



## 1. Project Data

**Project ID**

P093988

**Project Name**

BD: Dhaka Water Sup &amp; San. Project

**Country**

Bangladesh

**Practice Area(Lead)**

Water

**L/C/TF Number(s)**

IDA-45060

**Closing Date (Original)**

30-Jun-2013

**Total Project Cost (USD)**

165,700,000.00

**Bank Approval Date**

02-Dec-2008

**Closing Date (Actual)**

30-Jun-2016

**IBRD/IDA (USD)**
**Grants (USD)**

Original Commitment

149,000,000.00

0.00

Revised Commitment

83,086,245.87

0.00

Actual

74,298,934.35

0.00

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## 2. Project Objectives and Components

### a. Objectives

According to the Financing Agreement (page 5), the project objective was as follows:

- **To improve the sustainable delivery of stormwater drainage, wastewater, and water services to the population of Dhaka.**

The Project Appraisal Document (PAD, page 7) states more specifically the following:

- **To improve the sustainable delivery of stormwater drainage, wastewater, and water services by**



**the Dhaka Water Supply and Sewerage Authority (DWASA) to the population of Dhaka.**

The project objective was revised in June 2013, as follows:

- **To improve stormwater drainage in select catchments in Dhaka.**
- **To improve DWASA's planning activity.**

**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**

13-Jun-2013

**c. Components**

1. Rehabilitation and Strengthening of Existing Sewerage System (Appraisal: US\$ 63.8 million; Actual: US\$ 3.9 million): This component aimed to improve the existing sewerage infrastructure in Dhaka which had fallen into disrepair. Activities included: a study to prepare a master plan for a cost-effective and socially and environmentally sound wastewater management system; pilot septic sludge handling system; rehabilitation of the existing sewerage system, including the main trunk sewer line, four pumping stations, sewers, and the Pagla Sewage Treatment Plant; equipment for sewer cleaning; and technical assistance for improving operations and maintenance.

2. Rehabilitation and Strengthening of Storm Water Drainage System (Appraisal: US\$ 80.3 million; Actual: US\$ 52.3 million): This component aimed to improve the storm water drainage infrastructure in Dhaka, about half of which had become non-functional. Activities included: an update of the storm water drainage master plan; rehabilitation of the existing drainage system, two new pumping stations at Rampura and Kamlapur and drainage canals; equipment for drain cleaning; and technical assistance for improving operations and maintenance.

3. Support to the Implementation of Environment and Social Safeguards (Appraisal: US\$ 5.2 million; Actual: US\$ 1.0 million): This component provided technical support for the development and implementation of Resettlement Action Plans; and implementation of the environmental management framework.

4. Support to Service Improvement Planning in Low Income Communities (Appraisal: US\$ 8.7 million; Actual: US\$ 1.8 million): This component aimed to pilot several approaches to provide water supply services to selected low income communities, namely in slum areas. The pilot approaches were to follow a set of principles and guidelines on community engagement, design, construction, and management of service provision in the slum areas of Kamrangirchar, Badda, and Khilgaon. These areas were selected based on low levels of service provision, representation of flood prone areas, and settlements with low risk of immediate eviction.



5. Project Management and Institutional Capacity Building (Appraisal: US\$ 7.7 million; Actual: US\$ 12.7 million): This component provided technical assistance on project implementation, project monitoring, and DWASA's communications program.

At the time of project restructuring, components 1 (wastewater) and 4 (water supply for low income communities) were significantly scaled down.

#### **d. Comments on Project Cost, Financing, Borrower Contribution, and Dates**

##### **Project cost**

- The original project cost was US\$ 165.7 million. At the time of project restructuring, the total project cost was revised to US\$ 92.7 million, of which the actual project cost was US\$ 71.8 million.

##### **Financing**

- The original IDA Credit was planned at US\$ 149.0 million; at the time of project restructuring (at which time the Credit had disbursed US\$ 15.49 million), the IDA Credit was reduced to US\$ 76.0 million. US\$ 65.3 million of the Credit was cancelled.
- The US\$ to XDR exchange rate fluctuations led to changes in the overall available IDA Credit (US\$ 76.0 million at restructuring, US\$ 70.9 million at project closing). The ICR (page 8) reports that committed activities such as the information technology package under Component 5 could not be implemented as a result.

##### **Borrower contribution**

- The planned Borrower contribution was US\$ 16.7 million. At the time of project restructuring, no counterpart financing was planned. Actual contribution was US\$ 0.9 million.

##### **Dates**

- *June 2013*: The project was restructured to scale down project scope (including revision of the project objectives and key indicators) while increasing focus on capacity development activities. Nearly half of the IDA Credit amount was cancelled. The project closing date was extended from June 2013 to December 2015.
- *November 2015*: The project closing date was extended from December 2015 to June 2016 to allow completion of activities. The closing date was extended for a total of three years.

### **3. Relevance of Objectives & Design**



**a. Relevance of Objectives**

Water supply, sanitation and drainage services in the large urban center of Dhaka are characterized by limited coverage (30% coverage of sewerage, 38% coverage of drainage), unreliability, and uneven quality. The large majority of the households in Dhaka are not connected to a piped sewerage system (20% of the population), while canal drainage systems have largely fallen into disrepair and thus contribute to pollution of water sources. Damage to these systems was compounded by the 2004 floods. The rapidly growing urban population in Dhaka and the increased risk of flooding due to inadequate infrastructure have led to the critical need to rehabilitate drainage systems and upgrade waste water systems. In addition, there is also a pressing need to increase water supply services to the low income communities in slum areas of Dhaka, which are often forced to look for alternative sources of water with unclear quality and at higher cost. Therefore, the original project objective to improve delivery of stormwater drainage, wastewater, and water supply services is highly relevant.

Under the previous Bank's Country Partnership Strategy for FY2006-2009, the priority to improve the quality of water supply and sanitation services, including for the urban poor, was highlighted. The current Country Partnership Framework for FY 2016-2020 also includes addressing vulnerability to flood events. These were also consistent with the central Government of Bangladesh and Dhaka city priorities as reflected in various country development and sector strategies.

Under the project restructuring, the revised project objectives were significantly reduced in scope but remain highly relevant. The additional objective to strengthen capacity of the lead agency, Dhaka Water and Sanitation Authority (DWASA) is also relevant as DWASA faces challenges of a varying technical, commercial and financial nature.

**Rating**  
High

**Revised Rating**  
High

**b. Relevance of Design**

Sewerage and drainage systems are characterized by low coverage and effectiveness throughout Dhaka, hence the project design focused on rehabilitating the relevant infrastructure to full functionality. These were the main elements of the project design and reflected a robust results chain, with rehabilitated infrastructure likely to lead to improve access to and effectiveness of sanitation services and protection from flooding. In addition, water supply coverage was also mostly deficient in the low-income slum areas of Dhaka, hence the project designed included a focus on developing new infrastructure in these communities. However, these water supply interventions targeting low income communities had significant shortcomings in design, including weaknesses in the proposed technical solutions (not optimal for the densely populated areas) and the lack of implementing capacity by designated community service organizations. Therefore, relevance of the original project design is rated Modest.

Following project restructuring, the project design scope was significantly narrowed to focus on the activities most likely to achieve revised outcomes – namely storm water drainage and institutional development. Therefore, relevance of the revised project design is rated Substantial.



**Rating**  
Modest

**Revised Rating**  
Substantial

## 4. Achievement of Objectives (Efficacy)

### Objective 1

#### Objective

To improve the sustainable delivery of stormwater drainage, wastewater, and water services to the population of Dhaka.

#### Rationale

##### Outputs

- Construction of Rampura and Kamalapur storm water pumping stations.
- Construction and/or rehabilitation of 20.885 km of storm water canals (original target: 30,000; revised target: 20,885), plus provision of drainage cleaning equipment.
- Construction of three tube wells in six low-income communities, and small value works to connect low-income customers.

However,

- Key project interventions to rehabilitate the Pagla Sewage Treatment Plant and extend sewer lines were not completed.
- The phased approach to providing water supply services in slum areas was not carried out beyond the pilot stage and therefore activities were not fully scaled up as planned.

#### Outcomes

##### *Stormwater drainage*

- 3.6 million beneficiaries resided in project catchment areas that would benefit from reduced flood depth and duration. This fell short of the target of 4.0 million. The original key project indicator on “water level and number of days of waterlogging in the eastern part of Dhaka” was dropped. However, nine focus group discussions conducted in the Rampura catchment area reported less severe waterlogging during the heavy 2015 monsoon season (ICR, page 13).
- Capacity for permanent storm water pumping increased to 40 m<sup>3</sup>/day, achieving the target of 40.
- Capacity of drainage canals increased to 250 m<sup>3</sup>/second, achieving the target of 250.



### *Wastewater*

- No outcomes reported on wastewater services.
- The original project indicators on the number of households with access to sewerage services and the increase in population in project peri-urban areas with access to improved sanitation were dropped due to incomplete implementation of these activities.

### *Water supply*

- 49,000 low-income residents gained access to safe water supply, falling far short of the target of 180,000.

Achievement of this objective is rated Modest due to substantial improvement in storm water drainage, but negligible achievement in waste water (no outcomes reported) and water supply services (major shortfall in achieving targets)

**Rating**  
Modest

## **Objective 2**

### **Objective**

To improve DWASA's planning activity.

### **Rationale**

#### Outputs

- Preparation of a sewage master plan and a drainage master plan. These plans were subsequently approved by the DWASA Board of Directors.
- Completion of diagnostic study on septage management practices.
- Preparation of statutory audits for DWASA demonstrating transparent and accountable financial management, on a regular annual basis.

#### Outcomes

- Audited balance sheets from FY 2011-15 showed that the ratio of current assets over current liabilities is above the required threshold in project covenants, ranging from 2.05 to 3.13. DWASA's income statements also show a positive net income was maintained throughout the project period.



However,

- There was little or no evidence provided on the adoption or implementation of the sewage and drainage master plans, or related achievements.

**Rating**  
Modest

## 5. Efficiency

The PAD (Annex 9) provides an economic analysis of project costs and benefits. Project benefits are represented by reduced social and economic costs associated with flooding and environmental degradation – these are primarily derived from avoided damages to infrastructure, avoided disruption in economic activities, and their related economic costs to society. Costs are investment costs of the interventions and operations and maintenance costs for Components 1, 2, and 4. The net present value of calculated as US\$ 23.1 million, and the internal rate of return is 17.2%.

The ICR (Annex 3) provides an updated analysis, using a more recently available hydraulic and economic damage model. Costs used were actual project costs for the drainage investments only plus operations and maintenance costs (Component 2). The net present value is US\$ 24.2 million and the internal rate of return is 12.1%. This rate of return is lower than expected at appraisal.

In addition, the ICR discussion of efficiency in the use project resources does not sufficiently take into account the losses in efficiency due to negligible progress on several key activities that were eventually dropped (but not until just before the original closing date), significant implementation delays, and project extension of three years. These factors indicate modest efficiency.

### Efficiency Rating

Modest

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	✓	17.20	92.20 <input type="checkbox"/> Not Applicable



ICR Estimate	✓	12.10	79.60 □Not Applicable
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\* Refers to percent of total project cost for which ERR/FRR was calculated.

## 6. Outcome

### **Project under original design/objectives - Moderately Unsatisfactory**

Relevance of the project objectives is High and relevance of the project design is Modest due to the significant shortcomings in design of the low-income communities intervention. Achievement of the original objective to improve the sustainable delivery of stormwater drainage, wastewater, and water services is rated Modest due to negligible achievements in waste water and water supply services, despite significant achievements in storm water drainage services.

### **Project under revised design/objectives - Moderately Unsatisfactory**

Relevance of the project objectives is High and relevance of the project design is Substantial. Achievement of the revised objective to improve the sustainable delivery of storm water drainage services is rated Substantial. Achievement of the additional objective to improve DWASA's planning activity is rated Modest due to limited evidence of achievements.

Efficiency over the project period is rated Modest due to negligible progress on several key activities that were eventually dropped (but not until just before the original closing date), significant implementation delays, and an overall project extension of three years.

### **Overall outcome - Moderately Unsatisfactory**

According to IEG/OPCS harmonized guidelines, the combined overall outcome rating for a restructured project is determined by weighting the proportion of the IDA funding that disbursed before and after the restructuring. In the case of this project, as the outcome rating was Moderately Unsatisfactory for both periods, the combined outcome rating is also Moderately Unsatisfactory.

#### **a. Outcome Rating**

Moderately Unsatisfactory

## 7. Rationale for Risk to Development Outcome Rating

Training (and provision of equipment) for operations and maintenance of infrastructure was conducted, but risks of canal siltation/clogging and pump breakdown due to inadequate O&M remains substantial. The ICR (page 10) reports that at the time of ICR preparation, there was no clear plan or budget for operations and maintenance. The institutional framework for the water sector is still being concretized, although a follow up Bank project is being prepared to sustain these institutional reforms.





**a. Risk to Development Outcome Rating**

Substantial

## **8. Assessment of Bank Performance**

**a. Quality-at-Entry**

The project design was strongly aligned with the central and municipal government agendas. Lessons learned from prior water and sanitation operations in Dhakawere taken into account in the project design, such as the need to accompany physical investments with institutional capacity building. However, the most effective approach to critical institutional development was still not clearly understood, as reflected by the decision to rely on non-binding instruments that ultimately did not ensure government follow-through on agreed-upon actions. A design shortcoming was the intervention providing water supply services to low-income communities; as noted in the ICR (page 6), "difficulties in implementing the project in densely-populated low-income communities [LICs] were underestimated, even despite a phased approach, especially given the fact that DWASA was new to delivering services to LICs." Specifically, LICs selected for project interventions were on privately owned land, and proposed technical solutions were not optimal for the densely-populated communities. While the assessment of risks was extensive and included numerous operational risks and broader institutional risks, mitigation measures were ineffective for several key areas of risk particularly implementation and oversight capacity of DWASA.. The ICR (page 19) also notes the lack of readiness in bidding documents and feasibility studies, which contributed to significant implementation delays. The M&E framework was overall adequate and included hiring of an external firm to conduct M&E functions.

**Quality-at-Entry Rating**

Moderately Unsatisfactory

**b. Quality of supervision**

Project supervision ratings appear less than candid during the initial project period (rated in the satisfactory range from May 2009 to June 2012) despite limited implementation progress and clear indications of implementation problems. The formal project restructuring helped to narrow the project focus and achieve what was feasible, although it did not take place until one month before the original closing date. Adequate transition and O&M arrangements were not put in place, significantly affecting likely sustainability. Fiduciary and safeguards performance was satisfactory, with no major problems reported.

**Quality of Supervision Rating**

Moderately Satisfactory

**Overall Bank Performance Rating**

Moderately Unsatisfactory

## **9. Assessment of Borrower Performance**



### **a. Government Performance**

The government did not adhere to the Performance Agreement signed with DWASA, which was intended to reinstitute performance monitoring and further institutional reforms. This included annual joint reviews and annual audits which did not take place as agreed. Although these were non-binding agreements, obligations regarding these terms were included as project covenants. The ICR (page 8) also notes that slow government approval of procurement packages contributed to significant delays.

#### **Government Performance Rating**

Unsatisfactory

### **b. Implementing Agency Performance**

Implementation capacity was also overestimated, with heavy upfront procurement responsibilities for DWASA, and the need to coordinate with other public sector agencies, for example with the Dhaka City Corporation on drainage and solid waste management activities. The launch of initial project activities was considerably delayed due to procurement issues (40 month procurement process for the pumping stations), and debate on technical design issues. The ICR (page 8) notes that the Project Management Unit was "understaffed and the capacity to manage contracts and financial and procurement issues was low, leading to delays." Project restructuring resulted in significant reduction in scope of activities, particularly in investments (i.e. sewage treatment plant, sewer lines), to sharpen focus on feasible accomplishments. Safeguards and fiduciary performance was satisfactory, with no major problems reported.

#### **Implementing Agency Performance Rating**

Moderately Unsatisfactory

#### **Overall Borrower Performance Rating**

Unsatisfactory

## **10. M&E Design, Implementation, & Utilization**

### **a. M&E Design**

The original M&E framework included both output-oriented outcomes (increase in pumping capacity, volume of wastewater treated) and service delivery outcomes (number of households with access to sewerage services, number of people in slum areas with access to safe water and improved sanitation) indicators. The PDO indicator intended to measure reduction of urban flooding – "water level and number of days of water logging in the eastern part of Dhaka" – was not clearly defined and was dropped at restructuring. M&E arrangements included provision of technical assistance to monitor and report on project progress. The lack of effective coordination between the M&E framework and arrangements for the broader Performance Agreement may have been a missed opportunity to further impact sector monitoring capacity.



## **b. M&E Implementation**

The results framework was significantly revised during project restructuring to correspond with the reduced project scope and revised objectives, although a shortcoming is that the revised indicators were highly focused on outputs but not on actual service outcomes. The ICR (page 8) reports that Implementation Status and Results reports (ISRs) did not include information on all the indicators, but that at the mid-term review, DWASA provided a comprehensive report assessing project results, which then served as the basis for the revised results framework. The PMU's ability to monitor the project improved with more detailed and regular reports being provided during the latter project period.

## **c. M&E Utilization**

According to the ICR (page 9), M&E information was used as follows: to maintain focus on progress of infrastructure activities; to ensure focus on institutional development activities as integral to project success; and to address implementation problems in a timely manner. Limited specific examples are provided.

### **M&E Quality Rating**

Modest

## **11. Other Issues**

### **a. Safeguards**

The project was classified as an Environmental Category "B" project due to implementation of water supply and sanitation civil works. Safeguard policies on Environmental Assessment (OP/BP 4.01) and Involuntary Resettlement (OP/BP 4.12) were triggered. Canal rehabilitation works in three of the project areas included potential project-affected persons and therefore Resettlement Action Plans, including grievance redress mechanisms, were prepared for the three areas. Overall capacity building support included the establishment of a dedicated resettlement team, provision of resettlement compensation mechanisms, and training in managing resettlement issues. Over the project period, there were 221 households affected by the pumping stations, and 216 households affected by the canal works. One complaint regarding the partial demolition of a building on the Khilgaon-Bashabo canal was received and the ICR (page 9) reports that the matter was resolved.

Implementation of Environmental Management Framework was satisfactory, including preparation of the Environmental Management Plan, impact assessments for three of the larger sub-projects, and testing of excavated materials for potentially harmful substances. Implementing agency staff received training and equipment to increase environmental management capacity. The ICR (page 9) reports that civil works were all in compliance with local legislation and Bank policies. One compensation payment was provided for a case of non-compliance (felled trees on a work site) and another incident of land subsidence also occurred at a project site but without injuries.



## b. Fiduciary Compliance

**Financial management:** There were no major financial management problems, although the lack of a full-time financial management specialist in the project management unit led to some shortcomings in maintaining books of accounts and submission of financial reports. The ICR (page 10) reports that external project audit reports were timely and of sufficient quality and that the project was in compliance with all fiduciary covenants.

**Procurement:** A Procurement Risk Mitigation Plan was developed during project preparation, which included submitting quarterly monitoring reports and hiring an international procurement specialist. The hiring process for the latter did not yield qualified candidates, therefore a local expert was contracted. Although there were no major procurement shortcomings, performance was overall marked by delays. These included long delays in approving contract amendments and procuring technical assistance consultancies. The ICR (page 10) also notes that “irregularities” were encountered that needed extra time to resolve (no specific details were provided), complaint handling was a major issue, and overall turnout period for advertising, evaluation and award took significant time.

## c. Unintended impacts (Positive or Negative)

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## d. Other

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## 12. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Unsatisfactory	Moderately Unsatisfactory	---
Risk to Development Outcome	Substantial	Substantial	---
Bank Performance	Moderately Unsatisfactory	Moderately Unsatisfactory	---
Borrower Performance	Moderately Unsatisfactory	Unsatisfactory	Government performance was unsatisfactory due to shortcomings in meeting project covenants.
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

Lessons drawn from the ICR, adapted by IEG:

- Longer-term maintenance arrangements and funding need to be included in the project design to support sustainability of services. In the case of this project, the omission of these institutional measures poses a significant risk to the continued functioning of infrastructure investments supported by the project.
- Provision of services to low income communities in slum areas requires extensive understanding of existing conditions, legal aspects, and suitable technologies. In the case of this project, although a phased approach was appropriate given the complexity of the activities, the lack of proper attention to the aforementioned issues led to significant shortfalls in implementation.

### 14. Assessment Recommended?

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### 15. Comments on Quality of ICR

The ICR was candid about the project performance, including a detailed discussion of implementation problems that provides informative lessons for future operations of this nature in Bangladesh. The assessment of project achievements (Section 3.2) is limited in quantity and quality of evidence, although this is likely due to actual lack of available data and/or lack of outcomes. The discussion on efficiency (Section 3.3) is primarily focused on NPV/IRR calculation of project activities, but does not take into account the broader question of whether project resources were used efficiently during the course of project implementation.

#### a. Quality of ICR Rating

Substantial