Report and Recommendation of the President to the Board of Directors

Project Number: 42173
September 2013

Proposed Loan and Administration of Loan People's Republic of Bangladesh: Dhaka Environmentally Sustainable Water Supply Project

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 3 September 2013)

Currency unit	–	taka (Tk)
Tk1.00	=	$0.01286
$1.00	=	Tk77.75

ABBREVIATIONS

ADB	–	Asian Development Bank
AFD	–	Agence Française de Développement
CBO	–	community-based organization
CPS	–	country partnership strategy
DWASA	–	Dhaka Water Supply and Sewerage Authority
EIB	–	European Investment Bank
EMP	–	environmental management plan
IEE	–	initial environmental examination
MLD	–	million liters per day
NGO	–	nongovernment organization
NRW	–	nonrevenue water
O&M	–	operation and maintenance
PAM	–	project administration manual
PMU	–	project management unit
SDR	–	special drawing rights
WTP	–	water treatment plant

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., FY2012 ends on 30 June 2012.

(ii) In this report, "$" refers to US dollars.

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CONTENTS

PROJECT AT A GLANCE

1. Project Name: Dhaka Environmentally Sustainable Water Supply Project **2. Project Number:** 42173-013

3. Country: Bangladesh **4. Department/Division:** South Asia Department/Urban Development and Water Division

5. Sector Classification:

Sectors	Primary	Subsectors
Water and other Municipal Infrastructure and Services	√	Water supply and sanitation

6. Thematic Classification:

Themes	Primary	Subthemes
Social development	√	Human development
Environmental sustainability		Urban environmental improvement
Governance		Civil society participation

6a. Climate Change Impact

Adaptation	Medium

6b. Gender Mainstreaming

Gender equity theme (GEN)	
Effective gender mainstreaming (EGM)	√
Some gender elements (SGE)	
No gender elements (NGE)	

7. Targeting Classification:

General Intervention	Targeted Intervention		
	Geographic dimensions of inclusive growth	Millennium development goals	Income poverty at household level
		√ MDG7	

8. Location Impact:

Urban	High

9. Project Risk Categorization: Complex

10. Safeguards Categorization:

Environment	B
Involuntary resettlement	A
Indigenous peoples	C

11. ADB Financing:

Sovereign/Nonsovereign	Modality	Source	Amount ($ Million)
Sovereign	Project loan	Asian Development Fund	250.0
Total			250.0

12. Cofinancing:

Financier	Category	Amount ($ Million)	Administration Type
Agence Française de Développement	Official-Loan	100.0	PARTIAL
European Investment Bank	Official-Loan	100.0	Not ADB Administered
Total		200.0	

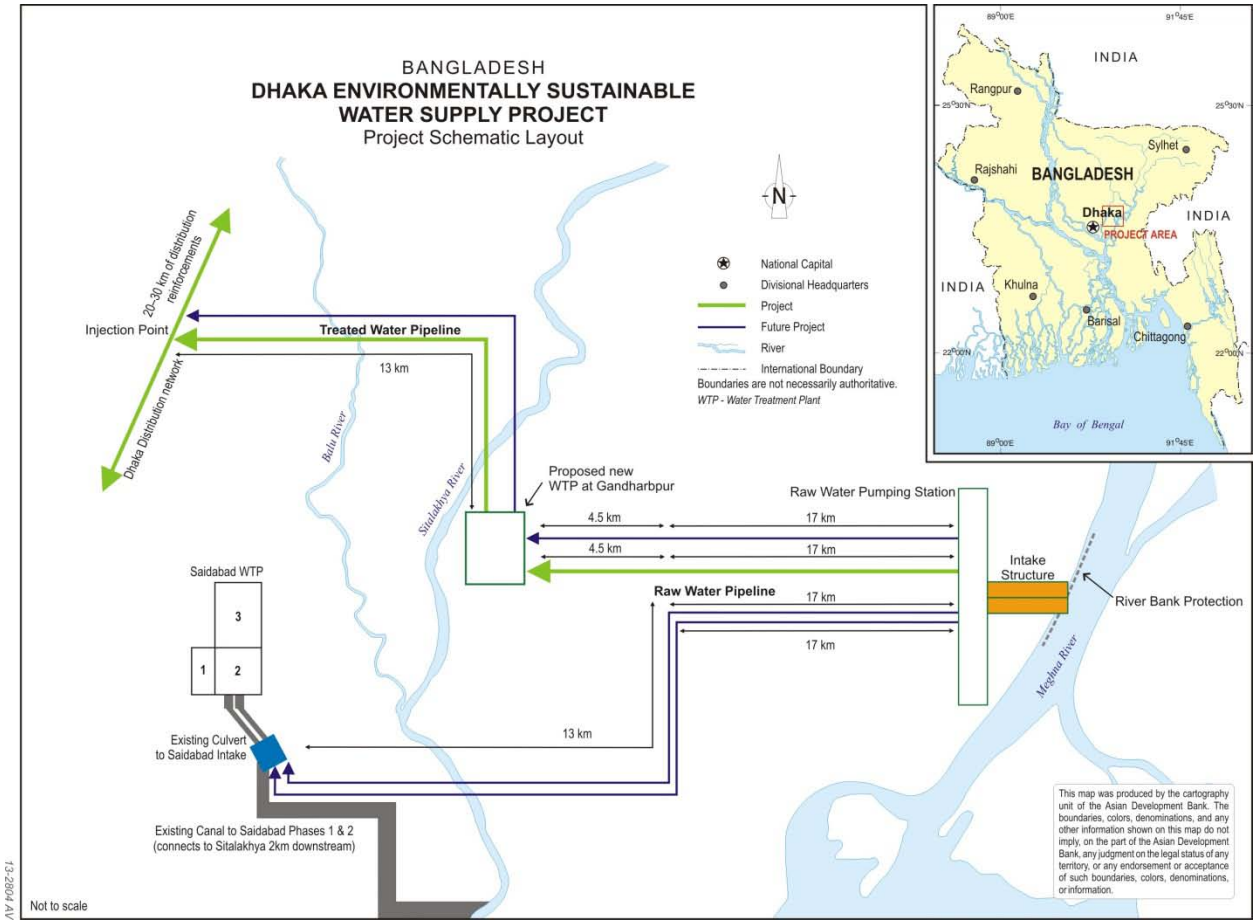
13. Counterpart Financing:

Source	Amount ($ Million)
Government	224.9
Total	224.9

14. Aid Effectiveness:

Parallel project implementation unit	No
Program-based approach	No

MAP


BANGLADESH
DHAKA ENVIRONMENTALLY SUSTAINABLE WATER SUPPLY PROJECT
Project Schematic Layout
N
National Capital
Divisional Headquarters
Project
Future Project
River
International Boundary
Boundaries are not necessarily authoritative.
WTP - Water Treatment Plant
20~30 km of distribution reinforcements
Injection Point
Dhaka Distribution network
Treated Water Pipeline
13 km
Buhi River
Sitalakhya River
Proposed new WTP at Gandharbpur
4.5 km
4.5 km
17 km
17 km
Raw Water Pumping Station
Intake Structure
River Bank Protection
Raw Water Pipeline
17 km
17 km
Meghna River
Saidabad WTP
3
1
2
13 km
Existing Culvert to Saidabad Intake
Existing Canal to Saidabad Phases 1 & 2 (connects to Sitalakhya 2km downstream)
Not to scale
INDIA
Rangpur
Sylhet
Rajshahi
BANGLADESH
Dhaka
PROJECT AREA
INDIA
INDIA
Khulna
Barisal
Chittagong
Bay of Bengal
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I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on (i) a proposed loan, and (ii) proposed administration of a loan to be provided by the Agence Française de Développement (AFD), both to the People's Republic of Bangladesh for the Dhaka Environmentally Sustainable Water Supply Project.[1]

2. The project will provide more reliable and improved security of water supply in Dhaka by developing a new surface water supply scheme for supply augmentation, which includes the development of a water intake at Meghna River, a raw water transmission pipeline, a water treatment plant (WTP) at Gandharbpur with capacity of 500 million liters per day (MLD), a treated water transmission pipeline to the existing water supply network, and distribution reinforcements. The project will also include distribution network improvements to reduce nonrevenue water (NRW); and will improve the quality of water supply services, including support to low-income communities.[2]

II. THE PROJECT

A. Rationale

3. **Water security.** The government has set a target of providing safe water coverage and full sanitation throughout the country by 2015. However, achieving and sustaining this target remains a major challenge, with population growth in urban areas much higher than the national average.[3] Dhaka Water Supply and Sewerage Authority (DWASA) provides water supply to about 90% of the population of 10.7 million in its service areas of about 400 square kilometers (km^2), but is unable to provide sufficient quality and quantity of water to its beneficiaries despite continual efforts for improvements.[4] It plans to expand its service areas to about 500 km^2 by 2020 and 600 km^2 by 2035, with a projected population of about 29 million. This requires significant capital investments to increase the level of supply, while ensuring long-term water security.

4. **Environmental sustainability.** DWASA has been relying heavily on groundwater as a source of water supply,[5] but current abstraction is beyond sustainable yields. Groundwater resources are depleting, and the water table is falling by 2–3 meters per year, which makes the lifetime of deep tube wells shorter, with 40–60 deep tube wells becoming inoperable each year. Groundwater extraction needs to be reduced from 1,900 MLD in 2012 to 1,360 MLD by 2020 and 1,260 MLD by 2025, when the overall supply needs to be increased to cater to the growing population in larger service areas. The main existing source of surface water is also being polluted rapidly. Out of the total 2,400 MLD currently provided by DWASA, 450 MLD is provided by the Saidabad WTP, which abstracts surface water from the nearby Sitalakhya River. The river water quality is deteriorating, particularly in terms of high ammonia concentration during the dry season owing to uncontrolled industrial effluent discharges into the river. The ammonia

[1] The design and monitoring framework is in Appendix 1.
[2] The Asian Development Bank (ADB) provided project preparatory technical assistance.
[3] Urban population growth was 2.81% per annum in 2005–2010, higher than the country's population growth of 1.12% during the same period. Dhaka city's population was 9.3 million in 2011, with an annual growth rate of 4.2% over 2001–2011.
[4] Average hours of water supply in DWASA service areas are 22.5 hours per day, but supply hours are limited to 14–15 hours per day in zones 4 and 10.
[5] Dependence on groundwater was about 90% until 2012. With the commencement of operation of the Saidabad WTP phase 2 with capacity of 225 MLD in December 2012, groundwater dependence has been reduced to about 80%.

concentration is becoming higher than the design standard that a pre-treatment unit can satisfactorily treat to an acceptable level—putting the sustainable operation of the WTP at serious risk. This makes it essential for DWASA to find an adequate and sustainable source of raw water for achieving its long-term development objectives. Meghna River will be a new source of water supply for Dhaka, which has good water quality and ample quantity even during the dry season.

5. **Efficiency improvements.** DWASA is implementing distribution network improvements for water supply with Asian Development Bank (ADB) financing.[6] The ongoing investments are rehabilitating and strengthening the water supply systems based on the long-term policy and investment road map, complemented by capacity building of DWASA to manage the water supply systems competently. Six contract packages have been awarded to reduce NRW to 15% in each district metered area in five out of 11 zones of the DWASA service area by 2015–2016.

6. **Reforms in progress.** Sector reform is proceeding under the partnership framework between the government and development partners, supported by the ongoing ADB-financed project (footnote 6).[7] Major achievements regarding DWASA's management improvement include (i) an annual tariff increase of 5% every year since 2007; (ii) implementation of a 5-year capacity building program for over 800 staff in areas including financial management, operation and maintenance (O&M), and billing and accounting; (iii) rationalization of staff evidenced by the reduction in the ratio of staff per 1,000 connections from 17 in 2007 to 12 in 2012; (iv) development of a 5-year business plan in 2011 and annual update thereafter; (v) computerization of the water connections database of about 310,000 customers; (vi) a fully computerized billing system; and (vii) a reduction in NRW from 36% in 2007 to about 30% in 2012. As a result, DWASA recovers not only full O&M costs but also repayment of principal and payment of interest.

7. These efficiency gains and policy reforms need to be scaled up and sustained, including NRW reductions in other zones. While the overall efficiency of the system is being improved, developing a new source of raw water for long-term water security in Dhaka is essential because of the large increase in demand associated with a growing population, the need for moving toward continuous water supply, and the need for reducing dependence on groundwater and ensuring the sustainable operation of existing surface water supply systems. Access to safe water should be provided to low-income communities, as women in low-income communities spend a significant amount of time collecting water for household use and the poor pay a higher cost for water from water vendors or through non-regularized water connections.

8. **Lessons.** The project reflects lessons and recommendations from previous interventions. Given the importance of improving efficiency, highlighted in the evaluation study, NRW reduction is actively being pursued prior to the supply augmentation.[8] Project cofinancing has been pursued in line with a conclusion of the post-evaluation that scaling up interventions through cofinancing is a good option.[9] AFD and the European Investment Bank (EIB) will cofinance the project. The project is fully consistent with ADB's Water Operational Plan and

[6] 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.

[7] Development partners that signed the framework are ADB, Danida, the Government of Japan, the Government of the Republic of Korea, and the World Bank.

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

[9] ADB. 2009. *Sector Assistance Program Evaluation: Urban Sector and Water Supply and Sanitation in Bangladesh.* Manila.

Bangladesh country partnership strategy (CPS).[10] The urban sector, including water supply and sanitation, is one of six priority sectors in the CPS. The project will also address key thematic drivers of the CPS, including environmental sustainability and partnerships.

B. Impact and Outcome

9. The impact will be improved access to and quality of sustainable water supply services in Dhaka. The outcome will be more reliable and improved security of water supply in Dhaka.

C. Outputs

10. **Output 1: New surface water supply system developed.** A raw water intake will be developed at Meghna River, about 30 kilometers (km) east of Dhaka, with structures and a pumping station having capacity to provide a total of 2,000 MLD of raw water.[11] Equipment such as pumps will be procured for 525 MLD only for the first phase of a new WTP at Gandharbpur. The Gandharbpur WTP, located about 10 km east of Dhaka, will be constructed with production capacity of 500 MLD. A raw water transmission pipeline from the intake to the WTP will also be constructed.[12] The project also includes a treated water transmission pipeline from the WTP to the injection point of the existing distribution network and distribution reinforcements. The WTP will serve the population of about 3 million in Badda, Gulshan, Mirpur, and Uttara (whole zones 5, 8, and 9; and part of zones 4 and 10). A design–build contract will incentivize design innovation, and ensure an integrated design and operation from the intake to the WTP. The same contractor will be engaged in the first 3 years of operation to prove the functionality, and build the capacity of DWASA personnel to manage and operate the facilities.

11. **Output 2: Distribution network strengthened.** As a continuation of the ongoing efforts toward NRW reduction, distribution network improvements will be implemented in zone 6 of DWASA's service areas. New or regularized connections at community or household levels will be provided in low-income communities in this zone under DWASA's existing pro-poor community support scheme. Public awareness-raising programs will be conducted to strengthen understanding on water use and conservation, customer services, metered connections, and billing systems. The capacity of DWASA in engaging and supporting low-income communities will be strengthened. At the same time, feasibility studies and preparation of bid documents will be undertaken for distribution network improvements in two densely populated zones in the DWASA service area (zones 1 and 2) to complete the distribution network improvement works.[13]

12. **Output 3: Project management and administration adequately supported.** Support will be provided for smooth and effective project implementation and operation by the project management unit (PMU) in DWASA. A new PMU for the project was established in May 2013, with core staff appointed. A project coordination unit in zone 6 will be involved in the

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

[11] The final capacity of the intake is 2,000 MLD—1,050 MLD for Gandharbpur WTP (including the second phase of 500 MLD) and 950 MLD for Saidabad WTP (for the existing 450 MLD and the third phase of 450 MLD). A safety margin of 5% has been added for the capacity of the intake for both WTPs. The Saidabad WTP plans to change the source of raw water from Sitalakhya River to Meghna River in the future.

[12] Land required for raw water transmission pipelines for both WTPs will be acquired under the project.

[13] Under the ongoing ADB-financed project (footnote 6), network improvement is ongoing in five zones (3, 4, 5, 8, and 10), and bid documents were prepared for two more zones (6 and 9). The proposed project will cover zone 6 and prepare bid documents for two more zones. The remaining two zones are in Narayanganj district and nearby (zone 7), where the network system is relatively new.

implementation of output 2 to ensure a smooth transfer and successful O&M after project completion. As the nature and project areas of outputs 1 and 2 are distinct, two teams of management and supervision consultants will be engaged. Three teams of nongovernment organizations (NGOs) will be engaged to facilitate the implementation of resettlement plans and assist in awareness-raising and community-related tasks.

13. With the implementation of the project, groundwater abstraction is expected to be reduced by 150 MLD. DWASA targets to increase the overall surface water supply to 1,900 MLD (including 500 MLD from this project) by 2021, which accounts for nearly 60% of the total water supply. Regarding wastewater management, DWASA approved a sewerage master plan in 2012, and its implementation will amply treat the incremental amount of wastewater generated by the project.

D. Investment and Financing Plans

14. The project is estimated to cost $674.9 million (Table 1).

Table 1: Project Investment Plan
($ million)

Item		Amount[a]
A.	**Base Cost**[b]	
1.	Gandharbpur water treatment plant, transmission mains, and related works	529.2
2.	Distribution network improvement	52.4
3.	Project management and implementation support	3.1
	Subtotal (A)	**584.7**
B.	**Contingencies**[c]	**68.8**
C.	**Financing Charges During Implementation**[d]	**21.4**
	Total (A+B+C)	**674.9**

[a] Includes taxes and duties of $113.1 million to be financed from government resources.
[b] In mid-2013 prices.
[c] Physical contingencies computed at 3% for distribution network improvement and 6% for other components. Price contingencies are computed on average at 2% on foreign exchange costs and 7% on local currency costs and include provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.
[d] Includes interest and commitment charges. Interest during construction for the loans has been computed at 2% for the Asian Development Bank (ADB) loan, and 3% for the Agence Française de Développement (AFD) loan and the European Investment Bank (EIB) loan. Commitment charges for the AFD and EIB loans are 0.25%.
Source: Asian Development Bank estimates.

15. The government has requested a loan in various currencies equivalent to SDR164,986,000 from ADB's Special Funds resources to help finance the project. The loan will have a 25-year term, including a grace period of 5 years, an interest rate of 2.0% per annum during the grace period and thereafter, and such other terms and conditions set forth in the draft loan and project agreements. The loan from ADB will finance (i) part of civil works and equipment costs, (ii) consulting services, (iii) incremental recurrent staff costs, and (iv) financing charges during construction. The government has also requested AFD and EIB to jointly finance a part of civil works and equipment costs with a loan equivalent of $100 million from each agency. The government will provide $224.9 million equivalent to cover (i) taxes and duties; (ii) land acquisition and resettlement; and (iii) road cutting, power supply, and other expenses paid to government agencies.

16. The financing plan is in Table 2. The loan proceeds from ADB will be relent to DWASA pursuant to a subsidiary loan agreement, with terms and conditions acceptable to ADB. The

government will assume the foreign exchange risk. The government will make available all counterpart funds on a timely basis. ADB, AFD, and EIB will jointly finance one design–build contract package under output 1.[14] AFD funds will be partially administered by ADB, while EIB funds will not be administered by ADB. ADB and AFD will conclude a joint contractual cofinancing agreement, while ADB and EIB will conclude an aide-mémoire on cofinancing.

Table 2: Financing Plan

Source	**Amount** ($ million)	**Share of Total** (%)
Asian Development Bank		
Special Funds resources (loan)	250.0	37.0
Agence Française de Développement	100.0	14.8
European Investment Bank	100.0	14.8
Government of Bangladesh	224.9	33.3
Total	**674.9**	**100.0**

Source: Asian Development Bank estimates.

E. Implementation Arrangements

17. DWASA will be the executing and implementing agency. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual (PAM).[15] All procurement of goods and civil works will follow ADB's Procurement Guidelines (2013, 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 the government and ADB, as set out in the procurement plan. Since Asian Development Fund resources and cofinancing resources will be used to jointly finance an individual procurement package, universal procurement will apply to the jointly financed package only.[16] ADB member country procurement eligibility restrictions will apply to other procurement packages financed solely by ADB. Consulting services will be engaged using ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).

Table 3: Implementation Arrangements

Aspects	**Arrangements**
Implementation period	January 2014–December 2019
Estimated completion date	31 December 2019
Management	
(i) Oversight body	Interministerial project steering committee Chair: Secretary of the Local Government Division Members: Bangladesh Inland Water Transport Authority; Bangladesh Water Development Board; Department of Environment; Dhaka North City Corporation; Dhaka South City Corporation; DWASA; Economic Relations Division; Finance Division; Implementation, Monitoring and Evaluation Division; Local Government Division; Local Government Engineering Department; Ministry of Land; Planning Commission; Power Grid Company Bangladesh Ltd.; RAJUK (capital development authority); Roads and Highways Department; Rural Electrification Board.
(ii) Executing agency	DWASA
(iii) Key implementing	DWASA

[14] For this package, universal procurement will apply.
[15] Project Administration Manual (accessible from the list of linked documents in Appendix 2).
[16] ADB. 2013. *Blanket Waiver of Member Country Procurement Eligibility Restrictions in Cases of Cofinancing for Operations Financed from Asian Development Fund Resources.* Manila.

Aspects	Arrangements		
agencies			
(iv) Implementation unit	PMU, Dhaka, 32 key staff		
Procurement	International competitive bidding	10 contracts	$375.0 million
	National competitive bidding	4 contracts	$1.0 million
	Shopping	4 contracts	$0.1 million
Consulting services	QCBS/CQS	2,523 person-months	$21.4 million
Retroactive financing and/or advance contracting	Advance contracting is for the recruitment of consultants, NGOs, survey, procurement of a distribution network improvement contract and associated goods, and a design–build contract for the construction of the intake, raw water pipeline, and water treatment plant. Retroactive financing will apply up to 20% of the loan amount for the above contracts and operation of the PMU incurred prior to the effectiveness of the loan agreement but not earlier than 12 months prior to the signing of the loan agreement.		
Disbursement	The loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2012, as amended from time to time) and detailed arrangements agreed upon between the government and ADB.		

ADB = Asian Development Bank, CQS = consultants' qualification selection, DWASA = Dhaka Water Supply and Sewerage Authority, PMU = project management unit, QCBS = quality- and cost-based selection.
Source: Asian Development Bank.

III. DUE DILIGENCE

A. Technical

18. Depleting groundwater resources in and around Dhaka have made the development of a new surface water source essential. As nearby water bodies (such as the Balu, Buriganga, Sitalakhya, and Turag rivers) are unsuitable because of poor and deteriorating water quality, Meghna River has been selected as a new source. Bangladesh's river morphology is highly dynamic, and careful morphological assessments selected the location of the intake site at Bishnondi, where accretion and erosion rates are much lower than areas upstream and downstream. Technical options recommended in the feasibility study were closely reviewed and some changes proposed through the project preparatory technical assistance: pipeline corridors have been widened to accommodate a paved access road for ease of maintenance as well for community use. The raw water intake and WTP, together with a raw water transmission main in between, will adopt a design–build modality to incentivize design innovation and ensure the integrated design of the three components and their efficient operation.

B. Economic and Financial

19. **Economic analysis.** The major benefits of the project will be sustainable water supply to a growing population in service areas—including improved access, convenience, and reliability of water supply, as well as increased quantities of water and improved water quality. Other indirect benefits arise from the employment of skilled and semiskilled workers in the construction works. The economic internal rate of return is 20.4%, and the sensitivity analysis confirms the project is viable under adverse conditions. The willingness to pay is substantially higher than the current monthly water expenses, indicating that substantial tariff increases are economically and socially feasible.[17]

20. **Financial analysis.** The financial analysis of the project focused on assessing its impact

[17] The average willingness to pay was Tk11.43 per cubic meter (m^3) for domestic use, which is much higher than the tariff of Tk7.34/m^3 in 2013. The survey was conducted during project preparation.

on DWASA's financial capability to ensure sufficient cash flow at the utility level to cover O&M costs, depreciation, and debt service obligations. The analysis revealed that the current annual 5% tariff increase would not be sufficient for the medium- to long-term financial sustainability of DWASA.[18] Assuming a progressive tariff increase beyond 5% from FY2016, based on the tariff adjustment plan adopted by DWASA in 2011, DWASA's debt service coverage ratio will generally remain above 1.0.[19] The government has assured an increase beyond 5% by 2015. ADB, through its technical assistance, is assisting the government in establishing a regulatory framework for water supply, which includes the development of a transparent, predictable, and independent tariff-setting mechanism aimed at achieving full cost recovery of water supply services over the long term.[20] ADB will provide continued policy advice and capacity development support to facilitate and monitor the development of such a framework.

C. Governance

21. Bangladesh's overall governance has improved with key governance reforms, including the constitution of the Independent Anti-Corruption Commission in 2004 and the enactment of the Right to Information Act in 2009, the Whistle Blower Protection Act in 2011, and the Money Laundering Prevention Act in 2012. A comprehensive national integrity strategy was adopted in 2012 to address corruption holistically, and strengthen governance institutions in a phased manner. The financial management assessment indicated that DWASA has adequate financial management capabilities for implementing the project. The capacity of DWASA's finance and accounting staff will be strengthened through training programs conducted under the project. DWASA has adequate capacity for procuring goods, works, and consulting services in accordance with ADB procedures and requirements. The PMU will have one procurement officer and will be supported by consultants in bid preparation and evaluation, particularly for the complex design–build contract.

22. 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 are described in the PAM.

D. Poverty and Social

23. In Dhaka, access to water is mainly dependent on household pipe connections and public taps. People living in slums or poor communities generally do not have legal access to water supply and sanitation, as they often live on unauthorized lands without having legal titles. They depend on illegal water lines and pay higher charges. The project will support organizing community-based organizations (CBOs), with the assistance of NGOs, to make them eligible for legal water connections. Households in low-income communities, including those headed by women, will have access to water supply either through legalization or new connections. This will enable the poor to receive water at a lower price through meters. The CBOs will be responsible for payment of water tariffs and maintenance of the community water points. People in the intake area will benefit from a deep tube well built by the project, as arsenic is a common problem in shallow tube wells in the area. To enhance awareness on water use, water quality, and public hygiene, public awareness campaign activities will be implemented. Capacity development of the communities will contribute toward sustainability of the benefits. Additionally,

[18] Under the Water Supply and Sewerage Act, 1996, DWASA is authorized to increase tariffs up to 5% per annum. The government needs to approve a higher increase.
[19] This will increase the tariff for domestic use to Tk17.71/m^3 in FY2022.
[20] ADB. 2013. *Technical Assistance to the People's Republic of Bangladesh for Establishing a Regulatory Framework for Urban Water Supply and Sanitation.* Manila.

the poor will benefit from short-term employment opportunities to be generated in construction activities for water supply augmentation and distribution improvement.

24. **Gender.** Expansion of the piped water supply network will benefit women by reducing their burden to fetch water for the family. They will be able to participate and voice their views in decisions related to water supply in the CBOs. A gender action plan has been prepared. More focused and efficient community awareness-raising campaigns will target women, enabling them to understand the need for economic use of water, maintenance of water quality, and payment of water tariffs. Women will be encouraged to play a major role in CBOs in low-income communities. Women will have an equal opportunity 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

25. The PAM outlines the detailed implementation arrangements for safeguards. The PMU will contain a safeguard implementation unit staffed with two officials: one environmental officer and one social and gender officer. The safeguard implementation unit will be assisted by safeguard specialists from among the management and supervision consultants to implement safeguards.

26. **Environmental safeguards (category B).** Two initial environmental examinations (IEEs) [21] with environmental management plans (EMPs), one for distribution network improvements and one for the new WTP with associated works, were prepared as part of the feasibility study in accordance with ADB's Safeguard Policy Statement (2009) and government laws. The documents were disclosed on ADB's website and relevant information disclosed to project communities. The IEEs, including EMPs, will be updated and submitted to ADB for review and approval during detailed design. The IEEs concluded that no significant adverse environmental impacts are anticipated, and any impacts will be mitigated through measures outlined in the EMPs. DWASA developed a sewerage master plan with two wastewater management projects, which will offset the incremental water supply caused by the project. The IEEs represent a single, unified document to ensure compliance with the rules and guidelines of ADB, AFD, EIB, and the government; and will be implemented as a single process regardless of the funding source. Consultant support will ensure that the PMU will have adequate capacity to manage environmental impacts. Environmental reporting to ADB will be done on a semiannual basis. 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.

27. **Involuntary resettlement (category A).** For works related to output 1, a total of 128.2 hectares (ha) of land, consisting of 54.8 ha of government land (including DWASA's) and 73.4 ha of privately owned land, will be required for the project. This land acquisition will cause 1,248 households (5,342 persons) to be either physically or economically displaced, with 528 households (2,259 persons) experiencing major impacts. The project will affect 2,218 households (9,803 persons) temporarily in the form of employment, income from daily labors, or business activities. A draft resettlement plan was prepared for the new WTP with associated works to mitigate the land acquisition and resettlement impacts. Eight public consultations and a number of focus group discussions were undertaken with the affected

[21] Initial Environmental Examination (accessible from the list of linked documents in Appendix 2).

people on the purposes and benefits of the project's activities and the possible impacts to their livelihood and daily activities. Meaningful consultations will continue with communities throughout implementation.[22] Qualified and reputed NGOs experienced in land acquisition and resettlement activities will be recruited to assist DWASA in finalizing and implementing the resettlement plan, and in conducting community development, livelihood, and income restoration programs for severely affected and vulnerable households. DWASA will recruit an external monitoring agency to monitor and evaluate the implementation of the resettlement plan. A resettlement framework was prepared for distribution reinforcements as the exact location of the work has not been fixed. A separate resettlement plan was prepared for output 2. No land acquisition will be required for these activities, and the temporary impacts that may occur to the roadside vendors and hawkers during construction will be mitigated.

28. **Indigenous peoples (category C).** The social impact assessment confirmed that no ethnic minorities reside in the project sites.

F. Risks and Mitigating Measures

29. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.[23]

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Water tariffs will remain low and DWASA cannot fully recover loan repayment and/or full operation and maintenance cost.	Tariff increase beyond 5%, and ensuring a minimum debt service coverage ratio of 1.0 for DWASA by the government, are covenanted. The government will establish an independent regulatory authority, which will regulate tariff adjustments proposed by water supply and sewerage authorities through an independent and transparent mechanism, aiming at future full cost recovery. The progress of government actions will be monitored. Establishing a regulatory framework is being supported by ADB technical assistance.[a]
Poor designs proposed by design–build contractor are not corrected because of DWASA's limited technical expertise.	Experts (consultants) will assist bid document preparation and evaluation to define performance requirements clearly and ensure the engagement of a highly qualified contractor. Design–build contractor will be made responsible for the first 3-year operation to incentivize design innovation and ensure an integrated design. Supervision consultants will review the designs proposed by the contractor.
Land acquisition process will be delayed.	Public consultation meetings to explain the scope of the project and entitlements of affected people were held during project preparation. Consultations will continue. Local nongovernment organizations will be engaged to facilitate implementation of land acquisition and resettlement including income restoration activities. Advance actions are being taken as part of project readiness efforts.
Project stakeholders are involved in corrupt practices.	A project website will be established at DWASA to provide transparency on project details, including procurement. DWASA will establish a system for handling complaints received in relation to contracts and procurement, among others. Technical audits of the project will be conducted on a random basis.

ADB = Asian Development Bank, DWASA = Dhaka Water Supply and Sewerage Authority.
[a] ADB. 2013. *Technical Assistance to Bangladesh for Establishing a Regulatory Framework for Urban Water Supply and Sanitation.* Manila.
Source: Asian Development Bank.

[22] The resettlement plans outline objectives, policy, principles, and procedures for resettlement, compensation, and other assistance measures for affected persons.
[23] Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

IV. ASSURANCES AND CONDITIONS

30. 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 and project agreements.

31. **Conditions for effectiveness.** The effectiveness of loan and project agreements will be subject to (i) execution and delivery of the financing agreements between the government and the cofinanciers, and fulfillment of all conditions precedent to their effectiveness or arrangements thereof satisfactory to ADB; and (ii) a letter of intent or other suitable instrument to document the collaboration arrangements between the cofinanciers in respect of the project.

32. **Condition for withdrawal from loan account.** A subsidiary loan agreement, in form and substance satisfactory to ADB, will have been duly executed and delivered between the government and DWASA and will have become fully effective and legally binding on the parties thereto in accordance with its terms.

33. **Tariff adjustment.** The government will, by 31 December 2015, allow a yearly increment of tariff beyond 5% to facilitate DWASA to function toward full cost recovery. This will be achieved by establishing an independent regulatory authority, which will regulate tariffs through a transparent, predictable, and independent mechanism, or other means acceptable to ADB.

V. RECOMMENDATION

34. 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

(i) the loan in various currencies equivalent to SDR164,986,000 to the People's Republic of Bangladesh for the Dhaka Environmentally Sustainable Water Supply Project, from ADB's Special Funds resources, with an interest charge at the rate of 2% per annum during the grace period and thereafter; 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; and

(ii) the administration by ADB of the loan not exceeding the equivalent of $100,000,000 to the People's Republic of Bangladesh for the Dhaka Environmentally Sustainable Water Supply Project, to be provided by Agence Française de Développement.

Takehiko Nakao
President

27 September 2013

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impact Improved access to and quality of sustainable water supply services in Dhaka	By 2021: Access increased to 95% in 400 km^2 of DWASA service areas (baseline: 90% access in 2012) Groundwater table drawdown is reduced to 1–2 meters a year (baseline: 2–3 meters drawdown a year in 2012) Diarrheal diseases are reduced to 3.6% (baseline: 4.0%[a] of children in Dhaka division)	DWASA annual reports DWASA annual reports Bangladesh Demographic and Health Survey	**Assumptions** Other investment projects on water supply, including chlorination system improvements, are implemented on time. Abstraction of groundwater is reduced with the increase in surface water supply. Overhead tanks of buildings are maintained properly. Hygiene practices are improved. **Risk** Network expansion does not keep pace with the population increase.
Outcome More reliable and improved security of water supply in Dhaka	By 2019 in zones 4, 5, 6, 8, 9, and 10: continuous water supply (baseline: 14–15 hours per day in zones 4 and 10, and 22.5 hours per day in zones 5, 6, 8, and 9) Water supply pressure of at least 1 bar at consumer end (baseline: 0.2–0.3 bars in 2012) Dependence on groundwater reduced to 30% (baseline: 100% in 2012 except zone 6) 98% of water quality test results within DWASA distribution systems meet country standards (baseline: 90% in 2011)	DWASA surveys DWASA surveys DWASA surveys Joint surveys of DWASA and Department of Environment	**Assumptions** NRW is reduced to less than 20% in concerned service areas, as planned by DWASA. River water quality at the intake is maintained. **Risk** Tariff level not raised to cover full O&M costs and debt recovery.
Outputs 1. New surface water supply system developed	By 2019: Water intake with capacity of 2,000 MLD constructed 21.5 km of raw water transmission pipeline laid	For all indicators: DWASA surveys	**Assumptions** Timely availability of cofinancing from AFD and EIB Timely acquisition of required land

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	WTP with production capacity of 500 MLD constructed 34 km of treated water transmission mains installed[b]		**Risks** Increasing political instability hampering project activities Sharp price increases of construction materials
2. Distribution network strengthened	By 2019 in zone 6: Rehabilitation of 376 km of water distribution network 32,000 household and community connections rehabilitated, including replacement of meters NRW reduced to 15% or less in 16 district metered areas from the current level estimated at about 35% in 2013 6,000 new or legalized household and community connections installed, including 500 connections in low-income communities (target: 10,000 women in low-income communities) Public awareness on water use and conservation raised in all 16 district metered areas	For all indicators: DWASA surveys	**Assumption** Timely issuance of permits by local governments
3. Project management and administration adequately supported	PMU established and fully staffed on time, with at least 30% women, by the end of 2013 Special management unit of the new surface water system established by 2018 Project is implemented on time and within budget Capacity development programs on financial management and gender mainstreaming implemented by 2019 (target: 100 staff for financial management with 30% women; 150 staff for gender mainstreaming) Project performance management system, with	For all indicators: DWASA surveys	

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	social and gender indicators and sex-disaggregated data, integrated with existing DWASA management information system by 2014		

Activities with Milestones	Inputs
1. New surface water supply system developed 1.1 Mobilize design–build contractor by Q1 2015 1.2 Conduct detailed design for treated water pipelines by Q2 2015 1.3 Complete construction works by 2018 1.4 Commence operation of the WTP at Gandharbpur by end of 2018 **2. Distribution network strengthened** 2.1 Mobilize design–build contractor by Q3 2014 2.2 Complete construction works by Q3 2017 2.3 Prepare bid documents for two future packages by 2017 **3. Project management and administration adequately supported** 3.1 DWASA provides PMU with office space and initiates staff recruitment, including project director (May 2013) 3.2 Issue bid documents for distribution network improvement (July 2013) 3.3 Issue bid documents for Gandharbpur WTP design–build contract by Q2 2014 3.4 Recruit all consultants and NGOs by Q3 2014 3.5 Engage all contractors by Q2 2016 3.6 Develop modules of capacity development programs and implement them (continuous from 2014 until 2019) 3.7 Undertake regular surveys and issue quarterly and semiannual monitoring reports and audit reports on time (continuous from 2014 until 2019)	**Loans** **ADB: $250 million** **AFD: $100 million** **EIB: $100 million** **Government: $224.9 million**

ADB = Asian Development Bank, AFD = Agence Française de Développement, DWASA = Dhaka Water Supply and Sewerage Authority, EIB = European Investment Bank, km = kilometer, km^2 = square kilometer, MLD = million liters per day, NGO = nongovernment organization, NRW = nonrevenue water, O&M = operation and maintenance, PMU = project management unit, Q = quarter, WTP = water treatment plant.

[a] Percentage of children under age five who had diarrhea in the 2 weeks preceding the survey.

[b] 13.0 km from the WTP to the injection point and 21.0 km of distribution reinforcements in the existing network.

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

http://adb.org/Documents/RRPs/?id=42173-013-3

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: Water Intake, Gandharbpur Water Treatment Plant, and Raw and Treated Water Pipelines
13. Initial Environmental Examination: Distribution Network Improvement
14. Resettlement Plan: Water Intake, Gandharbpur Water Treatment Plant, and Raw and Treated Water Pipelines
15. Resettlement Plan: Distribution Network Improvement
16. Resettlement Framework
17. Risk Assessment and Risk Management Plan

Supplementary Documents

18. Financial Management Assessment
19. Climate Change: Project Adaptation Action Report