



Bangladesh: Irrigation Management Improvement Project

Project Name	Irrigation Management Improvement Project	
Project Number	45207-002	
Country	Bangladesh	
Project Status	Active	
Project Type / Modality of Assistance	Loan	
Source of Funding / Amount	Loan 3135-BAN: Irrigation Management Improvement Project	
	concessional ordinary capital resources lending / Asian Development Fund	US\$ 46.00 million
Strategic Agendas	Environmentally sustainable growth Inclusive economic growth	
Drivers of Change	Governance and capacity development Knowledge solutions Private sector development	
Sector / Subsector	Agriculture, natural resources and rural development - Agricultural drainage - Agricultural production - Irrigation - Rural flood protection	
Gender Equity and Mainstreaming	Effective gender mainstreaming	
Description	The project is designed to realize the full production potential of large-scale irrigation schemes in Bangladesh. It will address the recurrent lack of sustainable management, operation, and maintenance (MOM) and increase water productivity by transferring MOM schemes to private operators and introducing innovative infrastructure modernization. The project will focus on modernizing the Muhuri Irrigation Project (MIP) in Chittagong division. It will also finance a feasibility study and detailed design for modernizing the Ganges_Kobadak Irrigation Project in Khulna division and the Teesta Irrigation Project in Rangpur division.	

The primary sources of water in Bangladesh are local rainfall (about 250 cubic kilometers (km³) annually) and transboundary inflows (about 1,000 km³ annually), derived mainly from the Brahmaputra, Ganges, and Meghna rivers. Bangladesh occupies only 8% of the total drainage area of these rivers but is located at their downstream end. The result is an abundant excess of surface water during the summer monsoon months and water shortfalls during the winter dry months. The impossibility of developing dam facilities prevents flow regulation throughout the year. Despite being scarce, water is not well managed. Minimal attention is given to water use efficiency and equitable allocation. Many farmers rely on groundwater to supplement the limited and irregular surface water supplies. However, in many areas, the use of groundwater is significantly constrained by arsenic contamination and aquifer limitations. Consequently, the minimum flows required to meet total dry season demands are less than what is available from surface and groundwater. Competition for water is increasing between sectors including agriculture, domestic and industrial water use, navigation, fisheries, and conservation of natural eco-habitats. Possible changes in temperature and rainfall patterns due to global warming may also modify crop-water requirements and water availability, and adversely widen the current gap between supply and demand.

Performance of irrigated agriculture and large irrigation schemes. In 2010, 31.5% of the population was living below the poverty line. Although agriculture's share of gross domestic product has declined, it is the primary economic sector in rural areas and provides 63% of rural employment. Bangladesh has a net cultivable area of around 8 million hectares (ha). In FY2012, about 5.3 million ha were irrigated; total rice production was 33.5 million tons with 56% being produced during the dry season. Irrigated agriculture productivity remains chronically low; since FY2004 paddy yields have averaged 3.6 tons/ha. The low land productivity is attributable to unreliable irrigation supply; inadequate agriculture extension services; and poor access to farm inputs, markets, and agricultural credit services. Around 550,000 ha or 11% of the total irrigated area is under large irrigation schemes. However, only 46% of this area is currently irrigated during the dry season. The lack of efficient and sustainable MOM continues to impact the productivity of large irrigation schemes. In 2012, MOM cost recovery from project beneficiaries of the Muhuri, Ganges_Kobadak, and Teesta irrigation schemes averaged 24%: Muhuri 63%, Teesta 18%, and Ganges_Kobadak 0.26%. As a consequence, the schemes' infrastructure is degraded and needs rehabilitation and modernization. Other factors include inadequate government financing, lack of beneficiary empowerment and engagement in MOM, and limited capacity of public agencies resulting in weak service delivery. Specific issues in MIP are (i) inadequate budget for system MOM; (ii) lack of distinction between annual, periodic, or emergency maintenance of a system; and (iii) poor cost recovery from water management groups.

Since 2000 substantial efforts have been made to improve irrigation MOM through the introduction of participatory irrigation management, which has been generally successful on small and medium-sized schemes in Bangladesh but yielded limited results for large schemes. The variable performance of participatory irrigation management in improving irrigation MOM is internationally documented and private sector participation through public-private partnership (PPP) is seen as an alternative approach. It has demonstrated promising results in a few developing countries such as Brazil, Ethiopia, and Morocco but is still to be developed in Asia. In 2009, the Asian Development Bank (ADB) provided technical assistance (TA) to the Bangladesh Water Development Board (BWDB) to examine alternative approaches of service delivery agreements and management arrangements including PPP for sustainable irrigation MOM in large irrigation schemes. The TA proposed a conceptual framework for engaging a third party operator to address the shortcomings of the MIP's MOM. It established the basis for the social and economic feasibility of the approach and confirmed farmers' willingness to pay.

The National Water Policy, adopted in 1999, sets out a comprehensive framework for the water sector in general and for large surface water irrigation schemes, including a strategic vision comprising private irrigation MOM through leasing, concession, or management contracts. The government has established policy, legal, institutional, and planning frameworks for the water sector, which provide a suitable environment for developing necessary sector reforms. The Water Act, promulgated in May 2013, revised and consolidated existing laws that govern the ownership, utilization, and financial management of water. The Sixth Five-Year Plan, 2011 to 2015 recognizes the need to increase agricultural productivity, foster crop diversification, and boost public spending on rural infrastructure. The plan also presents a strategic direction for medium- and large-scale surface water irrigation. At its highest level, the strategy focuses on modernization and improved management of existing irrigation systems and expansion of irrigation areas. To reduce public costs in sustainably operating these schemes and to improve delivery service, the strategy encourages the use of PPP wherever appropriate. As part of an overall investment program for the water sector, the government has approved an investment plan to rehabilitate and modernize all large surface water irrigation schemes at an estimated total cost of \$745 million. The project will support the modernization of the MIP's infrastructure and MOM, including transferring MOM to the private sector. The project will finance preparation of a modernization strategy, including feasibility studies and detailed designs, for the Ganges_Kobadak and Teesta irrigation projects.

MIP construction was completed in 1986. The design enabled dry season irrigation as well as supplemental wet season irrigation by constructing the Feni Closure Dam and Regulator to create a reservoir downstream of the confluence of the Feni, Muhuri, and Kalidash_Pahalia rivers. The backwater from the barrage enters the natural khals (channels) and canal network by gravity. From there it was to be lifted by about 800 low-lift diesel pumps to irrigate the fields. The project was to increase the dry season rice area from about 6,000 ha to 20,000 ha. Initially, farmers experienced major improvements in production and were able to cultivate much larger areas with rice; however, siltation of the reservoir and khals due to lack of maintenance and reduced runoff in the river has reduced the benefits over the years. The area irrigated in the dry season decreased to 11,300 ha. The increased cost of diesel fuel combined with low pump efficiency and decrease in the rice price contributed to discouraging farmers from cultivating. Opportunities to substantially increase water use efficiency and reduce pumping cost through innovative design modernization and improved MOM were identified during the project preparatory TA and will be supported by the project.

The project is consistent with ADB's Strategy 2020 and country partnership strategy for Bangladesh, 2011 to 2015 by reinforcing core areas of operations (such as infrastructure and water resources management) and investing in irrigation infrastructure modernization.

Project Outcome

Description of Outcome	Increased productivity and sustainability of the MIP
Progress Toward Outcome	Too early to assess.

Implementation Progress

Description of Project Outputs	<ol style="list-style-type: none"> 1. Performance-based irrigation management and agriculture support services established 2. Irrigation system infrastructure rehabilitated and modernized 3. Project efficiently managed with effective institutional development
Status of Implementation Progress (Outputs, Activities, and Issues)	<ol style="list-style-type: none"> 1. Preparations for the detailed design of remaining civil works on level 3 distribution system for 15,000 ha are underway. 2. Works are ongoing for the re-excavation of 152.3 km of khals under CW-01 and 193.6 km of khals under CW-02; and laying of buried pipe system and prepaid card meters covering 2000 ha under CW-03. Works on new water control structures, additional khal excavations, and upgrading of electrical distribution lines are scheduled for tender in 2017. 3. Project Design and Management Consultant supports the project management unit to form and engage with water management groups, and complete feasibility studies for Ganges Kobadak and Teesta Barrage irrigation modernization projects.
Geographical Location	

Safeguard Categories

Environment	B
Involuntary Resettlement	C
Indigenous Peoples	C

Summary of Environmental and Social Aspects

Environmental Aspects	The project is categorized B for environment and an initial environmental examination was prepared in accordance with SPS. The negative impacts are typical to any construction activities involving earth works and can easily be mitigated through adoption of measures described in the environmental management plan. Consultations were undertaken with affected stakeholders and a suitable grievance redress mechanism has been proposed to resolve any project related grievances. The PMU will be supported by PMDC environmental specialists monitor and supervise implementation of the MIP modernization environmental management plan.
Involuntary Resettlement	The Project is classified as Category C. The requirement for temporary relocation and resettlement during the scheme rehabilitation was avoided through by reducing the canals cross sections (steeper side slopes) in populated area. A resettlement framework (RF) prepared in accordance with the government's laws and regulations and ADB's Safeguard Policy Statement (SPS, 2009) as a prudent measure to address any involuntary resettlement-related uncertainty during the project implementation, should any issue arise. BWDB has experience in dealing with safeguards including with ADB projects and will be supported by appropriate consultant specialist.
Indigenous Peoples	The project is categorized as C. There are no indigenous peoples as defined for operational purposes by the SPS in MIP.

Stakeholder Communication, Participation, and Consultation

During Project Design	ADB maintains close dialogue with the government and other stakeholders to ensure commitment remains and the project communication campaign keeps farmers and local politicians engaged.
During Project Implementation	Participation is an important aspect of the project. Public awareness programs for gender, social, and infrastructure subproject related measures will be implemented. The Stakeholders Communication Strategy implementation will engage and inform relevant IMIP stakeholders and sectors with timely, accurate, and comprehensive information shared among stakeholders. Such information sharing will help to build consensus and ensure continuous stakeholder support throughout the Project. The stakeholder Engagement and Communication Strategy (SE&C) is to significantly increase stakeholder and community awareness of the Project strategy, activities and outputs in order to improve stakeholder engagement and to develop greater community support.

Business Opportunities

Consulting Services	<p>Consultant selection and engagement will be carried out in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). In view of the lack of experience of the Bangladesh Water Development Board with performance-based management contracts and the need to ensure expeditious mobilization, the government requested ADB to recruit the project management and design consultant (PMDC) and the irrigation management operator (IMO). BWDB retains the responsibility for negotiating and signing the contract with the PMDC and IMO, issuing the notice to proceed, and supervising their services. The PMDC and IMO recruitment will adopt a 90:10 quality_ cost ratio since a high level of expertise is essential to design performance-based irrigation management approaches for the Ganges _Kobadak and Teesta irrigation projects and to establish a strong and sustainable management organization for the Muhuri Irrigation Project. In addition, incentives linked to the performance of the construction-phase IMO consultant will be paid against achievement of key milestones. BWDB, with support from the PMDC, will monitor the IMO's performance against the milestones. Least-cost selection will be used for small consulting assignments, including external audits, independent safeguards monitoring, and simple studies.</p> <p>For the Muhuri Irrigation Project (MIP), BWDB will recruit a private consulting company or consortium through competitive selection and enter into a 5-year management contract agreement. The construction-phase Irrigation Management Operator (IMO) will be responsible for (i) the delivery of efficient service and revenue collection to recover the cost for MOM, (ii) construction supervision of MIP civil works, (iii) participatory design of level 3 system modernization, and (iv) development of pilot agricultural demonstrations and income generating activities. It is envisaged that after 5 years, the M-IMO will be recruited through a 15-year lease contract to maintain the MOM levels established during the 5-year first stage. The contract will be awarded through a competitive tender based on (i) a fixed fee for the lease with bidders presenting a financial offer for the water charge, or (ii) a predetermined water charge with bidders presenting a financial offer for the lease. After 15 years, the contract will be retendered.</p>
Procurement	All procurement of goods and works will be undertaken in accordance with ADB's Procurement Guidelines. Procurement packages for civil works will be split into eight packages.

Responsible Staff

Responsible ADB Officer	Cauchois, Arnaud M.
Responsible ADB Department	South Asia Department
Responsible ADB Division	Environment, Natural Resources & Agriculture Division, SARD
Executing Agencies	<i>Bangladesh Water Development Board 3 DIT Extension Avenue Hoque Chamber, Motijheel Commercial Area Dhaka, Bangladesh</i>

Timetable

Concept Clearance	12 Sep 2012
Fact Finding	21 Jul 2013 to 05 Aug 2013
MRM	22 Nov 2013
Approval	30 Jun 2014
Last Review Mission	-
Last PDS Update	30 Jan 2017

Loan 3135-BAN

Milestones					
Approval	Signing Date	Effectivity Date	Closing		
			Original	Revised	Actual
30 Jun 2014	14 Aug 2014	16 Sep 2014	31 Dec 2020	-	-

Financing Plan		Loan Utilization			
	Total (Amount in US\$ million)	Date	ADB	Others	Net Percentage
Project Cost	58.00	Cumulative Contract Awards			
ADB	46.00	30 Jun 2014	20.00	0.00	49%
Counterpart	12.00	Cumulative Disbursements			
Cofinancing	0.00	30 Jun 2014	9.52	0.00	23%

Project Page	https://www.adb.org/projects/45207-002/main
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