Report Number : ICRR0020640

1. Project Data

Project ID	Project Name
P040712	BD: Water Management Improvement Project
Country	**Practice Area(Lead)**
Bangladesh	Agriculture

L/C/TF Number(s)	Closing Date (Original)	Total Project Cost (USD)
IDA-43590,TF-94800	30-Jun-2015	123,260,000.00
Bank Approval Date	**Closing Date (Actual)**	
18-Sep-2007	30-Jun-2016	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	102,260,000.00	20,000,000.00
Revised Commitment	90,039,712.99	2,649,756.51
Actual	90,389,333.98	2,649,756.51

Prepared by	Reviewed by	ICR Review Coordinator	Group
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2. Project Objectives and Components

a. Objectives

The **original Project Development Objectives (PDO)** of the Water Management Improvement Project (WMIP) as stated in the Project Appraisal Document (PAD) were the following: "the primary objective is to improve national water resources management by involving the local communities to play an expanded role in all stages of the participatory scheme cycle management (PSM), from planning and design to operations and management. The secondary objective is to enhance institutional performance of the country's principal water institutions, particularly the Bangladesh Water Development Board (BWDB) and Water Resources Planning Organization (WARPO)" (PAD, para 18).

The Development Credit Agreement (DCA) states the same objectives but without distinguishing between primary and secondary objectives: "(a) to improve national water resources management by involving the local communities to play an expanded role in all stages of the participatory scheme cycle management; and (b) to enhance institutional performance of the Borrower's principal water institutions, particularly BWDB and WARPO" (DCA, p. 20).

The **revised objective** after Project's restructuring approved by the Board on July 1, 2011 was: "to improve water resources management by improving infrastructure and institutions through rehabilitating damaged water infrastructure, piloting the role of local communities and enhancing the institutional performance of the country's principal water institutions, particularly BWDB and WARPO" (Amendment to the DCA, para 3).

For the purpose of assessing the extent to which the objectives of this project were achieved the original objectives will be those in the DCA, and the revised objectives will be those stated in the Amendment to the DCA dated July 21, 2011.

b. Were the project objectives/key associated outcome targets revised during implementation?
Yes

Did the Board approve the revised objectives/key associated outcome targets?
Yes

Date of Board Approval
01-Jul-2011

c. Will a split evaluation be undertaken?
Yes

d. Components
The Project originally had three components; a fourth component was added after the Project's restructuring in 2011:

1. System Improvement and Management Transfer (*Cost estimate at appraisal was US$69.5 million, US$26.11 million at restructuring in 2011, and the latest/actual cost was US$19.0 million*).
Original: The component aimed to rehabilitate and improve (R&I) medium and large Flood Control and Drainage (FCD) and Flood Control, Drainage and Irrigation (FCDI) schemes in 7 BWDB zones and transfer their management to the established and strengthened community based Water Management Organizations (WMOs). The screening and auditing of eligible schemes was to be conducted with the use of a resource database survey, Geographic Information Systems (GIS) and other modeling tools. Final selection criteria included prioritization of community demand and willingness to contribute to O&M costs. The Component was expected to finance technical assistance, actual R&I works, incremental O&M expenses during the project period, and the cost of local NGOs to establish and provide training and capacity building to the WMOs. It was to finance capacity building of the BWDB staff in implementing

Participatory Scheme Management (PSM) approach and strengthening its technical capacity, as well as governance and accountability measures.

The component was also to finance the Department of Agriculture Extension and the Department of Fisheries to support WMOs in preparation of land use plans, agriculture/fishery development plans, disseminate information and provide trainings on appropriate agriculture technology and practices.

After restructuring in July 2011, the financing of the component was reduced by almost 2.7 times and the number of targeted FCD and FCDI schemes was reduced 3 times. The participatory aspects of the WMIP were scaled back, most notably dropping a requirement for WMOs to make financial contributions to the R&I costs. Part of financing was reallocated to new activities, such as construction of the BWDB training centers.

2. Operations & Maintenance (O&M) Performance Improvement (*estimated cost at appraisal was US$28.30 million, US$13.77 million at restructuring in 2011, and the actual/latest cost was US$9.27 million*).
Original: The objective of this component was to ensure the sustainability of rehabilitated and well-functioning schemes with solid WMOs through measures to improve the planning and execution of the O&M cycle under the BWDB. Scheme selection criteria also included willingness of the community to contribute to the first year's O&M costs. The component was to finance technical assistance, development of innovative cost-effective O&M contract arrangements, and training associated with the O&M improvement.
After restructuring in July 2011 the number of schemes was reduced, participatory aspects of the WMOs were scaled back, and WMOs were not any longer required to contribute in cash to the O&M.

3. **Institutional Improvement** (*estimated cost at appraisal was US$10.3 million, US$23.7 million at restructuring in 2011, and the latest/actual cost was US$9.27 million*).
Original: This component focused on institutional strengthening of the BWDB and WARPO and was to finance technical assistance on institutional improvement, capacity building and training, and monitoring and evaluation. This component had three sub-components: (a) *BWDB Institutional Improvement* focused on supporting implementation of BWDB reforms with a focus on human resources development; it included financing of technical assistance, procurement of equipment, renovation of training centers, as well as strengthening of M&E, accounting, and procurement; (b) *WARPO Institutional Improvement* aimed at its institutional development; this was expected to support maintenance, updating, and dissemination of the National Water Resources Database through the provision of technical assistance; it was to fund local and foreign training, workshops, office equipment and facilities, vehicles; (c) *Program Coordination and Monitoring* was to support establishment and functioning of the Program Coordination Unit (PCU). It financed various operational costs, technical assistance, Monitoring and Evaluation (M&E), knowledge management, selective strategic studies, and fiduciary reviews.
This Component was not revised significantly as a result of the Project's restructuring in 2011.

4. Flood Damage Rehabilitation (*estimated cost at restructuring in 2011 was US$67.53 million, and the latest/actual cost was US$62.96 million*). This component was formally added to the Project during restructuring in 2011 with financing reallocated from Components 1 and 2. It focused on Flood Damage

Rehabilitation (FDR) with financing of repairs of embankments and hydraulic structures damaged in cyclone *Sidr* in November 2007 and cyclone *Aila* in May 2009, which occurred relatively shortly after the project was originally approved in September 2007.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project cost. The original Project cost estimated at appraisal was US$136.7 million and was reduced to US$123.26 million after restructuring in 2011.

Financing. IDA's financing plan at appraisal was US$102.26 million. It was formally revised as a result of the restructuring in July, 2011 and reduced to US$93.3 million, with about US$8.0 million equivalent being cancelled and used to support emergency repairs to non-embankment infrastructure under another IDA funded on-going project. The latest actual disbursement of the IDA financing was US$90.39 million.

Borrower's Contribution. Government's contribution was estimated at US$10.04 million at appraisal, was reduced to US$9.03 million after restructuring in 2011, with the latest/actual cost being US$7.68 million.

Community contribution. It was estimated at US$4.4 million at appraisal, but after restructuring in 2011, there were no expectations from communities to make financial contributions to the Project's cost and correspondingly none were reported.

Co-financing. The Government of Netherlands (GoN) initially agreed to contribute US$20 million in financing for the Project. The total disbursement of the GoN's funding was US$2.3 million, with US$17.7 million formally cancelled in August 2014 due to various reasons, with the primary cause being the change in the Project's focus following restructuring.

Dates. Project preparation took a long time with the concept review taking place in August 1998, appraisal in February 2004, and Board approval another 3.5 years later in September 2007. The Project became effective in November, 2007 and was expected to be closed on June 30, 2015. The planned closing date remained the same after the first Project restructuring in July, 2011. However, the second restructuring in 2015 extended the closing date by 12 months until June 30, 2016.

Restructuring. The project underwent two restructurings:

Level 1 restructuring in July, 2011 revised the first objective of the PDOs. The change mainly reflected a shift from a full scale to a piloting of community engagement in irrigation scheme management. The second objective (enhancing institutional performance of BWDP and WRPO) from being PDO was changed and transformed into intermediate outcome contributing to improved water resources management. This restructuring also formalized changes, which were made prior to it as a result of emergency responses to two cyclones in 2007 and 2009 – namely:

- About US$8.0 million was cancelled from the credit in 2007 and reallocated to another IDA on-going Project to undertake emergency repairs of damaged by floods buildings.
- The Borrower was also allowed to use funds from the credit funds for rehabilitation works of damaged irrigation infrastructure. During the restructuring, US$32 million was reallocated to a new Component 4 from Components 1 (with 70.6% reduction in the number of FCD and FCDI schemes improved) and 2 (with 61.6% reduction in the number of schemes with O&M improvement.
- The criteria for selection and preparation of BWDB schemes were simplified, requirement of cash

contribution of the WMOs to the R&I cost was waived, and the ceiling on the unit cost of the schemes' rehabilitation was raised.
While the Level 1 restructuring resulted in no material change in the project's objective of improving water management and the associated enhancement of the Government's principal water institutions, there were substantial reductions in the key performance indicators for activities with the addition of flood damage rehabilitation and hence the Project's outcome will be assessed through a split evaluation method.

Level 2 restructuring on March 4, 2015 was undertaken to allow reallocation between categories and extend the project closing date by one year until June 30, 2016.

3. Relevance of Objectives & Design

a. Relevance of Objectives

Original Objectives
Bangladesh is highly susceptible to natural disasters caused by the rise in sea levels and storm-induced tidal flooding, which combined with high and intense rainfall during the monsoon season can lead to about 20-30 percent of country area being inundated every year. The problem, as stated in the PAD, is aggravated by impeded drainage due to flat topography (p. 22). Floods and cyclones take thousands of human lives, cause economic losses, and aggravate poverty. During dry seasons the availability of surface water is significantly less because of intense irrigation; water scarcity also affects navigation, drinking water supply, the environment, rural health and sanitation. These problems are aggravated by the poor condition of water resource infrastructure and their inadequate management at the local and national levels. A large number of government agencies are responsible for water management which have unclear roles and responsibilities, weak coordination, as well as inadequate technical and administrative capacity.

The original Project objectives were aligned with the Government of Bangladesh (GoB) priorities reflected in the National Water Policy, which adopted a new integrated approach to water resources management involving consideration of both agricultural growth and prevention of degradation of the environment. To introduce this new approach of integrated water management, it was important to engage users in planning, construction, operation and maintenance (O&M), and management of FCD/FCDI schemes. Another key element of the approach was to reform and strengthen key water management institutions. The original PDO is still relevant to the current GoB's priorities on management of the Bangladesh delta, as reflected in the Delta Plan 2100, to promote safe living through greater resilience and sustainable economic development. The GoB in its 7th Five Year Plan (FY2016-2020) continued to identify a variety of growth drivers including the increase of investments in infrastructure and strengthening water management institutions.

The original PDOs were also well aligned with the World Bank Group Country Partnership Framework (CPF) for Bangladesh for FY16-20. The CPF's Objective 3.2 of the Focus Area 3 emphasizes the need to invest in flood prevention infrastructure and institutions. IDA support is strategically focused on building and rehabilitating infrastructure to improve resilience; enhancing institutional capacity of key water institutions;

improving data monitoring; and developing asset management systems for long-term operations and maintenance (O&M) are crucial for poverty reduction as well as enhancing resilience of communities to climate change.

The minor shortcoming was that the original PDOs were not framed clearly, mixing final development outcome of improving national water resources management with intermediate outcome of involving the local communities in their management and enhancing national water management institutions.

Revised Objectives
Bangladesh was severely hit by the cyclones *Sidr* in 2007 and *Aila* in 2009, leading to massive losses and badly damaged irrigation schemes. Project's focus was shifted to repairs of the BWDB schemes damaged by the cyclones in response to Government's priority to damage rehabilitation. At the same time, after three and a half years of implementation, it was evident that the original aim of engagement of WMOs in the management of the schemes was overly ambitious and not realistic considering the limited experience in the country with the approach, as well as insufficient commitment from the GoB, which was also focusing mostly on the post disaster rehabilitation efforts. The Project's objective was revised with the intention to reflect this shifted focus and down scaling of 'national' level engagement of communities in irrigation scheme management to a pilot based approach. The revised PDO was well aligned with the country's changed conditions and needs, as well as being in line with the current CPF.

However, the revision concerned not the development objectives *per se*, which remained largely the same, but more the intermediate outcomes and components, which were previously part of the PDOs. Thus, after restructuring in 2011 the Project had only one PDO of "improving water resources management". Expected intermediate outcomes (previously mixed in with the PDO) were "improving infrastructure and enhancing the institutional performance of the BWDB and WARPO", and components focused on improving infrastructure and institutions, rehabilitating damaged water infrastructure, and piloting the role of local communities. Responding to the country's emergency needs with damaged irrigation infrastructure after cyclones in 2007 and 2009, the Project's objectives remained substantially relevant to Government and Bank priorities and strategic directions.

Rating	Revised Rating
Substantial	Substantial

b. Relevance of Design

Original Design
The Project's design according to the PAD was based on a long-term water management strategy in the GoB's Flood Action Plan, the National Water Policy (1999), and the National Water Management Plan (2004), which in turn were developed with the Bank's contribution to assessment and analysis of the sector (PAD, pp. 23-24). It apparently also incorporated key principles of the GoB's Guidelines for Participatory Water Management (2001), which provided the operational modalities and procedures to involve stakeholders in water management, including transfer of appropriate water management activities to stakeholder groups. The

Project was intended to scale up practical participatory water management approach developed and tested by the Integrated Planning for Sustainable Water Management Project (IPSWAM) in Bangladesh (2003-2011). However, as implementation showed, the country was not fully ready for the participatory irrigation scheme management (PSM), the Project faced difficulties with advancement of water resources management by the WMOs, partly because these Guidelines were largely declarative with limited development of institutions for participatory water management among stakeholders.

The Theory of Change, as reflected in the Results Framework (RF) was weak, presenting mostly outputs' monitoring indicators without clear chain of results leading to desired outcomes. The conceptual framework presented in the PAD was not in line with the RF and mixed outcomes with intermediate outcomes. At the same time, it can be seen that the Project's design was based on a principle that engagement of community organizations in the management of rehabilitated FCD/FCDI schemes would bring more efficient and sustainable operations, improve overall water management, reduce vulnerability of communities to disasters and enhance their livelihood opportunities in flood prone zones. Thus, Component 1, in addition to rehabilitation and improvement (R&I) works, aimed to facilitate selection of schemes and their R&I considering community demand and willingness to contribute to the O&M costs as a key selection criterion; formation and strengthening of the WMOs; mainstreaming PSM to BWDB based on existing state Guidelines and tested approach of other projects. In addition, Component 2 intended to target FCD/FCDI schemes in good technical conditions which had functioning WMOs to improve Operation & Maintenance. Finally, Component 3 was aimed at improving institutional performance of two state institutions (BWDB and WARPO) through enhancing their capacity to deal with water issues beyond flood control, drainage and irrigation and incorporating environmental degradation issues as well as the interests of other water users, to facilitate decentralization of authority to BWDB zonal level, to incorporate and strengthen PSM principles, and make them more transparent and accountable to water users/WMOs.

Project design did not adequately mitigate the recognized risk of weak procurement at appraisal. The establishment of the WMOs was largely dependent on international technical assistance to support Components 1 and 2, including to develop and mainstream the PSM in all targeted schemes, procurement of which was significantly delayed, and in turn it affected the pace of the PSM implementation.

While the proposed project design elaborated a process of formation and strengthening of WMOs on the ground, emphasizing the importance of the local NGOs engagement in the process, it did not consider the capacity of the NGOs and did not specify how the implementation arrangements of these activities were to be coordinated by the BWDB's district offices.

The activities related to extension and information dissemination of improved technologies in agriculture and fisheries, as well as elaboration of land use plans by communities, added complexity to an already ambitious Project with multiple players and a large number of target scheme areas spread around the country.

Several moderate shortcomings of the original design noted above affected the Project's implementation and thus the relevance of the Project's original design is evaluated as modest.

Revised Design

Following the 2011 restructuring, the Project design shifted its focus to rehabilitate infrastructure damaged in

cyclones in 2007 and 2009 with reduced the number of FCD/FCDI schemes whose systems as well as operations and maintenance were to be improved under Components 1 and 2, with a considerable part of the project's proceeds reallocated to the flood damage rehabilitation (FDR) component. Based on the Project's pre-restructuring experience, the revised design also significantly downplayed the elements of the participatory water management, which was the central principle of the original design. It left community participation in water management at the piloting level to be mainstreamed beyond the scope of this Project. The change in the project's approach with scaling down PSM, led to the Government of The Netherlands (GoN) cancelling most of its contribution to the Project.

The ICR argues that the country was not ready for full scale PSM approach at the time of the implementation and several steps had to be taken at the piloting level to advance decentralization of irrigation water management. The revised design addressed these shortcomings and ICR informs that at the end of the Project, the necessary elements for the PSM were in place (p. 9). The revised Project design was also streamlined with results for agricultural production, for which there was no sufficient funding allocated from the start, no longer targeted as an outcome. Although the revised design remained relevant in terms of Government's priorities at that time, and directly addressed the considerable need to deal with the effects of the preceding cyclones, its institutional aspects ("piloting the role of local communities and enhancing the institutional performance of the country's principal water institutions") were also substantially relevant to the GoB's reform agenda for decentralized water management.

Rating	Revised Rating
Modest	Substantial

4. Achievement of Objectives (Efficacy)

Objective 1

Objective

Original Objective 1: To improve national water resources management

Rationale

Outputs: The ICR does not provide information on specific outputs delivered by the Project before the restructuring in 2011. However, the Restructuring Paper of 2011 states that the "Overall implementation of the project has been significantly delayed in the almost four years following World Bank approval in September 2007. Progress with the three original components (excluding the FDR works) has been minimal" (Restructuring Paper, p. 6).

- The technical assistance (TA) contract for the main implementation support was finalized only in July 2010 and no schemes under Components 1 and 2 were ready to begin rehabilitation (Aide Memoire, December 2010).
- Prior to the restructuring in 2011, the Project disbursed US$22.39 million, mostly for the FDR activities, which were launched with Bank approval before the formal restructuring (see Section 2e above). These

activities resulted in repairing water regulating structures, about 175 km of embankments and 7 km of river bank protection.

Outcome: The Project focused on post cyclone repairs and rehabilitation, and thus, despite the good progress rehabilitating damaged schemes, it contributed very little to the Project's original Objective 1 of improved national water resources management in 7 BWDB zones and the transfer their management to the established and strengthened community based WMOs. Therefore, the efficacy of the Original Objective 1 is rated as Modest.

Rating
Modest

Objective 1 Revision 1

Revised Objective
Revised Objective 1: To improve water resources management

Revised Rationale
The objective of "improving national water resources management' was not revised. However, after restructuring, the number of schemes to be rehabilitated was reduced from 102 to 32 under Component 1 and from 98 to 35 under Component 2. A total of 63 schemes were to be rehabilitated after flood damage under a new Component 4. The Project scaled back a participatory principle of the scheme management to piloting level and limited it only to the schemes under Component 1 and 2. According to the ICR, the Project improved approximately 800,579 hectares and reached approximately 9.5 million people. The following information on outputs and achieved outcomes were derived from the ICR (Section 3.2 and Annex 2).

Outputs:

• The revised target of improved 67 water management structures (32 under Components 1 and 35 under Component 2) was achieved.
• The target under new FDR Component was to rehabilitate 63 schemes in 27 districts was not fully met with 61 schemes completed, and 2 being dropped due to a shortage of funds. Under this component, 178 km of embankment were reconstructed or repaired, 263 km of canal were re-excavated, and 135 hydraulic structures were repaired or reconstructed. According to the ICR, all physical projects were completed in accordance with their designs and specifications.
• All 67 targeted by the Project FCD and FCDI schemes were transferred to the water management associations (WMAs).

Outcomes:
The revised Results Framework aimed at the achievement of three major PDO level outcomes, with one related to increase of agricultural production which was dropped after restructuring (Restructuring Paper, 2011, p. 14):

(a) Reduced damage to property and assets. According to the ICR, the Project rehabilitated and improved all planned number of schemes and implemented irrigation works under Component 1 and 2, as well as post disaster damaged schemes targeted under Component 4. The achievement of this outcome was intended to be measured through the satisfaction of the communities in 60% of completed project schemes. In terms of monetary losses from the damages, the baseline estimate value of total asset damages and output losses from the 2007 flood were approximately Tk 78 billion, with about Tk 39 billion is asset damages. The ICR reports with respect to the PDO's indicators (based on the FAO independent impact evaluation survey) that 58% of those interviewed in 30% of the target communities (20 schemes of the total 67 targeted schemes) rated benefits from irrigation and flood control schemes to be medium to high. No data on the monetary value of damage at the end of the Project was available. Indeed, measurement of satisfaction regarding the reduction of the level of damage was difficult to interpret, as there was no counterfactual to allow respondents to make a comparison with a situation without the project. Nonetheless the overall satisfaction rate of benefits was very close to target value.

(b) Reduced damage due to floods/cyclones on crop area. The outcome was intended to be measured in 60% of project schemes. The Bank's baseline estimate was that the damaged crops from the 2007 cyclone induced flooding covered about 147,000 ha (partial) and 164,000 ha (full). The ICR reports in regards to the PDO indicators, that the FAO evaluation concluded that the improved flood control and drainage, enabled additional production from 0.5-2.1 tons of rice per hectare to an average of 6.4 tons per hectare. The improved flood control and drainage also allowed cultivation of other high-value *rabi* crops, as well as vegetables and fruits, and reportedly led to greater production of fish. It also states that the excavation of channels and other repairs increased irrigation coverage for *boro* winter-season rice production and reduced the cost for farmers.

(c) Existence of WMOs in about 60% of completed project schemes functioning in accordance with their roles and responsibilities agreed upon in the management plan. The Project formed WMOs and their federations-WMAs in all targeted irrigation schemes. The BWDB and all targeted WMOs signed agreements in all project schemes transferring management. ICR states that Project facilitated improved culture and practice of O&M planning and execution within BWDB and improved capacity of the local communities to participate actively in operations and maintenance of flood control, drainage and irrigation schemes. However, because the WMOs did not participate in the schemes selection, they have not exercised financial management in collecting contributions to sustain operation of schemes.

Revised Rating
Substantial

Objective 2
Objective
Original Objective 2: To enhance institutional performance of the country's principal water institutions, particularly BWDB and WARPO

Rationale

(No progress was made in the Project's implementation to reach Objective 2 due to delays in procurement of international technical assistance before restructuring. This objective was dropped as a PDO at restructuring in 2011 but was retained as an intermediate outcome with indicators and hence activities aimed at achieving the original objective continued. The final outcome of Objective 2 after restructuring was assessed as at the project's close as substantial.

Outputs:

• The revised target of forming 785 WMOs in all Project targeted schemes was met. Staff of all WMOs were trained and received technical support from the BWDB to perform their duties in O&M.
• The institutional reform plan for BWDB was completed and approved in December 2011, and a new staffing plan was completed as planned and approved in June 2012.
• A new staffing plan of the BWDB was completed and approved before June 2012.
• A human resources development plan of the BWDB completed by December 2011.
• Updated NWRD database with enhanced data layers was supposed to be fully completed and disseminated. However, the ICR reports that it was only 80% completed and that WARPO would finalize it using its own resources.
• 21,058 BWDB staff members were trained in Bangladesh, and 475 persons underwent training abroad in disciplines such as engineering, accounting, auditing, computer literacy, procurement, and human resources management.
• Training centers to support the PSM process and WMO mobilization were constructed.

Outcomes:
(a) New Water Management Cell in the Ministry of Water Resources. This was established with defined roles and the responsibility to facilitate the WMOs. The Chief of Water Management, a new position created within the Ministry, heads the cell. Additional staff have been provided to strengthen the cell and make it fully functional.
(b) The BWDB project monitoring and management system strengthened. The strengthening of the BWDB geographic information system cell, and modernization of hydraulic monitoring were in place as planned when the project closed.
(c) WARPO's institutional reform plan completed and approved. The plan was completed in June 2011 and approved by December 2011.

Rating
Substantial

5. Efficiency

At appraisal
The PAD presents results of the economic and financial analysis conducted at appraisal. This analysis was based on 'with project' and 'without project' scenario of four sample schemes in different hydrological regions of Bangladesh. It also quantified agricultural benefits for all Project's schemes in 2007 prices over a period of 25 years, assuming a discount rate of 12%. The expected ERR at appraisal for all schemes to be covered under Component 1 was estimated at 29.5%, generating net benefits amounting to Taka 2.6 billion (2003 TK). The ERR for all schemes to be covered under Component 2 was estimated at 48%.

At Project's Closing
The ICR economic and financial analysis at the end of the project was conducted based on a sample of 10 schemes, at 2016 prices by adjusting actual expenditures using the CPI provided by the Bangladesh Bureau of Statistics over a period of 25 years for all schemes, with 12% discount rate. Scenarios "without" and "with" rehabilitation of structures were prepared for each of the ten sampled FCD and FCDI schemes. The ICR analysis was performed using FARMOD software, and the weighted average ERR was estimated at 30.3% for the FCD and FCDI schemes and 24% for the FDR schemes. The ERR of the overall project was estimated in the ICR at 22%, and the net present value at BDT 5.65 billion (US$72.4 million). The ICR does not provide average ERR for all types of schemes.

The ICR also presents results of a sensitivity analysis of deviations from the base case assumptions, and a 25% reduction in benefits that could result from the avoided damages in crops and assets shows that the ERR still would be high at 16.3%, and the net present value would be 2.21 BDT billion or US$28.3 million (ICR, p. 41).

Cost of Project management was reasonable, estimated at appraisal to reach US$3.1 million (2.3% of a total Project cost), including US$1.5 for M&E, and for various studies. Management and coordination activities were undertaken by the Project Coordination Unit formed in the BWDB.

Project was adversely impacted by the cyclones in 2007 and 2009. As a result of that, there was a delay in Project's closing date by one year, a reduction was made in number of schemes to be covered under Components 1 and 2 from 200 to 67. However, there were an additional 61 schemes covered under the FDR component, which was added after restructuring.

On the basis of the information provided in the ICR this Review concluded that the overall efficiency of the Project was substantial..

Efficiency Rating
Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)

Appraisal		0	0 ☐Not Applicable
ICR Estimate	✓	22.00	0 ☑Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

The achievement of the Project's Objective 1 before restructuring was rated Moderately Unsatisfactory based on substantial relevance of objectives and modest relevance of the design, modest efficacy (based on the less than expected results of the investment and institutional capacity improvement program) and modest efficiency (based on the modest results). The project's achievement of Objective 1 after the restructuring was rated Satisfactory based on substantial relevance of the objective and design, substantial efficacy because of the successful rehabilitation of the cyclone and flood-damaged irrigation systems and substantial efficiency. The weighted average of the rating for Objective 1 based on the proportion of total project disbursements before restructuring (24.99%) and after restructuring (75.01%) is Satisfactory. The achievement of Objective 2 was rated Satisfactory because relevance of objectives was substantial and, even though relevance of the design was rated modest, efficacy and efficiency were both substantial.

a. Outcome Rating

Satisfactory

7. Rationale for Risk to Development Outcome Rating

There are significant technical, institutional and financial risks to sustainability of Project's outcomes.

Technical. Based on information provided in the ICR and ISRs at project completion the technical capacity of recently formed Water Management Organizations (WMOs) and Water Management Associations (WMAs) was still insufficient to manage schemes and undertake O&M. In effect the Project did not ensure that there would in future be procedures and arrangements for the BWDB and its district offices to provide technical support to the formed WMOs. Also the BWDB had insufficient funds in its budget to allocate to larger repairs of schemes in case of disasters and hence without improved funding the WMOs would not be able to finance large-scale rehabilitation works in the future.

Institutional. The ICR does not indicate how WMOs were formed, what institutional structure they had and whether different community groups were mobilized to join to make them inclusive and broad based organizations. There is no information on the role of the local government in supporting the WMOs in management of the schemes. The scheme's management responsibility was transferred to the Water Management Associations (association of several WMOs) during the last few months of the Project's implementation, with 19 schemes transferred three months before Project's closing date and 47 schemes after

that date (Implementation Completion and Results Mission Report, October 2016). The late transfer presented a serious challenge for the WMAs to start independently managing the schemes and organizing the O&M process without Project support. There was ambiguity on key issues of responsibility on larger scale rehabilitation of the schemes, collection and use of the O&M charges, and the level of support from the BWDB in maintenance of the scheme. Unless addressed these challenges may undermine the sustainability of the project's outcome.

Financial. It is not clear if there was a legal framework allowing WMOs to collect and retain water charges. The WMOs also lacked practical experience in collecting water charges from users and allocating funds to undertake annual O&M. The ICR mentions that ad hoc contributions collected from the communities were not used for O&M, but rather for a range of different economic and social activities at the village level. It was therefore not clear whether water charges would in future be adequate and effectively managed to sustain irrigation services to farmers.

Government ownership/commitment. The ICR states that the planned institutional reforms were implemented at BWDB and WARPO and are likely to continue. There is GoB commitment to the PSM principle, which is reflected in establishment of a new Water Management Cell in the MoWR. However, according to the ICR, there is a lack of clear strategy in the GoB on funding mechanisms of the Participatory Scheme Management and its scaling up, which poses another risk to sustainability of the WMOs formed by the Project.

a. Risk to Development Outcome Rating

Substantial

8. Assessment of Bank Performance

a. Quality-at-Entry

The Project's design according to the PAD (para 80) was based on a water sector analysis and assessment of the various water sector policies adopted by the GoB during preceding several years. The PAD stated that the design was also based on lessons on participatory water management learned by other projects, especially those financed by the Asian Development Bank and the Government of The Netherlands. However, the implementation showed that there were some shortcomings in quality at entry, especially those related to the country's readiness to launch the PSM at the national level. For example, it took more than three years from Bank/Government negotiations to effectiveness due to the GoB delaying implementation of agreed steps to demonstrate its commitment to embark on a PSM reform. The original design was overly ambitious in terms of institutional reforms on the ground, considering the lack of BWDB's experience and capacity for implementing the PSM principles. These problems contributed to delays and underpinned the downscaling of the original Project's scope at restructuring. The delays in implementation continued for another three years due to weak procurement capacity and lack of apparent GoB's interest in procurement of the international TA.

Quality-at-Entry Rating
Moderately Satisfactory

b. Quality of supervision
As noted already Project implementation had a very slow start with delays in procurement of crucial TA. When cyclone *Sidr* hit Bangladesh in 2007 only a month after project effectiveness, part of the Project's funds, in response to GoB's urgent request, was reallocated to a new component aimed at repairing damaged irrigation infrastructure and another part was cancelled to be reallocated to another IDA financed Project which was also assisting the Government in the aftermath of the 2007 cyclone. Additional changes in financing allocations were made after the next cyclone in 2009. While the rationale for these changes was strong, the ICR does not explain why it took 4 years to formally restructure the Project. The restructuring in 2011 formalized earlier fund reallocation decisions made in 2007 and also provided an opportunity to address a number of operational challenges. After the restructuring, project implementation improved significantly. The ICR notes that the focus on flood damage rehabilitation (FDR) as well as the reduced scope of Components 1 and 2, allowed available institutional capacity to be concentrated in fewer schemes. Considerable efforts were also undertaken in managing procurement risks. In addition, improving the project management capacity of BWDB was a focus of restructuring and continuing implementation support from the Bank. The PSM was redesigned as a pilot within WMIP for scaling up at later stage. The Bank provided adequate support in implementation of Project's activities.

Quality of Supervision Rating
Moderately Satisfactory

Overall Bank Performance Rating
Moderately Satisfactory

9. Assessment of Borrower Performance

a. Government Performance
According to the PAD, the GoB developed a strong commitment to the project's design and, after some reluctance, to embark on PSM reforms. However, this was not evident at least at the initial stage of implementation. For example, approval of the revised development project proposal (DPP), fulfilling agreed actions on the reorganization of the BWDB were significantly delayed. The failure of the GoB to sign a grant agreement with the Government of The Netherlands (GoN), as well as the failure to open a separate designated account for co-financing as mentioned in the ICR, led to systematic delays in transfers of funds and at the end contributed to the GoN's decision to cancel most of the grant.

On the other hand, the experience gained through implementing of the Project, according to the ICR, led to an increase in the Government's commitment to continue the reform program. Agreed institutional changes were made in the course of Project implementation, though the ICR does not provide specific information

on the substance of these changes and what impact they made. To a large extent the GoB fulfilled its obligation at appraisal to provide counterpart funding disbursing 93.6% of its commitment.

Government Performance Rating
Moderately Satisfactory

b. Implementing Agency Performance
Responsibility for Project implementation was placed with the main organizations of the water sector (BWDB and WARPO) under the direct supervision of the Ministry of Water Resources. According to the ICR, the BWDB, as lead implementation agency, handled overall Project management and coordination role in a satisfactory fashion while ensuring that inter-ministerial collaboration with WARPO and the newly established Water Management Cell. However, as noted already, there were significant delays with procurement of the major technical assistance contracts at the initial stage, which led to overall implementation delays. Issues related to the future financing of the operation and maintenance of the repaired schemes in terms of ensuring state funds for that and large-scale repairs remained unresolved.

Implementing Agency Performance Rating
Moderately Satisfactory

Overall Borrower Performance Rating
Moderately Satisfactory

10. M&E Design, Implementation, & Utilization

a. M&E Design
The Monitoring and Evaluation (M&E) for the project was the responsibility of the implementing agencies and an independent third party – a consulting company hired by the BWDB reporting to the Project Steering Committee. The M&E framework designed at the appraisal was ambitious covering all components and various aspects of the Project's processes and outputs. The PDO indicators were accompanied by the data from the baseline survey. The M&E framework stipulated participatory monitoring and reporting by the WMO/WMA members, officials from Ministry of Water Resources, BWDB and other representatives of the state institutions engaged in implementation (PAD, p. 11). Project level activities were to be monitored and tracked through village-level monitoring of each scheme.

The original Project's Result Framework included four PDO indicators and 14 intermediate outcome indicators. These indicators, though linked to specific components, were not fully informative, complex and often difficult to measure.

b. M&E Implementation

According to the ICR, the Project had set up an adequate management information system to monitor results and compliance with information collected through field visits, site verification by M&E and Bank teams, government documents, and interviewing community members and representatives of the WMOs. The PSM process was reportedly monitored by evaluating WMO performance and making random site visits to completed schemes after management transfer. However, information on the results of such monitoring was not presented in the ICR.

At the restructuring, several indicators were dropped with the Project downscaling its PSM target. Those dropped indicators related to change in Project's activities on advancing community based water management and included those indicators, which were measuring contribution of the WMOs to O&M of the Project's scheme and satisfaction of the WMOs with the services provided by the BWDB services, as well as indicator related to training of the WARPO staff on integrated water management. Another indicator dropped at the restructuring was one measuring agricultural production.

There were problems in collection of data for analysis of the level of cyclone damage and the impact on crop yields with the Department of Agricultural Extension, due its weak capacity to monitor these aspects of project outcomes which resulted in limited availability of data.

c. M&E Utilization

The M&E information, according to the ICR, was consistently used to inform project implementation, especially on the performance of the PSM approach. The Food and Agriculture Organization (FAO) conducted an independent evaluation of the PSM components and generated lessons learned for future projects in area of water management.

M&E Quality Rating

Substantial

11. Other Issues

a. Safeguards

This Project was classified in environmental category B at appraisal because no new construction of irrigation infrastructure and schemes was envisaged - only rehabilitation of existing ones with no significant adverse environmental impacts expected. The Project prepared an Environmental Management Framework covering the potential cumulative impacts of rehabilitation of the embankments and the institutionalization of the PSM mechanisms. The Project triggered Environmental Assessment (OP 4.01), Pest Management (OP 4.09), Natural Habitats (OP/BP 4.04), Involuntary Resettlement and Indigenous Peoples (OP 4.12 and OP 4.10), and the Projects on International Waterways (OP/BP/GP 7.50). Social safeguards proved adequate, with all civil works performed on BWDB sites without any encumbrances. However, the ICR made no specific statement on whether or not there was compliance with any of these safeguards.

b. Fiduciary Compliance

Financial management. The GoB did not sign any legal agreement with the Government of The Netherlands for co-financing with IDA and thus the Project used one account for incurring expenditures for funds from both IDA and The Netherlands. This led to systematic delays in transfers of funds. This issue was resolved resulting in accelerated disbursements. Based on information provided in the Bank's Implementation Supervision Reports and the ICR, the Project's financial management performance was satisfactory for much of the implementation period. While BWDB had adequate financial management system in place, the WARPO suffered from the limited skills of staff. To address that shortcoming, an additional technical support was recruited. Overall the financial management performance was considered moderately satisfactory.

Procurement. Procurement risk was rated high at the design stage due to the Government's past performance with the WB projects. To mitigate that risk, the Project set up an international procurement panel to assist the borrower in bid evaluation, awarding of contracts, and overall contract management. In addition, third-party supervision consultants were mobilized to enhance construction supervision and contract management on behalf of the Borrower. Despite these measures, weak procurement capacity caused a delay of three years in starting implementation. The project experienced delays in disbursement by nearly two years due to delays in procurement of the international TA. Nevertheless, according to the ICR, procurement of goods and services generally complied with relevant provisions of the project's legal documents and the Bank's Procurement Guidelines and was satisfactory. The ICR also mentions that there was only one case of misprocurement of works, with SDR 0.26 million declared ineligible in 2014, mostly due to lack of proper records. Overall procurement performance was moderately satisfactory.

c. Unintended impacts (Positive or Negative)

The ICR reports that in many localities the WMOs assumed a broader role in community development, including provision of microcredit and advocating for leases to BWDB of other lands for livelihood activities for disadvantaged households.

d. Other

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12. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	---
Risk to Development	Substantial	Substantial	---

Outcome			
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	---
Borrower Performance	Moderately Satisfactory	Moderately Satisfactory	---
Quality of ICR		Substantial	---

Note
When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.
The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

13. Lessons

The ICR presented 9 lessons learned namely three under each of three headings (General, Project Design and Project Implementation). Most lessons listed were focused on this project and were not generally applicable. However, the most significant lesson which had general applicability was as follows:

• **Complex institutional core reforms, if incorporated in a Project's design, are better implemented in a focused and phased manner.** Unconnected to reform activities and multiple actors engaged in implementation typically overwhelm responsible agencies and beneficiaries, and distract them from achieving the core reforms. A phased approach ensures stronger commitment and sustainability of core reforms.

14. Assessment Recommended?

No

15. Comments on Quality of ICR

The ICR gives a picture of the Project's preparation, implementation and results, provides some insightful explanations for important elements of the challenges faced by the Project and how they were addressed. The report could have provided more information on implementation of the Project before restructuring and achieved results, if any. The OCR could explain better about outcomes and specific issues arising from the institutional changes and how they improved performance of the two national water management institutions and ensured better services delivery. The ICR did not provide sufficient information on which elements of the PSM were downscaled and why in the restructured project. Its has insufficient information on Project's compliance with the environmental safeguards. Notwithstanding these aspects, the ICR provides sufficient evidence for evaluation of Project's outcomes.

a. Quality of ICR Rating
Substantial