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CASE STUDY

Taking a Sustainable and Holistic Approach to Water Resources Management

This river runs through the capital city of Thimphu and forms the Wangchhu Basin. Photo credit: ADB.

With the Integrated Water Resources Management approach, sustaining water resources is a collaborative effort in Bhutan.

Published: 06 May 2019

Overview

In Bhutan, getting water for drinking and irrigation is not easy despite abundant supply from rivers, glaciers, and frozen mountains of the Himalayas because of the terrain. Climate change aggravates the situation by threatening the sustainability of water resources.

To address these challenges, the Government of Bhutan, supported by the Asian Development Bank (ADB), is implementing an Integrated Water Resources Management (IWRM) approach to harness the country's abundant water resources and follow a long-term plan for their sustainable use.

Project snapshot

Dates	• **28 Feb 2014:** Approval Date • **30 Jun 2016:** Closing Date
Cost	• **US$ 1.6 million (Amount Utilized)**
Institutions and Stakeholders	**Financing** • Japan Fund for Poverty Reduction: US$ 1.50 million • Multi-Donor Trust Fund under the Water Financing Partnership Facility (contributors are Australia, Austria, Norway, Spain, and Switzerland): US$ 250,000.00 • Asian Development Bank **Executing agency** • National Environment Commission, Royal Government of Bhutan

Context

Bhutan has one of the highest average yearly water supply per capita in South Asia with 94,500 cubic meters. Water resources are traditionally managed through community-based institutions and used mainly for household and farm needs.

However, the country's growing economy and population have resulted in higher water demand for more varied uses. For instance, water for hydropower gets a lot of focus from the government as it has become the biggest national income contributor and has brought significant progress in reducing extreme poverty in the country. Bhutan's potential to produce 30,000 megawatts of electricity led locals to refer to their water as "white gold."

Challenges

Water accessibility remains a challenge to many isolated communities on mountain slopes. The government has already invested considerable financial resources to draw and supply water from distant locations to storage and distribution networks in urban and rural areas. The per capita cost of delivering water services is expensive and not sustainable.

Lack of irrigation to many farmlands and smallholdings likewise restrict agricultural production as rivers are mainly used to produce hydroelectricity. This poses risks to the country's food security which is already threatened by climate change and rural–urban migration.

The role of government in the management of water has increased over the years, but it is still constrained by weak coordination and regulatory mechanisms.

Solution

The 2011 Water Act of Bhutan identified IWRM as the approach needed to ensure that water resources are protected, conserved, and/or managed in an economically efficient, socially equitable, and environmentally sustainable manner.

ADB's Adapting to Climate Change through Integrated Water Resources Management technical assistance project helped the Government of Bhutan in strengthening the capacity of the National Environment Commission to develop IWRM-based nationwide water and food security strategies.

IWRM is a holistic approach to water management. It follows the basic principles of efficient use, equitable access, balanced approach to extraction, and use of appropriate technologies. Each country must chart its own IWRM plans, depending on its geography, size, political system, and level of development.

The National Environment Commission formed a technical advisory committee composed of representatives from 15 key government stakeholders, non-government organizations, and civil society groups to guide the design and development of plans that will support the country's critical areas of water management:

- rural drinking water and sanitation,
- urban water management,
- economic use of water,
- ecosystem services for water supply, and
- water-related risks and disasters.

The government involved the implementers, beneficiaries, and other stakeholders in consultations and workshops to cultivate support. From these engagements, baseline information about the country's water management needs was gathered and used as a reference for the development of the national strategies.

Outputs

Collaborative water management

The National Integrated Water Resource Management Plan (NIWRMP) was finalized and launched in 2016 to unify and coordinate efforts by different agencies in managing the country's water resources.

The Bhutan Water Security Index was also developed to track the government's progress towards its water sustainability goals.

Management plan for a priority river basin

Wangchhu Basin is considered a priority basin under the national plan as it occupies almost 12% of Bhutan's area and is home to two major towns: the capital Thimphu and main port of entry, Paro.

The Wangchhu River Basin Management Plan was launched to improve rural and urban drinking water supply and sanitation, rural water storage, irrigation development, and flood protection measures.

The plan also proposed institutional arrangements for its effective implementation.

Plan for food security

The National Irrigation Master Plan was launched to support the Ministry of Agriculture and Forests in achieving food self-sufficiency. The main objective is to design a 15-year roadmap for the development of climate adaptive irrigation systems and irrigated agriculture in the country. This includes plans for the development of new irrigation and reconstruction of existing ones, technological interventions, and institutional arrangements.

Lessons

With the emerging threats and uncertainties surrounding climate change, combined with increasing demand due to population growth and lifestyle changes, water resources must be properly managed for a secure future.

The success of this kind of national development strategy will depend on the participation and ownership of the implementing agencies and other stakeholders from both the national and local levels.

High-level political support is needed to ensure that recommendations for the achievement of developmental goals are implemented.

Resources

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Lance has more than 20 years of water resources management experience in Asia and the Pacific. He focuses on water governance and infrastructure development and irrigation modernization. He leads the preparation and implementation of significant irrigation and trans-basin investment projects in India and Sri Lanka.