aim of putting migration at the forefront of the global agricultural research agenda. In Nepal, our researchers are assessing how continued out-migration affects rural communities, with emphasis on changing gender roles in farming and water resource management.

### Interventions for better agricultural water management

Fragmented landholdings, the rising costs of agricultural inputs, growing ecological and climatic stresses, and deeply entrenched inequality pose major barriers to improvement of Nepal's agricultural water management.

IWMI has pioneered a variety of technical and social interventions, such as collective farming, solar-powered and micro-irrigation, among others, through the Digo Jal Bikas and DSI4MTF (Improving Dry Season Irrigation for Marginal and Tenant Farmers in the Eastern Gangetic Plains) projects.

### Enhanced watershed resilience in the face of climate change

IWMI is devising ways to revive mountain springs as a means of enhancing watershed resilience in the face of climate change. For this purpose, researchers are analyzing isotopes to identify recharge areas and sources of spring water (rain, snow, surface water and groundwater), while determining the residence time of water in aquifer systems. This work forms part of the project Building Climate Resilience of Watersheds in Mountain Eco-Regions (BCRWME), which we are conducting in partnership with the Department of Forests and Soil Conservation.

### Solar-powered irrigation to create new options in agriculture

IWMI researchers are testing the use of solar-powered water pumps for small-scale irrigation in Kailali District as part of the Digo Jal Bikas project and in Saptari District under the DSI4MTF project. The pumps enable farmers, including women, to grow vegetables in the dry season, offering gender-equitable benefits. In Saptari, for example, women in collectives have equal access to the pumps and after training, feel confident about operating them.

# THE IWMI/NEPAL PARTNERSHIP

IWMI is a non-profit, scientific research organization focusing on the sustainable use of water and land resources in developing countries. In Nepal, we work closely with national government agencies, including the Department of Water Resources and Irrigation, Department of Forest and Soil Conservation, Water and Energy Commission Secretariat (WECS) as well as a wide array of development partners, local level governments and academic institutions, while also supporting master's and doctoral students. Headquartered in Colombo, Sri Lanka, with offices across Asia and Africa, IWMI is a CGIAR Research Center and leads the CGIAR Research Program on Water, Land and Ecosystems (WLE). Much of our work in Nepal forms part of WLE. CGIAR is a global research partnership for a food-secure future.

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