Report and Recommendation of the President to the Board of Directors

Project Number: 47254-003
June 2016

Proposed Loan
People's Republic of Bangladesh: Dhaka Water Supply Network Improvement Project

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 29 May 2016)

Currency unit	–	taka (Tk)
Tk1.00	=	$0.01276
$1.00	=	Tk78.400

ABBREVIATIONS

ADB	–	Asian Development Bank
CBO	–	community-based organization
DMA	–	district metered areas
DMS	–	design, management, and supervision
DWASA	–	Dhaka Water Supply and Sewerage Authority
IEE	–	initial environmental examination
LIBOR	–	London interbank offered rate
LIC	–	low-income community
MLD	–	million liters per day
NGO	–	nongovernment organization
NRW	–	nonrevenue water
O&M	–	operation and maintenance
PAM	–	project administration manual
PMU	–	project management unit
SCADA	–	supervisory control and data acquisition
SDR	–	special drawing right

NOTES

(i) The fiscal year (FY) of the Government of Bangladesh and its agencies ends on 30 June. "FY" before a calendar year denotes the year in which the fiscal year ends, e.g., FY2016 ends on 30 June 2016.

(ii) In this report, “$” refers to US dollars

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PROJECT AT A GLANCE

1. Basic Data — **Project Number:** 47254-003

Project Name	Dhaka Water Supply Network Improvement	**Department /Division**	SARD/SAUW
Country	Bangladesh	**Executing Agency**	Dhaka Water Supply and Sewerage Authority
Borrower	Government of Bangladesh		

	2. Sector	**Subsector(s)**	**ADB Financing ($ million)**
✓	**Water and other urban infrastructure and services**	Urban water supply	275.00
		Total	**275.00**

3. Strategic Agenda	**Subcomponents**	**Climate Change Information**	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Adaptation ($ million)	148.40
Environmentally sustainable growth (ESG)	Eco-efficiency	Climate Change impact on the Project	Low
	Global and regional transboundary environmental concerns		

4. Drivers of Change	**Components**	**Gender Equity and Mainstreaming**	
Governance and capacity development (GCD)	Civil society participation	Effective gender mainstreaming (EGM)	✓
Partnerships (PAR)	Organizational development		
	Civil society organizations		
	Implementation		

5. Poverty Targeting		**Location Impact**	
Project directly targets poverty	Yes	Urban	High
MDG-targeting (TI-M)	MDG7		

6. Risk Categorization: Complex

7. Safeguard Categorization **Environment:** B **Involuntary Resettlement:** B **Indigenous Peoples:** C

8. Financing

Modality and Sources	**Amount ($ million)**
ADB	**275.00**
Sovereign Project loan: Ordinary capital resources	275.00
Cofinancing	**0.00**
None	0.00
Counterpart	**133.00**
Government	133.00
Total	**408.00**

9. Effective Development Cooperation

Use of country procurement systems	Yes
Use of country public financial management systems	Yes

Source: Asian Development Bank

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the People's Republic of Bangladesh for the Dhaka Water Supply Network Improvement Project.[1]

2. The proposed project will improve the water supply system in the country's capital, Dhaka, by making it more reliable, sustainable, and climate-resilient. It will consolidate and enhance the gains made in the efficiency of the water distribution network achieved under two ongoing Asian Development Bank (ADB) projects, and improve the service delivery and the capacity of the Dhaka Water Supply and Sewerage Authority (DWASA).[2]

II. THE PROJECT

A. Rationale

3. **Enhancing distribution network efficiency gains.** The development of urban infrastructure has not kept pace with rapid urbanization in Bangladesh. Providing sufficient drinking water to meet growing demand in Dhaka has been particularly challenging due to the city's average annual population growth rate of 3.6% since 2005, which has far exceeded the 1.1% national average.[3] DWASA is the public utility responsible for providing Dhaka's 13.5 million people with water.[4] Support for its efforts to improve its distribution network has included financing under the two earlier ADB projects: (i) the Dhaka Water Supply Sector Development Program, which was approved in 2007 to rehabilitate DWASA's supply systems and build up its institutional capacity; and (ii) the Dhaka Environmentally Sustainable Water Supply Project, approved in 2013 with the aim of augmenting the surface water sources for the supply system and improving parts of the distribution network (footnote 2).

4. Both projects are ongoing. They have improved the water distribution networks to deliver quality service for 7 million people by establishing district metered areas (DMAs) and working to reduce the ratio of nonrevenue water (NRW) in the system in each DMA.[5] Unlike before, the piped water supply in the DMAs commissioned so far is now available 24 hours a day. Physical water losses from these systems have been cut from 40% to less than 15%.[6] Good quality potable water from system taps is now assured. The 2007 program has provided authorized access to piped water to 154,000 people in 15 low-income communities (LICs). Based on the success under these projects, DWASA is now committed to providing authorized connections in all LICs in Dhaka.

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[1] The design and monitoring framework is in Appendix 1.

[2] (i) ADB. 2007. *Report and Recommendation of the President to the Board of Directors: Proposed Loans and Technical Assistance Grant to the People's Republic of Bangladesh for the Dhaka Water Supply Sector Development Program.* Manila (Loans 2382-BAN [project loan] and 2383-BAN [program loan]); and (ii) ADB. 2013. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Administration of Loan to the People's Republic of Bangladesh for the Dhaka Environmentally Sustainable Water Supply Project*. Manila (Loan 3051-BAN). ADB funded the preparation of the proposed project with support from the Netherlands Trust Fund under the Water Financing Partnership Facility.

[3] United Nations Department of Economic and Social Affairs. 2015. *World Urbanization Prospects: The 2014 Revision.* New York.

[4] DWASA is a public sector autonomous commercial organization, entrusted with the responsibility for providing water supply, sewage disposal, and storm water drainage services to Dhaka City.

[5] NRW is equal to the total amount of the system input volume minus the total amount of the authorized consumption. DMAs are areas that are hydraulically isolated from the bulk water transmission mains and the rest of the neighboring areas. The use of the DMA-based approach helps in proper management of water leakage, water pressure, and water balance.

[6] Physical losses in 30 commissioned DMAs range from 1.58% to 14.06% and the current average is 4.95%, according to DWASA estimates.

5. DWASA still has challenges. It needs to expand efficiency gains throughout its service area. It must reduce overall physical losses and the estimated 26% overall NRW ratio in its system operations. In areas not covered by the ongoing projects where 6.5 million people reside, water losses are still the main reason for poor service delivery. Reducing these losses will increase the amount of water available to residents, which will reduce household use of illegal suction pumps to withdraw water from distribution lines, and underground storage reservoirs. This, in turn, will improve the quality and reliability of the water consumed in the city, ease water-related public health risks, cut down the consumption of energy used to pump water, and help make clean water more accessible generally and in LICs. If accompanied by the setting of appropriate water tariffs, reducing NRW will also ensure DWASA's financial sustainability. In addition, DWASA needs additional financing to complete some of the civil works of DMAs under ongoing contracts of the 2007 program.[7]

6. **Increasing climate change resilience**. Climate change is likely to exacerbate the threats to Dhaka's already vulnerable water security. The decline in water availability due to altered precipitation patterns and increased evapotranspiration caused by higher temperatures, and the rising incidence of water pollution from flooding are major climate risks. A rise in the number of weather events that could disrupt water supply service is a secondary projected risk, along with rising sea levels that could increase the salinization of both groundwater and surface water.[8]

7. The use of the DMA-based approach reduces the city's vulnerability to water shortages by making more water available through efficient water management systems. DWASA also needs to adapt to future climate change effects by enhancing its institutional abilities in the sustainable operation and maintenance (O&M) of DMA systems. In addition, it must be able to monitor water quality to detect and mitigate water pollution and salinization. A program to make the public aware of the need to conserve water will be necessary to prepare the city to withstand adverse climate events. Improving access to piped water in LICs will increase the resilience of the poor in the face of climate change and the risk of natural disasters.

8. **Sustainable management of district metered areas.** DWASA is committed to institutional reforms to ensure sustainable service delivery. Under a partnership framework between the government and development partners supported by the 2007 program, DWASA has increased its drinking water tariff by 5% annually since 2007. It has implemented a capacity-building program for more than 2,200 staff members in such areas as financial management and O&M. It also reduced the number of staff per 1,000 connections from 17 in 2007 to 9 in 2013.

[7] DMA improvement under the 2007 program includes the rehabilitation of 1,536 kilometers of distribution network pipe and 157,000 service connections. The additional funds ($36.89 million [ADB's financing portion]) are required to cover the cost overruns resulting from changes in the SDR–$ exchange rate, an increase after detailed designs and physical verification of the existing distribution networks in the quantity of works and goods required, and price escalation. ADB's eligibility criteria for additional financing have been met. The 2007 program remains technically feasible, economically viable, and financially sound even after taking the additional financing into consideration. It aligns with the government policy and the current country partnership strategy. With additional financing, the program will be completed by the end of 2017, compared with the current targeted closing date of 30 June 2016. The 2007 program is performing well in terms of delivering expected outputs, and its implementation progress has been satisfactory. Out of the net loan amount ($139.7 million), the cumulative contract awards total $138.7 million, or 99.3%, and the disbursements are $126.4 million, or 90.5%, as of the end of March 2016. Performance on compliance with safeguard policy requirements has been satisfactory. Risks have successfully been managed, and the project has an *on track* rating. The project performance on these criteria was good for the 12 months before interdepartmental review, and the design and implementation problems have been fully and satisfactorily addressed. More details are provided in the Summary of Additional Financing Part (accessible from the list of linked documents in Appendix 2).

[8] Project Climate Risk Assessment and Management Reporting (accessible from the list of linked documents in Appendix 2).

DWASA developed a 5-year corporate business plan in 2010 and updates it regularly.[9] It has been carrying out a turnaround program since 2010 to build its institutional abilities, promote transparency, and improve operational efficiency and customer services. These activities have contributed to full O&M cost recovery and better debt servicing of DWASA. Its net profit was Tk111 million in FY2014, compared with loss of Tk670 million in FY2008.[10]

9. Managing DMAs professionally and sustaining the newly achieved low levels of NRW ratios are both critical to keeping DWASA's operations sustainable. This is also important to meeting Dhaka's growing demand for water, which is projected to rise from 2,144 million liters per day (MLD) in 2015 to 2,616 MLD in 2020. DWASA has plans to enhance its capacity to produce water from various sources to 3,306 MLD by 2020 from 2,420 MLD in 2014, mainly by developing surface water sources. This will include the 500 MLD augmentation to be achieved under ADB's Dhaka Environmentally Sustainable Water Supply Project (footnote 2). Another water treatment plant (Saidabad Water Treatment Plant III) is also planned by DWASA. However, these will not meet projected needs unless current water losses are substantially reduced. Water supply deficits may arise after 2020, and efficiency gains will be needed to deal with them.[11]

10. To sustain its efficiency gains, DWASA's capacity to carry out O&M in the DMAs must be improved, since a growing number of DMAs will be commissioned and handed over by contractors to DWASA operational staff under the ongoing projects. DWASA needs to institutionalize the DMA-based approach by updating operating procedures, training and orienting operations staff in DMA management, and developing a comprehensive DMA management plan. The project will help DWASA make the necessary institutional transformation into a highly efficient and financially sound water utility.

11. **Lessons**. Lessons and findings from previous ADB water sector operations highlight a strong need to ensure efficiency gains by reducing NRW ratios before expanding a system's water supply.[12] This project is in line with these recommendations. It will support the ongoing efforts of DWASA to improve its existing distribution networks alongside the augmentation of the system's water sources and the maximization of service delivery benefits. The project is consistent with ADB's Water Operational Plan and its country partnership strategy for Bangladesh for 2011–2015.[13]

B. Impacts and Outcome

12. The impacts will be (i) safe drinking water made available for all of Bangladesh's urban populations, aligned with the government's five-year plan for FY2016–FY2020;[14] and (ii) adaptive capacity of water sector enhanced for reducing climate change vulnerability, aligned with the national strategy for water supply and sanitation.[15] The outcome will be sustainable provision of a more reliable, improved, and climate-resilient water supply in Dhaka City.

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[9] ADB. 2011. *Progress Report on Tranche Release to the People's Republic of Bangladesh for the Dhaka Water Supply Sector Development Program (Second Tranche).* Manila; and DWASA estimates.

[10] DWASA. 2014. *Annual Report, 2012–2013.* Dhaka; and DWASA. 2015. *Annual Report, 2013–2014*. Dhaka. In FY2014, DWASA had an operating ratio of 88.7% and a debt service coverage ratio of 4.4.

[11] All data are from DWASA. 2014. *Water Supply Master Plan for Dhaka City.* Dhaka.

[12] ADB. 2010. *Special Evaluation Study: Water Policy and Related Operations.* Manila.

[13] ADB. 2011. *Water Operational Plan, 2011–2020*. Manila; and ADB. 2011. *Country Partnership Strategy: Bangladesh, 2011–2015.* Manila.

[14] Government of Bangladesh, Ministry of Planning, Planning Commission. 2015. *Seventh Five-Year Plan: FY2016–FY2020.* Dhaka.

[15] Government of Bangladesh, Ministry of Local Government, Rural Development, and Cooperatives. 2014. *National Strategy for Water Supply and Sanitation.* Dhaka.

C. Outputs

13. The outputs will be DWASA's (i) distribution network strengthened, (ii) sustainable managerial capacity of DMA enhanced, and (iii) capacity for quality service delivery enhanced. The major value additions of the project to improve efficiency, quality, and resiliency of drinking water distribution include expanding DMAs, introducing technology for DMA management including a supervisory control and data acquisition (SCADA) system, building DWASA's capacity to improve its finances and sustain the O&M in the DMAs, and engaging with civil society. The project will facilitate regular policy dialogue among stakeholders to improve DWASA's regulatory and tariff structure.

14. **Output 1: Distribution network strengthened.** Building on the ongoing work of two ADB-financed projects, the project will help improve the distribution network in Dhaka City.[16] It will finance the improvements (i) in new DMAs not financed by the ongoing loans,[17] and (ii) in DMAs under the 2007 program through additional financing to meet cost overruns and complete civil works under ongoing contracts (footnote 7). The project will extend new or regularized water connections to LICs where people are relying on illegal water lines or private water vendors and paying higher charges than they will when they use the expanded systems.

15. **Output 2: Sustainable managerial capacity of district metered areas enhanced.** DWASA's managerial and technical capacity will be strengthened to keep NRW at a low level. The project will assist DWASA in (i) preparing and implementing a sustainable NRW reduction plan;[18] (ii) strengthening monitoring capacity at the zone level with renewed standard operating procedures,[19] upgraded training modules and SCADA system, and the piloting of automated meter reading; and (iii) enhancing in-house design capacity for sustainable DMA management.

16. **Output 3: Capacity for quality service delivery enhanced.** The project will help DWASA (i) prepare and implement an operational and financial improvement plan by enhancing the existing 5-year corporate business plan;[20] (ii) build capacity for planning, design, construction supervision, and project management; (iii) prepare and implement a plan to make the public more aware of demand control, water conservation, and health and hygiene; (iv) make the quality of the service delivery to LICs better; (v) prepare and implement a water quality monitoring system; (vi) implement a gender action plan; and (vii) enhance project readiness for future investment.[21]

D. Investment and Financing Plans

17. The project is estimated to cost $408 million (Table 1).

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[16] Under the two ADB-financed projects, DWASA has been strengthening the existing water supply network by establishing DMAs in 3 of its 10 zones (5, 6, and 8) and parts of 4 zones (3, 4, 9, and 10) that serve 7 million people.

[17] The project will cover the new DMAs of 3 zones (1, 2, and 7) and the remaining parts of 4 zones (3, 4, 9, and 10) that serve 6.5 million people. It will rehabilitate 1,500 kilometers of distribution network pipe; and rehabilitate, build, or regularize 234,000 connections.

[18] The sustainable NRW reduction plan will include the targets for NRW reduction; optimal DMA-based organizational structure; an incentive mechanism to improve operations; and an asset management plan, budget requirements, and a training plan.

[19] Standard operating procedures will include water loss assessment, water balance calculation, leak management, asset management, and smart water management technologies.

[20] The existing 5-year corporate business plan comprises subplans. These include an investment plan, a financial plan, a tariff plan, and a human resource development plan. In addition, the project will prepare a sustainable NRW reduction plan, a water quality monitoring plan, and a demand management plan.

[21] DWASA will engage consultants to prepare future projects, mainly involving sewerage management.

Table 1: Project Investment Plan
($ million)

Item	Amount[a]
A. Base Cost[b]	
1. Distribution network strenghtened[c]	294.59
2. Sustainable district metered area management	21.99
3. Capacity enhancement of Dhaka Water Supply and Sewerage Authority for quality service delivery	26.66
Subtotal (A)	**343.24**
B. Contingencies[d]	**49.51**
C. Financing Charges During Implementation[e]	**15.25**
Total (A+B+C)	**408.00**

[a] Includes taxes and duties of $92.94 million to be financed from government resources. The Asian Development Bank (ADB) may finance local transportation and insurance costs and bank charges.
[b] In mid-2016 prices.
[c] Comprises (i) $242.14 million for new district metered areas, and (ii) $52.45 million for the additional financing part.
[d] Physical contingencies computed at 10.0% for civil works and equipment. Price contingencies computed at 1.4%–1.5% on foreign exchange costs and 6.0%–6.2% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.
[e] Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year forward London interbank offered rate (LIBOR) plus a spread of 0.5%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.
Source: Asian Development Bank estimates.

18. The Government of Bangladesh has requested a loan of $275 million from ADB's ordinary capital resources to help finance the project. The loan will have a 25-year term, including a grace period of 5 years, a straight-line repayment method, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year (the interest and other charges during construction to be capitalized in the loan), and such other terms and conditions set forth in the draft loan and project agreements.[22] The ADB loan proceeds will be relent to DWASA on terms and conditions satisfactory to ADB.

19. The financing plan is in Table 2.

Table 2: Financing Plan

Source	**Amount** ($ million)	**Share of Total** (%)
Asian Development Bank		
Ordinary capital resources (loan)[a]	275.00	67.4
Government	133.00	32.6
Total	**408.00**	**100.0**

[a] Includes $36.89 million of the Asian Development Bank's additional financing part. Climate finance is tracked as $148.40 million, with (i) $143.37 million for civil works of new district metered areas, (ii) $4.10 million for consultants for capacity building for sustainability, and (iii) $0.93 million for a nongovernment organization for demand control and public awareness. (More details in Table 7 of the Project Administration Manual [accessible from the list of linked documents in Appendix 2].)
Source: Asian Development Bank estimates.

20. ADB is coordinating with Agence Française de Développement (French Development Agency), the Danish International Development Assistance, and the European Investment Bank, which together are processing loans totaling an indicative amount of $372 million for the proposed new Saidabad Water Treatment Plant III. The parallel collaborative cofinancing will be recognized through a memorandum of understanding or similar bilateral arrangements to be confirmed by the partners.[23]

[22] Based on this, the average loan maturity is 15.25 years and the maturity premium payable to ADB is 0.10% per annum.
[23] The board of Agence Française de Développement approved its loan (€115 million) in January 2015. Cofinancing with the Danish International Development Assistance ($200 million), and the European Investment Bank (€40

E. Implementation Arrangements

21. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual (PAM).[24]

Table 3: Implementation Arrangements

Aspects	Arrangements		
Implementation period	January 2016–June 2021		
Estimated completion date	30 June 2021 (Loan closing date: 31 December 2021)		
Management			
(i) Oversight body	Interministerial project steering committee Chair: Secretary of the Local Government Division Members: (i) Department of Environment; (ii) Dhaka North City Corporation; (iii) Dhaka South City Corporation; (iv) DWASA; (v) Economic Relations Division; (vi) Finance Division; (vii) Implementation, Monitoring and Evaluation Division; (viii) Local Government Division; (ix) Local Government Engineering Department; (x) Ministry of Home; (xi) Ministry of Public Works; (xii) Planning Commission; (xiii) RAJUK (capital development authority).		
(ii) Executing agency	DWASA		
(iii) Key implementing agencies	DWASA		
(iv) Implementation unit	Project management unit, Dhaka, 28 key staff		
Procurement [a]	International competitive bidding	9 contracts	$208.59 million
	National competitive bidding	2 contracts	$ 1.32 million
	Shopping	2 contracts	$ 0.12 million
Consulting services	Quality- and cost-based selection	5 contracts (4,572 person-months)	$22.91 million
Retroactive financing and/or advance contracting	Advance contracting is being implemented for the recruitment of consultants and the nongovernment organization, as well as for procurement of civil works packages for the distribution network improvement. Retroactive financing will be up to 20% of the ADB loan amount for eligible expenditures incurred before loan effectiveness in connection with civil works, including those under the Dhaka Water Supply Sector Development Project, and project management and capacity development. However, such expenditures cannot be incurred more than 12 months before the signing of the loan agreement.		
Disbursement	The loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2015, as amended from time to time) and detailed arrangements agreed between the government and ADB.		

ADB = Asian Development Bank, DWASA = Dhaka Water Supply and Sewerage Authority.
[a] Additional financing will be utilized for a part of six existing civil works contracts through contract modifications of the Dhaka Water Supply Sector Development Program. The project administration manual outlines the information regarding existing contracts and provides estimated modified amounts.
Source: Asian Development Bank

III. DUE DILIGENCE

A. Technical

22. The project will establish DMAs (footnote 5). The technical ability of the DMA-based approach to reduce water losses has been demonstrated by ADB's ongoing projects. The approach will help strengthen the climate resilience of these water supply systems by making more water available. DWASA has gained experience in installing a SCADA system in piloted DMAs. These have shown the advantages of centralized supervision and control of water flow and water pressure. The project will assist DWASA in realizing the full-scale operational capacity of the SCADA system. Trenchless technology will be used in rehabilitating existing pipes. This will

million) will be confirmed once approved by the respective institutions. The Saidabad Water Treatment Plant III will complement the project's distribution network improvement to deliver more reliable services.
[24] Project Administration Manual (accessible from the list of linked documents in Appendix 2).

considerably reduce the need to open up the roads and pavements and thus reduce traffic flow disruptions. It will also mitigate the resettlement impacts. To ensure quality civil works, contractors will be required to meet functional guarantees, such as a minimum of sustained network pressure (1 bar or greater at all times) and a cap on physical losses (below 10% of supplied volume in each DMA).

B. Economic and Financial

23. **Economic analysis.** The major benefits of the project will be the provision of an improved and more reliable water supply to a growing population in project service areas—including incremental water supply; savings for customers who will no longer need to incur water purification costs; savings for consumers who will no longer have to pay higher prices to buy water from vendors; savings in the energy costs of households that will no longer need to use electricity to employ suction pumps to withdraw water; and savings in health-related expenditures due to an expected reduction of waterborne diseases. The estimated economic internal rate of return is 15.4% for new DMAs to be developed under the project.[25] The sensitivity analysis shows that the project is viable under adverse conditions.

24. **Financial analysis.** The financial analysis found the project to be financially viable, with the internal rate of return for new DMAs estimated at 1.4%.[26] Sensitivity analysis showed this return, which exceeds the estimated weighted average cost of capital of 0.24%, to be robust under several adverse scenarios. Analysis of DWASA's financial position revealed that the current annual 5% tariff increase would not be enough over the medium and long terms to fully cover O&M costs and service loans due to an increased number of development partner-funded projects. The government must ensure that DWASA meets the appropriate debt service coverage ratio of more than 1.0 and an operating ratio of less than 100% for it to remain financially sustainable. This needs to be done by the higher tariff adjustment or other means. To help the government and DWASA achieve this financial sustainability, ADB will provide policy advice and capacity development support and help develop an updated tariff adjustment plan.

C. Governance

25. **Financial management.** A financial management assessment concluded that DWASA is capable of undertaking the financial management of ADB-financed projects. DWASA has prior and ongoing experience in implementing ADB projects and knowledge of ADB's financial accounting methods and disbursement procedures for such projects. The overall risk assessment for the project is moderate. The risk mitigation measures include (i) strengthening DWASA's internal audit unit to conduct timely audits, and (ii) implementing an integrated financial data system to increase the efficiency of reporting and monitoring. This project will modernize accounting, billing and collection, and audit systems for enhancing the financial management of DWASA.

26. **Procurement**. All procurement of goods and works will follow ADB's Procurement Guidelines (2015, as amended from time to time). National competitive bidding will follow the government's Public Procurement Act, 2006 and Public Procurement Rules, 2008, with modifications and/or clarifications agreed between DWASA and ADB. A project procurement capacity assessment concluded that DWASA is capable of carrying out the procurement for ADB-financed projects. It has prior and ongoing experience in implementing these projects and is

[25] The economic internal rate of return of the 2007 program with additional financing is 16%.
[26] The financial internal rate of return of the 2007 program with additional financing is 1.5%, which is higher than the weighted average cost of capital of 1.43%.

familiar with ADB's procurement procedures. The overall risk assessment for the project is moderate, and the risk mitigation measures against the implementation delays include (i) providing training to and sharing knowledge with the project management unit (PMU) to strengthen its ability to process procurement efficiently, and (ii) preparing the master bid documents for works and consulting services to expedite advance action. A procurement specialist from the design, management, and supervision (DMS) consultants will help the PMU prepare and evaluate bids.

27. **Anticorruption**. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and DWASA. The specific policy requirements and supplementary measures related to preventing corruption are described in the PAM (footnote 24). In October 2012, the government approved a national integrity strategy and formed a national integrity advisory committee to implement the strategy and oversee anticorruption activities. It is chaired by the prime minister. The strategy includes a road map for strengthening both state and nonstate accountability institutions to fight corruption and improve governance. The constitutional anticorruption agency is the Anti-Corruption Commission, which is empowered to investigate any irregularities in the project. The PMU will follow government rules and procedures for all expenses and revenue items. DWASA will establish a project website for transparency and a system for handling complaints related to contracts and procurement.

D. Poverty and Social

28. Access to a water supply in Dhaka City is mainly through household pipe connections and public taps. People living in LICs generally do not have legal access to these water supplies or to sanitation services because they often live unauthorized on lands to which they have no legal title. They depend on illegal water lines or private vendors, and pay higher charges than they would for a legal supply. With assistance from nongovernment organizations (NGOs), the project will help community-based organizations (CBOs) make poor households in LICs, including households headed by women, eligible for legal water connections either by legalizing existing illegal connections or setting up new ones. This will enable the poor to receive metered water for less than what they now pay. The CBOs will be responsible for paying water tariffs and maintaining the community water points. Campaign activities will be carried out to enhance public awareness on water conservation and public hygiene. Capacity development in the communities will contribute to making the project benefits sustainable.

29. **Gender.** The expansion of the piped water supply network under the project will benefit women by reducing the time and effort now needed for them to obtain water for their households.[27] Women will be able to actively participate and voice their views in decision-making on water supply matters through the CBOs. A gender action plan has been prepared.[28] Focused and efficient community campaigns will make women aware of the need to use water economically. Women will have equal opportunity with men to participate in project-supported training programs, recruitment, and employment in construction. Core labor standards, including equal wages for women and men for work of equal value, will be ensured. Resources have been allocated for the implementation and monitoring of the gender action plan.

E. Safeguards

30. The PAM outlines the detailed implementation arrangements for safeguards. DWASA has the capacity to implement safeguards based on its experience in the ongoing ADB-financed

[27] The project will benefit approximately 150,000 women from LICs.
[28] Gender Action Plan (accessible from the list of linked documents in Appendix 2).

projects.[29] The PMU will have a safeguard implementation unit staffed by an environment officer, a social officer, and a gender officer. The unit will be assisted by safeguard specialists of the DMS consultant team and NGOs.

31. **Environmental safeguard.** The project is classified as category B for environment per ADB's Safeguard Policy Statement (2009). No significant environmental impacts are anticipated. All the project sites visited by the project team are located outside sensitive areas, and adverse impacts from construction or operations can be avoided and/or mitigated through proper design, high-quality construction, and good O&M practices. The drafts of five initial environmental examinations (IEEs) with related environmental management plans have already been prepared and disclosed on the DWASA and ADB websites.[30] All bid documents and contracts of civil works packages will contain IEEs, and all IEEs will be submitted to ADB for review, no objection, and disclosure prior to the issuance of bidding documents. DWASA will obtain the necessary statutory clearances and permits from the Department of Environment prior to the award of project-related civil works contracts. DWASA will make use of its prior experience from the ongoing ADB projects in environmental management and will be supported by the DMS consultant team. Consultation and public participation will continue throughout project implementation, and any environmental grievances will be handled in accordance with the grievance redress mechanism developed for the project. Environmental reporting to ADB will be done on a semiannual basis.

32. **Involuntary resettlement.** The project is classified as category B for involuntary resettlement. All the affected people are making informal use of government land or right-of-way to live or run their business. No private land acquisition will be required. The project will have impacts on the semipermanent structures and livelihoods of 259 vendors or hawkers during construction, but the effects will be temporary and those affected will be able to return to their original sites after construction is completed. The project will also temporarily impact the daily wages of 84 workers. The semipermanent structures of two households will be impacted, and one household will need to be relocated. Five draft resettlement plans were prepared to mitigate the involuntary resettlement impacts related to each civil works package and disclosed on the DWASA and ADB websites.[31] The plans were prepared based on an impact assessment in sample project sites and will be updated during the detailed engineering design. Public consultations and focus group meetings have been held at each project site. Consultations will be continued with communities throughout implementation. DWASA has experience from the ongoing ADB projects in implementing ADB's safeguard policy and requirements. An NGO experienced in land acquisition and resettlement activities will be engaged to help DWASA finalize and implement the resettlement plan.

33. **Indigenous peoples.** The project has been designated category C for indigenous peoples. No communities of indigenous people were found at the project sites.

[29] The compliance with safeguards has been satisfactory in the ongoing ADB projects, and risks have been managed adequately. No major environmental and social safeguard issues are identified during the implementation of environmental management plans and resettlement plans.
[30] Initial Environmental Examination (accessible from the list of linked documents in Appendix 2).
[31] Resettlement Plan (accessible from the list of linked documents in Appendix 2).

F. Risks and Mitigating Measures

34. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.[32] The overall benefits are expected to outweigh the costs.

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Project costs may increase due to an increase in the works and equipment required and delays in implementation.	DWASA will conduct an extensive survey to increase the accuracy of data on existing networks. With the help of consultants, DWASA will review the contractors' final design before construction to optimize works and equipment requirements and the implementation method. DWASA began advance contracting for the distribution network improvement to reduce the risks of price escalation due to delays. The Local Government Division of the Ministry of Local Government, Rural Development, and Cooperatives and DWASA will coordinate with the city corporations and other relevant government agencies to expedite the project construction.
Water tariffs may remain too low, leaving DWASA unable to make loan repayments and/or fully fund O&M costs.	Either through the necessary tariff adjustments or other means, the borrower will ensure that DWASA has sufficient funds to meet its debt service obligations, cover O&M costs, and move toward full cost recovery. Targets for its debt service coverage ratio (more than 1.0) and its operating ratio (less than 100%) will be covenanted. ADB will provide policy advice and capacity development support to facilitate and monitor DWASA's financial sustainability. ADB will closely monitor the progress on tariff adjustments through continuous dialogue with the government and DWASA.
The procurement process may be delayed due to DWASA capacity constraints.	DWASA staffs have gained experience in similar procurement packages under the ongoing ADB-funded projects. The bid documents for the distribution network improvements are based on the latest ADB standard bidding document for the procurement of plant, which DWASA staff are familiar with. Advance actions have been taken for early mobilization of consultants and contractors. The master bid documents are being prepared during project processing. Procurement specialists will be recruited to help DWASA prepare bid documents and bid evaluation reports and to train DWASA staff.

ADB = Asian Development Bank, DWASA = Dhaka Water Supply and Sewerage Authority, O&M = operation and maintenance.
Source: Asian Development Bank.

IV. ASSURANCES

35. The government and DWASA have assured ADB that implementation of the project shall conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the PAM and loan documents. The government and DWASA have agreed with ADB on certain covenants for the project, which are set forth in the loan agreement and project agreement.

V. RECOMMENDATION

36. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of $275,000,000 to the People's Republic of Bangladesh for the Dhaka Water Supply Network Improvement Project, from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Takehiko Nakao
President

1 June 2016

[32] Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

DESIGN AND MONITORING FRAMEWORK

Impacts the Project is Aligned with

(i) Safe drinking water made available for all urban populations (Seventh Five-Year Plan, 2016–2020)[a]
(ii) Adaptive capacity of water sector enhanced for reducing climate change vulnerability (National Strategy for Water Supply and Sanitation)[b]

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome Sustainable provision of a more reliable, improved, and climate-resilient supply of water ensured in Dhaka City	By year 2022, in new DMAs covered by the project: a. Uninterrupted, 24-hour supply of piped water delivered to 6.5 million people (2015 baseline: intermittent and insufficient supply, 8–10 hours average per day) b. Water supply pressure of at least 1 bar (10 meters) at consumer end achieved (2015 baseline: 0.1–0.5 bar) c. Nonrevenue water (NRW) reduced to below 10% (2013–2014 baseline: 26%) d. 98% of water quality test results within DWASA distribution systems meet country standards (2013 baseline: 90%)	For all indicators: DWASA's annual monitoring surveys QPRs and PCR	Water tariffs may remain too low for DWASA to fully fund its loan repayment and/or the cost of operation and maintenance.
Outputs 1.Distribution network strengthened[c]	1a. By year 2021, in new DMAs covered by the project: (i) 1,500 kilometers of water distribution network rehabilitated (ii) 187,000 connections to households and communities rehabilitated, from which at least 2.4 million women will benefit (iii) 42,000 new or legalized connections of households and communities, from which at least 550,000 women will benefit (iv) 5,000 new or legalized connections of LICs, from which at least 150,000 women will benefit	For all indicators: DWASA's annual monitoring surveys QPRs and PCR	Project cost may increase due to volume increase of required works and equipment and delayed implementation.

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	1b. By end of 2017, output e1 of the design and monitoring framework for the Dhaka Water Supply Sector Development Program accomplished[d]		
2. Sustainable managerial capacity of DMA enhanced	2a. Sustainable NRW reduction plan implemented in 2018 2b.700 DWASA staff (seven zones) trained in DMA management by 2020, with women staff making up at least 30% of training participants 2c. SOP upgraded and implemented in 2018 2d. SCADA system implemented in all DMAs and AMR implemented in three model DMAs in 2020	For all indicators: DWASA's annual monitoring surveys QPRs and PCR	
3.Capacity for quality service delivery enhanced	3a. Five-year corporate business plan improved and implemented in 2018 3b. Awareness campaign program implemented in seven zones by 2020, with women making up at least 30% of participants 3c. 35 CBOs organized in LICs by Q1 2020, with women making up at least 50% of all members and filling 50% of leadership positions 3d. Water quality monitoring system upgraded and implemented by 2018 3e. 50 DWASA staff, at least 30% of them women, trained for operationalizing laboratory equipment by 2020 3f. Gender action plan implemented by 2020 3g. Bidding documents for two future investment projects ready by 2018	For all indicators: DWASA's annual monitoring surveys QPRs and PCR	

Key Activities with Milestones
1. Distribution network strengthened 1.1 Mobilize contractors by Q3 2017 1.2 Complete construction works by Q3 2019 1.3 Commission all DMAs by Q3 2019 **2. Sustainable managerial capacity of DMA enhanced** 2.1 Complete and approve sustainable NRW reduction plan by Q4 2017 2.2 Complete and approve the training module for DMA by Q4 2017 2.3 Complete and approve SOP by Q4 2017 2.4 Install the SCADA system in all DMAs by Q1 2020 2.5 Install AMR in three piloted DMAs by Q2 2018 **3. Capacity for quality service delivery enhanced** 3.1 Established project management unit with full staff (30% women) in Q1 2016 3.2 Conduct primary data collection activities by Q3 2016 3.3 Recruit all consultants including nongovernment organizations by Q2 2017 3.4 Complete and approve 5-year corporate business plan by Q4 2017 3.5 Support the formation of CBO and their activities in LICs by Q1 2020 3.6 Establish at least 300 chlorination units by Q2 2019 3.7 Complete and approve the training module for operationalizing laboratory equipment by Q4 2017
Inputs Asian Development Bank: $275.0 million (ordinary capital resources loan) Government: $133.0 million
Assumptions for Partner Financing Outputs necessary to reach the design and monitoring framework outcome that are not administered by the Asian Development Bank includes the Saidabad Water Treatment Plant III to be financed by the Agence Française de Développement (French Development Agency) (€115 million), the Danish International Development Assistance ($200 million), and the European Investment Bank (€40 million).[e]

AMR = automated meter reading, CBO = community-based organization, DMA = district metered area, DWASA = Dhaka Water Supply and Sewerage Authority, LIC = low-income community, NRW = nonrevenue water, PCR = project completion report, Q = quarter, QPR = quarterly progress report, SCADA = supervisory control and data acquisition, SOP = standard operating procedure.

[a] Government of Bangladesh, Ministry of Planning, Planning Commission. 2015. *Seventh Five-Year Plan: FY2016–FY2020.* Dhaka.

[b] Government of Bangladesh, Ministry of Local Government, Rural Development, and Cooperative. 2014. *National Strategy for Water Supply and Sanitation.* Dhaka.

[c] All project outputs are incremental with baseline = 0 or not applicable.

[d] This pertains to the additional financing part, which includes the rehabilitation of 1,536 kilometers of the distribution network and 157,000 service connections (More details in the Summary of Additional Financing Part [accessible from the list of linked documents in Appendix 2]). The outcome resulting from the additional financing part will be reported in the project completion report of the Dhaka Water Supply Sector Development Program.

[e] All figures are indicative.

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

http://www.adb.org/Documents/RRPs/?id=47254-003-3

1. Loan Agreement
2. Project Agreement
3. Sector Assessment (Summary): Water Supply and Other Municipal Infrastructure and Services
4. Project Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Financial Analysis
8. Economic Analysis
9. Country Economic Indicators
10. Summary Poverty Reduction and Social Strategy
11. Gender Action Plan
12. Initial Environmental Examination: Distribution Network Improvement Package No. ICB 2.8
13. Initial Environmental Examination: Distribution Network Improvement Package No. ICB 2.9
14. Initial Environmental Examination: Distribution Network Improvement Package No. ICB 2.10
15. Initial Environmental Examination: Distribution Network Improvement Package No. ICB 2.11
16. Initial Environmental Examination: Distribution Network Improvement Package No. ICB 2.12
17. Resettlement Plan: Distribution Network Improvement Package No. ICB 2.8
18. Resettlement Plan: Distribution Network Improvement Package No. ICB 2.9
19. Resettlement Plan: Distribution Network Improvement Package No. ICB 2.10
20. Resettlement Plan: Distribution Network Improvement Package No. ICB 2.11
21. Resettlement Plan: Distribution Network Improvement Package No. ICB 2.12
22. Risk Assessment and Risk Management Plan

Supplementary Documents

23. Summary of Additional Financing Part
24. Project Climate Risk Assessment and Management Reporting
25. Financial Management Assessment