



## Completion Report

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Project Number: 46463-002  
Technical Assistance Number: 8623  
August 2017

# Bhutan: Adapting to Climate Change through Integrated Water Resources Management

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TA Number, Country, and Name:			Amount Approved: \$1,750,000	
TA 8623-BHU: Adapting to Climate Change through Integrated Water Resource Management			Revised Amount: Not Applicable	
Executing Agency: National Environment Commission	Source of Funding: <sup>1</sup> Japan Fund for Poverty Reduction Multi-Donor Trust Fund <sup>2</sup> under the Water Financing Partnership Facility		Amount Undisbursed: \$ 125,323	Amount Utilized: \$ 1,624,677
TA Approval Date: 28 Feb 2014	TA Signing Date: 26 Mar 2014	Fielding of First Consultants: 10 Sep 2014	TA Completion Date Original: 31 Dec 2015 Account Closing Date Original: 31 Dec 2015	Actual: 30 Jun 2016 Actual: 30 Sept 2016
<p><b>Description</b></p> <p>This technical assistance (TA) supported the Government of Bhutan in operationalizing the 2011 Water Act and related Water Regulation (2014) to strengthen its resilience from current variability and anticipated impacts of climate change. The Government of Bhutan identified the important role of integrated water resource management (IWRM) in: (i) facilitating the sustainable development of Bhutan's vast hydro-power resources while protecting the quality of the country's watersheds; (ii) addressing water scarcity issues for drinking and agriculture; and (iii) managing the risk of water-induced disasters.</p> <p><b>Expected Impact, Outcome, and Outputs</b></p> <p>The TA's expected impact was climate-adaptive water resource management is adopted. The expected outcome was institutional capacity for IWRM is improved. The expected outputs were (i) the National IWRM Plan (NIWRMP) is finalized, (ii) a river basin master plan (RBMP) for one priority major river basin is finalized, (iii) the National Irrigation Master Plan (NIMP) is finalized, and (iv) water resources governance is strengthened.</p> <p>The TA design is considered <i>relevant</i> since it is aligned with (i) the Government of Bhutan's 11<sup>th</sup> Five-Year Plan (FYP)<sup>3</sup> which called for improved water security with the development of a national IWRM plan that operationalizes the Water Act, and development of a Water Regulation; and (ii) it was consistent with ADB's country partnership strategy (2014-2018)<sup>4</sup> and Water Operational Plan (2011)<sup>5</sup> that call for both IWRM and building resilience to climate change. The project design was appropriate to achieve the outcome. However, the outcome indicators were overly ambitious to be achieved within the project timeframe and did not fully represent the output achievements to improve institutional capacity for IWRM. This did not seriously affect the delivery of the targeted outputs or the intended outcome, thus, the TA design is still relevant. The implementation arrangements were appropriate to meet the TA's objectives. The National Environment Commission (NEC), the lead agency in water governance, was the executing agency. NEC coordinated the work of the Department of Agriculture (DOA) as an implementing agency for the development of the NIMP. It was necessary to develop the NIMP to inform the preparation of the NIWRMP, which covered all types of water use. Stakeholders including relevant government agencies, district development councils, block councils and water management committees were actively engaged in the development of the plans through numerous consultation meetings and workshops.</p> <p><b>Delivery of Inputs and Conduct of Activities</b></p> <p>The TA was expected to begin in April 2014 and to close in December 2015. However, delays with recruitment resulted in consultants mobilizing only in September 2014. ADB recruited an international consulting firm using quality-and cost-based selection method. The firm was expected to provide 50 person-months of international and 30 person-months of national consultants. At contract closing, a total of 55.3 person-months of international expertise and 37.6 person-months of national expertise were utilized. Six contract variations were done to meet the actual needs of the TA during implementation: (i) adjustments of home and office inputs and various expenses, (ii) new experts (information technology specialists), (iii) replacement of unavailable experts, and (iv) extension of</p>				

<sup>1</sup> The amount from Japan Fund for Poverty Reduction (JFPR) is \$1,500,000 and from the Multi-Donor Trust Fund under the Water Financing Partnership Facility is \$250,000

<sup>2</sup> Financing partners: the governments of Australia, Austria, Norway, Spain, and Switzerland. Administered by ADB.

<sup>3</sup> Government of Bhutan, Gross National Happiness Commission. 2011. *11<sup>th</sup> Five-Year Plan (2013-2018)*. Thimphu.

<sup>4</sup> ADB. 2014. *Country Partnership Strategy: Bhutan, 2014-2018*. Manila.

<sup>5</sup> ADB. 2011. *Water Operational Plan, 2011-2020*. Manila.

service contract. The TA was extended by 6 months, from 31 December 2015 to 30 June 2016 to cover the initial delay in consultant recruitment. The TA is rated *efficient*.

The terms of reference were appropriate in achieving the outputs. However, during implementation, two consulting tasks were removed: (i) environmental flows study, as NEC had commissioned a separate project, and (ii) the development of a National Irrigation Inventory for the NIMP as DOA had already completed the inventory. Instead, the consultant provided general day-to-day advisory services to DOA such as guidance on engineering design, contract management, and construction supervision. The consultant's deliverables were of a high standard and were well-received by the government. The consultant also submitted monthly progress reports. Overall, the consultant's performance is rated *satisfactory*.

NEC formed a technical advisory committee and provided timely guidance and support throughout the TA. The committee comprised of representatives from 15 key government stakeholders related to water resources management in Bhutan, as well as a civil society and non-government organizations (Tarayana Foundation and the Royal Society for Protection of Nature). Meetings and workshops were held four times during project implementation. NEC's performance is rated *satisfactory*.

ADB closely monitored the progress of the consultants and quality of their deliverables, and provided guidance and direction to the TA during implementation. ADB fielded four missions during the implementation period: an inception mission and three review missions. ADB's performance was *satisfactory*. To promote visibility of the Government of Japan's grant assistance, logos were used for Japan Fund for Poverty Reduction and Japan Official Development Assistance on all TA reports and workshop banners; and the use of JFPR funds is acknowledged in all TA reports.

#### **Evaluation of Outputs and Achievement of Outcome**

At TA completion, three out of four outputs were achieved; Output 1. The NIWRMP was finalized. The plan was endorsed by NEC and officially launched on World Water Day on 22 March 2016. Several consultations and workshops were required to ensure that the plan would be adopted by the stakeholders. The plan analyzed several water-related issues, as well as the governance and legal framework in the context of IWRM. Priority recommendations of the NIWRMP relate mainly to enhancing the institutional capacity of government agencies, particularly the Water Resource Coordination Division (WRCD) in NEC for implementation of IWRM with the goal of water security. The Bhutan Water Security Index (BWSI) was developed under the NIWRMP as a tool to describe the degree of water security achieved or pursued. The knowledge product 'Water: Securing Bhutan's Future' was launched on 22 March 2016.<sup>6</sup>

Output 2. The RBMP for one priority major river basin, i.e. Wangchhu basin, was finalized. The Wangchhu River Basin Committee (WRBC) was endorsed by the NEC on 25 June 2015 and an executive order for its formation was issued on 14 April 2016. Significant effort was spent on defining the roles, responsibilities and accountabilities of the committee members. The TA facilitated the development of the Wangchhu Basin Management Plan (WBMP) through consultations and workshops with the designated members of the WRBC. The WBMP contains baseline data and targets for water security indicators to be incorporated in the next Five-Year Plans. The WBMP was endorsed by the WRBC on 21 April 2016. The WBMP was gender-inclusive and followed the Dublin principles of IWRM where the role of women was stressed. Additionally, a priority investment project 'Rural Water Storage in Wangchhu Basin' was developed to concept level.

Output 3. The NIMP was finalized. The plan was endorsed by the DOA on 3 March 2016 and approved by the Ministry of Agriculture and Forests on 18 April 2016. The plan aims to increase the national level of paddy self-sufficiency from 50% to 75% at an estimated cost of \$140 million. The document was socially- and gender-inclusive with irrigation investment projects prioritization criteria on factors such as how many people (including women) benefit from the project and the level of community support. Priority investments were identified in the NIMP with interventions that cover irrigation, land development and agriculture mechanization, integrated crop and water management, institutional strengthening and capacity development. NIMP has also been used to develop Bhutan Integrated Irrigated Agriculture Development Project which is included in the country operations business plan (2017–2019) for an investment of \$30 million.<sup>7</sup>

Output 4. The strengthening of water resources governance was substantially achieved. Out of four targets, one was modified, two fully achieved, and one partly achieved. The first target to update the Water Regulation was deferred as a revision of the regulation only promulgated in late 2014 and became effective in early 2015. Revision of the regulation during 2015/2016 was considered too soon by NEC. Instead, the Water Act and the Water

<sup>6</sup> ADB and Government of Bhutan, National Environment Commission. 2016. *Water: Securing Bhutan's Future*. Thimphu.

<sup>7</sup> ADB. 2016. *Country Operations Business Plan: Bhutan, 2017–2019*. Manila.

Regulations were reviewed to identify conflicts between their provisions and other water-related acts and to provide recommendation for future updates. Shortcomings in the regulations regarding registration of water user associations (WUA) were also identified. The TA consultant drafted guidelines and designed forms for WUA registration. Targeted capacity strengthening programs were developed and implemented for IWRM, river basin management, irrigation design and management, and climate change for the TA. Training courses, and meetings were held with a total of 748 participants, of which about 23% were women. The project aimed at generating gender-segregated information and women participation in meetings of at least 30%. This was not fully achieved as meetings and trainings with government agencies depended largely on the number of female officers working in these agencies, which was beyond the control of the project. The irrigation engineering manual developed under this TA was officially endorsed by DOA on 6 November 2015. DOA engineers used the manual during their day-to-day activities to support the design of new schemes. The TA also completed various other studies of which the results were incorporated in the NIWRMP, RBMP and NIMP, including (i) strengthening WRCD-NEC, and DOA (ii) identifying IWRM entry points into national planning procedures (iv) training needs assessment and programming, (v) communications plan, (vi) IWRM stakeholder analysis, (vii) legal aspects of IWRM, and (viii) social aspects.

The expected outcome was improved institutional capacity for IWRM. While the outcome statement has been achieved, its targets have only been partially achieved. The first indicator—procedures and regulations for setting and enforcing environmental flows approved by NEC—is only partially achieved. The Water Act and Regulation prescribes how environmental flows are to be managed but enforcement is weak. The NIWRMP has set out that the Ministry of Economic Affairs will have a regulatory role to ensure minimum river environmental flows are maintained while planning hydropower projects. A separate study on institutional capacity for assessment and monitoring of environmental flows is ongoing. The second indicator—10% of all water withdrawals and discharges within project basins operate with appropriate agreements—was also partly achieved. Current basins withdrawals operate under the Water Act and Regulation. A survey of the water withdrawals and discharges was not completed, so the indicator was not measured. The last indicator—50% of all new and existing water-related infrastructure is planned, developed, and maintained per the RBMP—is likely to be achieved. The WBMP aims to increase and sustain water security in the Wangchhu basin through improved planning and coordination among agencies involved in water resources management. At present, the WRBC has only coordination authority. Under subsequent revisions of the NIWRMP and RBMP, their roles may become regulatory. A follow up regional TA is supporting the implementation of the RBMP.<sup>8</sup> Despite the partial achievement of the indicators, the project outcome is generally considered achieved because the government has adopted and is implementing the TA outputs.

Generally, the TA was *effective* as all the outputs were achieved. Though the indicators for the outcome were not fully achieved, it is evident that the institutional capacity for IWRM was improved.

### **Overall Assessment and Rating**

Overall, the TA is *successful*. The TA was *relevant* since it was aligned with government and ADB strategies and policies. It was *effective* since it produced key government water resources planning documents, which accelerated the implementation of IWRM in the country. The TA was also *efficient* with 93% of TA funds utilized and minimal implementation delays. The TA is *likely sustainable* because the outputs were developed with strong stakeholder and political support, ensuring adoption of the frameworks produced. The guidelines for preparation of the 12<sup>th</sup> Five-Year Plan refers to NIWRM and the BWSI as an indicator for the national key result area. A proposed investment project stemming from the NIMP is included in ADB's country operations business plan 2018-2020 and the irrigation manual is a key reference for DOA engineers. ADB is further supporting the implementation of the outputs through a regional TA (footnote 1).

### **Major Lessons**

Key implementation issues relevant for other similar initiatives include (i) high level political support is needed to ensure that RBMP recommendations are implemented; (ii) engaging stakeholders requires significant time to ensure buy-in is achieved; (iii) roles, responsibilities and accountabilities need to be clearly defined for RBCs; and (iv) the consultation process is very valuable for awareness and capacity building.

### **Recommendations and Follow-Up Actions**

To keep the momentum in the implementation of IWRM, the regional TA (footnote 1) is providing continued support to NEC ensuring that the plans established under this TA are implemented. The BWSI system and the legal framework for registering WUAs will be monitored by NEC to ensure workability.

Prepared by: Suzanne Marsh Designation and Division: Water Resources Specialist, SAER

<sup>8</sup> ADB. 2016. *Regional Technical Assistance for Strengthening Integrated Water Resources Management in Mountainous River Basins*. Manila.