



Report and Recommendation of the President to the Board of Directors

Project Number: 39405
November 2007

Proposed Loans and Technical Assistance Grant
People's Republic of Bangladesh: Dhaka Water Supply
Sector Development Program

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 6 November 2007)

Currency Unit – taka (Tk)

Tk1.00 = \$0.01438

\$1.00 = Tk69.53

ABBREVIATIONS

ADB	– Asian Development Bank
CBO	– community-based organization
CSO	– civil society organization
CWASA	– Chittagong Water Supply and Sewerage Authority
D&M	– design and managing consultants
DANIDA	– Danish International Development Assistance
DFID	– Department for International Development
DMA	– Dhaka Metropolitan Area
DMD	– Deputy Managing Director
DPHE	– Department of Public Health Engineering
DTW	– deep tube well
DWASA	– Dhaka Water Supply and Sewerage Authority
DWSSDP	– Dhaka Water Supply Sector Development Program
EA	– executing agency
EARP	– environmental assessment and review procedures
EIRR	– economic internal rate of return
FCB	– financial and capacity building
FIRR	– financial internal rate of return
HTW	– hand tube well
IA	– implementing agency
ICB	– international competitive bidding
IEE	– initial environmental examination
JBIC	– Japan Bank for International Cooperation
JSP	– joint strategy partners
KOICA	– Korea International Cooperation Agency
Lcd	– liter per capita per day
LGD	– Local Government Division
LGI	– local government institution
MC	– management consultants
Mld	– million liters per day
MODS	– management, operations, distribution, and services
MOF	– Ministry of Finance
NCB	– national competitive bidding
NGO	– nongovernment organization
NPRS	– national poverty reduction strategy
NRW	– non-revenue water
O&M	– operation and maintenance
PBMC	– performance-based management contract
PCR	– project completion report
PCU	– project coordination unit
PIP	– performance improvement program
PMU	– project management unit
PPI	– program for performance improvement

PPME	– project performance monitoring and evaluation
PRS	– poverty reduction strategy
PSC	– project steering committee
PTW	– production tube well
PWSS	– <i>pourashava</i> water supply section
QCBS	– quality and cost-based selection
SDP-WSSB	– Sector Development Programme—Water and Sanitation Sector in Bangladesh (2006)
TA	– technical assistance
WACC	– weighted average cost of capital
WASA	– water supply and sewerage authority
WSS	– water supply and sanitation
WTP	– water treatment plant

GLOSSARY

<i>mistries</i>	– plumbers
<i>pourashava</i>	– peri-urban town

NOTES

- (i) The fiscal year of the Government and its agencies ends on 30 June. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2000 ends on 30 June 2000.
- (ii) In this report, "\$" refers to US dollars, "£" refers to UK pounds sterling, "¥" refers to yen.

Vice President	L. Jin, Operations 1
Director General	K. Senga, South Asia Regional Department (SARD)
Director	H. Kim, Urban Development Division, SARD
Team leader	T. Ueda, Urban Development Specialist, SARD
Team members	K. Emzita, Senior Counsel, Office of the General Counsel
	P. Kamayana, Senior Country Programs Specialist, SARD
	H. Ikemoto, Urban Economist, SARD
	R. Barba, Safeguards Specialist, SARD
	R. Islam, Project Implementation Officer, SARD
	M. Tachiiri, Urban Economist, SARD

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LOAN AND PROGRAM SUMMARY

Borrower	People's Republic of Bangladesh
The Proposal	The proposed Dhaka Water Supply Sector Development Program (DWSSDP) includes a program loan for the equivalent of \$50 million and a project loan for \$150 million from the Special Funds resources of the Asian Development Bank (ADB).
Classification	Targeting classification: Targeted intervention Sector: Water supply, sanitation, and waste management Subsector: Water supply and sanitation Themes: Sustainable economic growth, capacity development Subtheme: Developing urban areas
Environment Assessment	Category B. An initial environment examination for the project loan (core and supplementary appendixes) and an environment assessment of the policy matrix for the program loan (supplementary appendix) were undertaken.
Program Impacts and Description	The overall expected impact of the DWSSDP is to contribute to sustained economic growth and improved public health conditions in the urban centers of Bangladesh, particularly in the Dhaka Metropolitan Area, by improving the water supply services. The DWSSDP is the first phase of a long-term support program for the urban water supply sector based on the Partnership Framework that the external development partners and the Government agreed upon. The successful implementation of the DWSSDP will help reduce child mortality and improve health generally, increase the productivity of women by shortening the time required to fetch and store water, and conserve precious natural resources—surface and groundwater. The program and project loans under the DWSSDP are designed to complement each other in achieving progress towards these key goals.
The Program Loan	
Outcomes	The program loan will support the reforms in the urban water supply sector laid out in Sector Development Programme–Water and Sanitation Sector in Bangladesh (SDP-WSSB) 2006 by assisting the Government in improving the management and operation of urban water supply institutions, including <i>pourashavas</i> (peri-urban towns) and Water Supply and Sewerage Authorities (WASAs). The reforms under the program loan will help achieve sustainable and improved operation of water supply services in the urban areas. The reforms include (i) improving local governance and strengthening local institutional framework; (ii) preparing sector strategy and plan; (iii) improving financial sustainability; and (iv) strengthening Dhaka Water Supply and Sewerage Authority (DWASA) governance and organizational structure and financial management capacity. Appendix 4 presents a development policy letter and policy matrix of the

	Program along with strategic goals, key targets, and process for each output.
Loan Amount and Terms	A loan of SDR31,843,000 (\$50 million equivalent) will be provided from ADB's Special Funds resources, with a term of 24 years, including a grace period of 8 years, and an annual interest charge of 1.0% per annum during the grace period and 1.5% per annum thereafter;
Estimated Program Completion Date	31 December 2013
Tranches	The loan will be released in two tranches of SDR15,922,000 (first tranche) and SDR15,921,000 (second tranche) (\$25 million equivalent) when the Government and DWASA comply with the conditions for their release.
Executing Agencies and Implementation Arrangements	The Executing Agencies (EAs) will be the Finance Division of the Ministry of Finance (MOF), and the Local Government Division (LGD) of the Ministry of Local Government, Rural Development and Cooperatives. DWASA will be the Implementing Agency for certain activities, as specified in the policy matrix.
Procurement	The loan proceeds will be used to finance the foreign exchange costs (excluding local duties and taxes) of items produced and procured in ADB member countries, excluding ineligible items and imports financed by other bilateral and multilateral sources. In accordance with the provisions of ADB's <i>Simplification of Disbursement Procedures and Related Requirement for Program Loans</i> , the reimbursement procedure will be used to disburse the loan proceeds based on certification by the Government. Supporting import documentation will not be required if, during each year that loan proceeds are expected to be disbursed, the total value of the imports minus imports from nonmember countries, ineligible imports, and imports financed under other official development assistance is equal to or greater than the amount of the loan expected to be disbursed during that year. For the first tranche, the import certification may cover goods procured 180 days before loan effectiveness. With each withdrawal request, the Government will certify its compliance with this formula. Otherwise, import documentation under existing procedures will be required. ADB reserves the right to audit the use of the loan proceeds.
Counterpart Funds	The Government will use the local currency counterpart funds generated by the loan proceeds to meet program expenditures and associated costs of reform, as well as to help maintain current levels of social expenditures. The counterpart funds generated by the proceeds will be transferred from the MOF to LGD to meet the costs and counterpart funding requirements of implementing the sector reform.

The Project Loan

Outcomes

The Project will contribute to sustainable provision and operation of urban water supply services in Dhaka, by rehabilitating and strengthening the water supply system based on the long-term policy and investment roadmap. The physical investment under the Project will be complemented by capacity building of DWASA to enable the authority to competently manage the water supply systems for about 12.3 million people in Dhaka. The Project has three components:

Outputs

Component A: Distribution System and Quality Improvement.

This will involve rehabilitation and optimization of DWASA's water distribution network to minimize losses and to enable 24-hour pressurized water supply; and provision of water quality assurance and control measures.

Component B: Capacity Building and Institutional Strengthening.

This will involve the following subcomponents: (i) institutionalization of sound financial management, efficient billing, revenue collection, and customer record systems; (ii) comprehensive training of all levels of staff to optimize operational performance and upgrading of training facilities; and (iii) extensive demand control and awareness campaign for consumers.

Component C: Project Management and Implementation Support.

This component will support (i) project management and monitoring; (ii) detailed planning and design activities under the Project; (iii) contract structuring, tendering, execution, and management; and (iv) construction supervision. In addition, the component will assist DWASA in conducting a feasibility study for an optimal location for the future surface Water Treatment Plant (WTP) with a capacity of 500 million liters per day. The consultants engaged also will prepare an outline design and prepare tender documents for the WTP.

Project Investment Plan

The Project is estimated to cost the equivalent of \$212.7 million (including the contribution of the Government), including taxes, duties, interest charges on the ADB loan, and physical and price contingencies.

Financing Plan

ADB will provide SDR95,530,000 (\$150 million equivalent), which is 70.5% of the total cost. The Government will finance the equivalent of \$62.7 million, or 29.5% of the total project cost, including taxes and duties, resettlement cost, land acquisition, remuneration of counterpart staff, office accommodation, part of the civil works, and other miscellaneous costs.

(\$ million)		
Source	Cost	Percent
Asian Development Bank (ADF)	150.0	70.5
Government of Bangladesh	62.7	29.5
Total	212.7	100.0

ADF = Asian Development Fund.

Sources: Government of Bangladesh and Asian Development Bank estimates.

Cost Estimates	The Project is estimated to cost \$212.7 million, including taxes and duties of \$16.1 million.
Loan Amount and Terms	ADB will provide a loan of SDR95,530,000 (\$150 million equivalent) from its Special Funds resources to help finance the Project. The loan will a term of 32 years, grace period of 8 years, and interest charge of 1.0% per annum during the grace period and 1.5% per annum thereafter.
Relending Terms	The loan proceeds will be relend to DWASA pursuant to a subsidiary loan agreement with terms and conditions acceptable to ADB. Relending terms will include a repayment period of 20 years, including a 5-year grace period, and annual interest rate of 5%. The Government of Bangladesh will assume the foreign exchange risk.
Period of Utilization	Until 30 June 2014
Estimated Project Completion Date	31 December 2013
Executing Agency	DWASA
Implementation Arrangements	DWASA will be responsible for overall management, supervision, and execution of the Project. A Project Management Unit (PMU) will be established, consisting of one full-time project director with the rank of Deputy Managing Director (DMD) or chief engineer or additional chief engineer. In addition, there will be three dedicated deputy project directors. The deputy project director (finance) will be recruited from outside of DWASA through competitive selection process. The two other deputy project directors, who will head technical eastern zone and technical western zone, will be the rank of the superintending engineers or above. The project director and the three deputy project directors will be appointed exclusively to the Project. Four executive engineers will assist the deputy project directors in managing the works under them. The PMU will be responsible for all day-to-day management of the project, including but not limited to (i) preparing an overall project implementation plan and detailed work program; (ii) providing overall monitoring and guidance on implementation of project works; (iii) carrying out all tendering and execution of contracts; (iv) monitoring and supervising all project management activities;

(v) preparing necessary project progress and project completion report; and (vi) ensuring full compliance with the ADB's resettlement, environmental, and other safeguard policies.

Procurement

Procurement of all goods and services to be financed under the Project will be carried out in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time). All civil works contracts estimated to cost the equivalent of \$1 million or more will be procured through international competitive bidding (ICB). Civil works contracts estimated to cost less than \$1 million will be procured using national competitive bidding (NCB). To the extent practicable, goods will be grouped into procurement packages larger than \$500,000 to be suitable for ICB procedures. Goods that cannot be grouped into larger contracts and are estimated to cost less than \$500,000 per contract will be procured through national competitive bidding. The feasibility of community contracting will be examined on a case-by-case basis for slum and/or bulk water supply and other community-level works not exceeding \$10,000 in value, and will need pre-fact approval by ADB. NCB procedures applicable to the Project are specified in the Government's *Public Procurement Act 2003*. Miscellaneous minor goods expected to cost less than the equivalent of \$100,000 will be purchased using shopping procedures. NCB packages valued at more than \$100,000 each will be subject to prior review by ADB.

Consulting Services

Consultants will be selected and engaged under the Project in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). All consultants under the Project will be engaged as firms and will be engaged following ADB's quality- and cost-based selection (QCBS) procedures.

Program and Project Benefits and Beneficiaries

The investment under DWSSDP will cover four out of six water supply zones in the Dhaka city for immediate system rehabilitation and optimization. Detailed studies will be also prepared for the next phase to rehabilitate the remaining two zones and to develop new water source. While the program is the first phase of the long-term support to the Dhaka city, once completed, the rehabilitated system supported by new water source development will ensure stable and sustained water supply to entire population in Dhaka Metropolitan Area (DMA). The poor will benefit from the overall improvement of the water supply system while other development partners will provide targeted services to the poor under the Partnership Framework. The user survey conducted during the project preparatory Technical Assistance showed that the poor women will benefit most from the improved services in terms of time saving and improved health conditions.

Risks and Assumptions

Rehabilitation of the existing pipeline, the major component of the Project, carries risks. Although DWASA maintains digital maps of its pipelines and has general ideas of where prevalent illegal and poor connections might be, the real extent only emerges at the

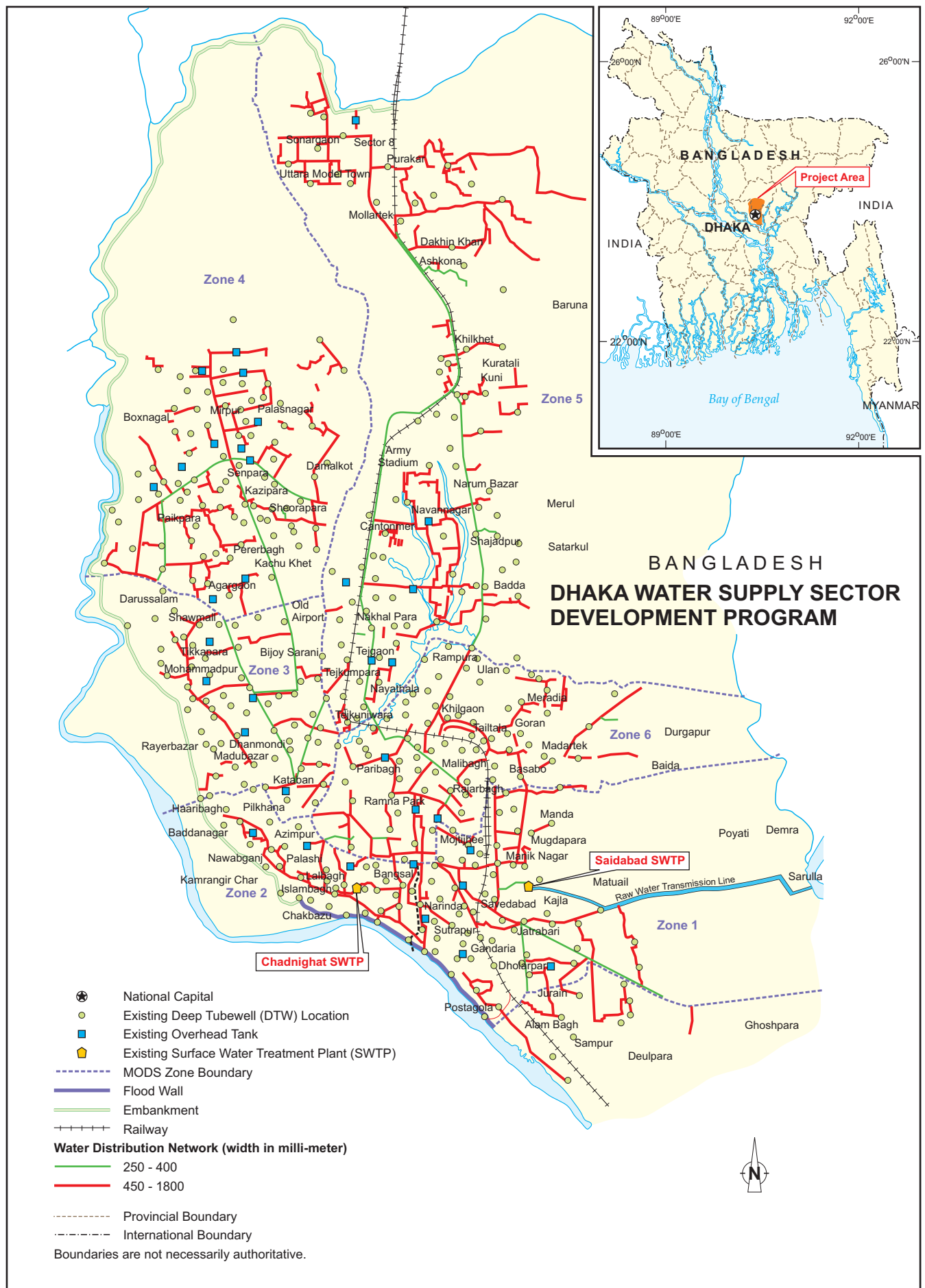
time of excavation. Though the Project is based on conservative assumptions, the required works and costs to rehabilitate and optimize the system might exceed the original estimate. This risk will be mitigated by careful preparatory works based on lessons learned from the pilot scheme, and substantial engineering consulting support to DWASA during project implementation.

Despite firm commitment of the Government, resistance to the reforms program might arise from outside and within (for example, from unions). Tariff adjustment may face opposition, undermining political support to the reform. The reform program is underpinned by the Partnership Framework between the Government and major development partners to support the Government initiative in a coherent manner. To minimize the social impact and sustain broad public support, the tariff adjustment will be carried out gradually based on the affordability study and with the help of communication programs which involves Community-Based Organizations (CBOs) and NGOs.

Technical Assistance

In conjunction with the Project, technical assistance (TA) will be provided for advisory assistance to the Government in improving and strengthening the management and operation of urban water supply and sanitation services. This will include assistance to LGD and DWASA in preparing and implementing key policy reforms. The TA also will assist DWASA in conducting the necessary technical preparation for introducing optimization measures in the existing water supply sources; and in supporting the smooth start-up of project implementation.

The total cost of the TA is estimated at \$3,125,000, of which ADB will finance \$2,500,000 on a grant basis from its TA funding program. The TA consultants will be recruited in accordance with ADB's *Guidelines on the Use of Consultants*. ADB will engage a qualified consulting firm and individual consultants (for a total of 131 person-months). Additional individual consultants may be recruited as necessary to strengthen the process. The TA will be undertaken intermittently from January 2008 to January 2011. Some of the outputs (including studies, recommendations, draft rules and regulations, draft business plan, and draft operations manual) are expected to support LGD, DWASA, and other key stakeholders in fulfilling the policy actions under the program and project loans.



I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on (i) two proposed loans for the Dhaka Water Supply Sector Development Program (DWSSDP), and (ii) a proposed technical assistance (TA) for Management Support for Dhaka Water Supply and Sewerage Authority (DWASA) to the People's Republic of Bangladesh. The design and monitoring framework for the Program is in Appendix 1.

II. THE SECTOR: PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

A. Sector Description and Performance

2. Bangladesh has the seventh largest population in the world. However, its land area is limited, making Bangladesh one of the most densely populated countries in the world.¹ Almost a quarter of its 140 million people (35 million) live in urban areas, and the urban population is increasing 2.5% a year—nearly twice the national rate.² Almost one third of the total urban population lives in Dhaka Metropolitan Area (DMA, the capital of Bangladesh), that is growing twice as fast as other urban areas. DWASA³ serves 70% of the DMA. When the DMA population reaches 17 million in 2025, less than 45% of the people would be covered by the DWASA water supply system.⁴ Most of the remaining uncovered population may abstract water from their private wells, using the same aquifer. The Government of Bangladesh (the Government) and DWASA face an enormous challenge in supplying safe, reliable water to the capital city's growing population.

3. Bangladesh's economy has generally grown more than 5% annually during 2000-2006.⁵ However, most of the development is taking place in the cities, Dhaka in particular. Despite considerable progress, basic services in all urban centers are deficient. Of the 309 urban towns, only 102 have a piped water supply system. In most towns, the water supply is sourced from deep tube wells. Due to the high cost of electricity, water pumps run for only 10–12 hours per day, resulting in an intermittent water supply of 2–4 hours at most per day. Urban water supply conditions typically are characterized by (i) unaccounted-for-water by sub-zone is usually as high as 50-60% of production,⁶ (ii) tariffs below average production costs, and (iii) low billing and collection rates. On average, less than 20% of houses have their own connections, while about 60% rely on shallow private tube wells. The remaining 20% of the population fetches water from stand posts or from public tube wells, if the town has a piped water supply system. Water shortages have become increasingly apparent because of the falling water tables resulting from unregulated extractions of groundwater. Inadequate basic urban services, including sanitation, are a severe hindrance to the continued development of urban areas, as well as efforts to reduce poverty. Rehabilitation and expansion of the existing systems, in parallel with investment in new systems in most towns and cities, is urgently needed.

¹ Unit for Policy Implementation, Local Government Division. 2005. *Sector Development Program, Water and Sanitation Sector in Bangladesh*. Dhaka (September).

² ADB. 2005. *Country Strategy and Program. Bangladesh 2006-2010*. Appendix 3 (page 167). Manila.

³ Dhaka Water Supply and Sewerage Authority is responsible for providing, operating, and maintaining water supply, sanitation, and storm water disposal services to the population of Dhaka, as stipulated in the Water Supply and Sewerage Authority Act, 1996.

⁴ Local Government Division. 2005. *Sector Development Program, Water and Sanitation Sector in Bangladesh*. Dhaka (September).

⁵ ADB. 2007. *Key Indicators 2007*. Manila. P. 179 (except 2002, which was 4.4%).

⁶ For overall Dhaka city's unaccounted-for-water, it is estimated in the range of 33-42%. These figures are based on billed amount, rather than actual reliable meter reading. In Manikdi pilot area, actual readings gave 60%.

4. More than 26% of urban households lack latrines or access to hygienic sanitation. Except for a limited waterborne sewerage system in Dhaka, which covers only 30% of the city area, no other urban centers have any form of sewerage system. Only 20% of the households in urban areas have access to a solid waste collection system. Most of Bangladesh has low-lying, flood-prone areas, and groundwater is contaminated by naturally occurring arsenic. Frequent cyclones and floods during the rainy season, combined with inadequate drainage and solid waste management, increase the exposure of the urban population to the effects of polluted water. Waterborne diseases are prevalent, and infant mortality is high (Appendix 2, sector road map is in Supplementary Appendix A). Hence, sustainable access to a safe, potable water supply and sound sanitation facilities is a high priority.

5. The Local Government Division (LGD) under the Ministry of Local Government, Rural Development and Cooperatives is overseeing the water supply and sanitation (WSS) sector and policy. Urban WSS services are provided by water supply and sewerage authorities (WASA), city corporations, and *pourashava* (peri-urban town) water supply sections (PWSS). The Department of Public Health Engineering (DPHE) implements new water supply systems and carries out major rehabilitation programs, except in the areas managed by the WASA.⁷ After completion of the works, DPHE hands over the WSS systems to local government institutions (LGI) for operation and maintenance (O&M). The shortcomings in this delivery situation are (i) absence of demand management; (ii) inadequate cost recovery; (iii) inefficient service provision; (iv) lack of financing and autonomy, especially in setting tariffs and staffing; and (v) lack of involvement of users in water utility planning and operation. DPHE undertakes much of the development projects because of the weak capacities of the LGIs. Planning and public service delivery are generally supply-driven, and do not respond adequately to users' needs. Water consumption does not depend on economic pricing, but on the availability of supply. The lack of autonomy of the responsible government agencies also undermines the effective service delivery and quality standards.

6. In Dhaka and Chittagong, a semiautonomous WASA is responsible for WSS. This large water utility operates and manages the system, as well as collects fees. Water is sourced from groundwater and surface water. The DWASA has numerous institutional and financial constraints, similar to those faced by urban towns, in achieving the recovery of user charges, controlling losses, and effectively managing the institution. A lack of commercial orientation and low tariffs have led to inefficient practices and poor financial performance. Planning and implementation are largely a supply-driven, top-down, and target-oriented processes, which suffer from unclear priorities and uncoordinated development. All agencies involved in WSS typically prefer to meet physical targets rather than establish and monitor processes for reaching goals related to facility operation, management, utilization, and maintenance. Despite gradual reductions in water-related mortality and morbidity rates, and increased physical coverage, further development is needed across the sector.

7. In recognition of these needs, the Government included WSS improvement as part of its seven-point agenda for reducing poverty in its 2005 national poverty reduction strategy (NPRS).⁸ By 2015, the NPRS aims to reduce poverty by 30%, and child mortality from 53 to 31 per 1,000 live births. The Government likewise has committed to achieving the Millennium Development Goals, including halving the proportion of people without access to sustainable safe WSS by 2015. In addition, the Government goals and priorities highlight safe drinking water and appropriate sanitation. These are consolidated in the new Sector Development

⁷ Dhaka and Chittagong only.

⁸ Government of Bangladesh. 2005. *Poverty Reduction Strategy*. Dhaka.

Programme—Water and Sanitation Sector in Bangladesh (SDP-WSSB) 2006, which includes (i) National Policy for Safe Water Supply and Sanitation 1998, (ii) Sector Development Framework (SDF) 2004, (iii) Pro-Poor Strategy 2005, and (iv) National Policy for Arsenic Mitigation 2004. In particular, the SDF 2004 sets an optimistic target and timescale, aiming for 100% coverage of basic WSS by 2015.

8. The SDP-WSSB 2006 emphasizes (i) ensuring basic minimum needs related to WSS for all citizens, especially the poor; (ii) decentralizing the service delivery and capacity building of LGIs to sustain investments and good governance; (iii) recommending optimal service delivery options and institutional framework; (iv) drawing a blueprint to realize sector reform and capacity building to achieve desired coverage and performance levels; and (v) outlining a sector investment plan for the next 10 years to fulfill sector targets, sector reforms, and capacity building needs within the available resources. Recognizing the overly ambitious target, the Government critically reexamined and acknowledged that, while the policy addresses the key issues, it lacks operational strategies and tools, such as financial allocations, time frame, institutional arrangements, legal instruments, and policy directives.

B. Issues and Opportunities

9. Although the size of urban areas differs, issues and challenges that DWASA faces are common to the urban WSS sector in general. As such, they should be addressed as part of the sector-wide reform program to meet the challenges. DWASA is currently facing six major challenges.

10. **Inadequate Supply of Clean Water to Meet Rapidly Growing Demand.** More than 80% of Dhaka's water supply comes from groundwater, and the upper aquifer of Dhaka already has exceeded its withdrawal limit. As a result, almost half of the deep tube wells supplying water to Dhaka will dry up by 2013. The lower aquifer can accommodate only about 50 new tube wells. The groundwater supply inevitably and urgently will have to be augmented with treated surface water. However, treating surface water is much more technically complex and expensive than using groundwater.

11. **Poor Quality of Water Distribution Network.** The pilot program in Manikdi area (para. 59) found that all household connections are substandard and leaking, and that physical water losses are up to 50%. This is under very low pressure conditions. In its current condition, the network cannot sustain the higher pressure required for transmitting treated water. In addition to losses due to leaks, only 59%⁹ of household connections have water meters to account for consumption—and the installed meters are often inaccurate or inaccessible—making effective management of demand virtually impossible.

12. **Poor Quality and Reliability of Water.** Generally, the quality of groundwater being pumped into the water supply network of Dhaka is believed to be good. The quality deteriorates, however, as it moves through the piped network. The problems stem from a number of sources. Leaks affect the hygienic conditions of the pipes and connections. To a greater degree, the system's low and sometimes negative pressure—caused by consumers using suction pumps or service connections installed at the bottom of underground tanks—causes extensive contamination of the water within the network. In addition, the current treatment plants are not

⁹ ADB. 2005. *Technical Assistance to People's Republic of Bangladesh for Preparing the Dhaka Water Supply Project*. Manila. TA 4651, approved on 22 September 2005, for \$1 million. (PPTA final report). Page 11. para 45. "DWASA indicated (April 2006) that there are 135,500 metered (59%) and 95,900 unmetered connections."

working optimally and require pre-treatment facilities. Water quality aside, the reliability of supply is severely hampered by intermittent power supply to the pumps, which do not have backup generators.

13. Limited Coverage of Slum Dwellers. About 1.3 million people (or 15% of the population) in the DWASA service area are living in slums. DWASA serves the majority of the slum dwellers, many of whom have unauthorized connections. However, a significant number of the more vulnerable slum dwellers still do not have access to services. This number is projected to increase to more than 4 million by 2025.

14. Financially Unsustainable Utility. For a number of reasons, including extensive leakage in the system (unaccounted-for water), unsustainable tariffs, and poor accounting and management systems, DWASA is unable to meet Dhaka's fast-growing demand for water. Of the water that is accounted for (about 50%), only 62% of revenues are collected. In total, only one third of the water that enters the network is ever paid for. DWASA accounting and management systems are outdated, inefficient, and often not transparent.

15. Inefficient or Ineffective Management Systems. DWASA and its operations are highly politicized. As a result, in recent years, managing director (MD) position was vacant long time, and turnover of senior executives (including MD) is high. Workers unions exert strong pressure on management, often preventing them from recruiting key staff or taking disciplinary action. The capacity and motivation levels of staff are generally low. Customer interface is extremely limited. DWASA's management systems and structure barely allow for effective planning, allocation, and monitoring of resources. Consequently, DWASA has difficulty serving its customers effectively.

16. Important Features. Despite the huge challenges, Bangladesh's water sector also presents a significant opportunity. The Government is strongly emphasizing development of the sector in its NPRS, which has broad funding agency support (Appendix 3). The SDP-WSSB, developed through extensive consultation, outlines a clear and comprehensive vision for the sector. The Government and its external development partners are taking a broad-based and deliberate approach to sector reform and institutional change. Momentum in the sector is significant, and the current environment is conducive to change. Other development partners were consulted extensively during project preparation. As a result, the timing is well synchronized with the sector reform initiatives of other development partners aimed at strengthening WASAs and water supply bodies within pourashavas, and giving them greater responsibility and autonomy.

17. Lessons Learned. The past and ongoing ADB projects in the sector include (i) District Towns Water Supply Project¹⁰ (\$14.4 million), (ii) Second Water Supply and Sanitation Project¹¹ (\$31 million), and (iii) Secondary Towns Water Supply and Sanitation Sector Project¹² (\$41 million). ADB's first investment was rated partly successful.¹³ The second, which included

¹⁰ ADB. 1982. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the District Towns Water Supply Project*. Manila. Loan 571, for \$14.4 million, approved on 17 June 1982.

¹¹ ADB. 1993. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grants to the People's Republic of Bangladesh for the Second Water Supply and Sanitation Project*. Manila. Loan 1264, for \$31 million, approved on 16 November 1993.

¹² ADB. 2006. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Secondary Towns Water Supply and Sanitation Sector Project*. Manila. Loan 2265, for \$41 million, approved on 16 October 2006.

¹³ ADB. 1995. *Project Performance Audit Report on the District Towns Water Supply Project in Bangladesh*. Manila.

interventions in nine towns, was rated successful.¹⁴ The third, which covers 2007–2012, began only recently. In other post-project evaluation assessments, ADB found DWASA to be a well-established institution with adequate technical and institutional capacities.¹⁵ However, the assessment recommended the preparation of an adequate investment program for the future, with corresponding O&M, to properly maintain the water supply, sanitation, and drainage system for Dhaka. Based on other key lessons learned, successful projects should (i) add enforceable milestones in the form of a phased performance-based funding approach; (ii) place high priority on financial performance and autonomy of the local water supplying bodies, adopting double-entry accounting systems, separating water supply accounts, training staff, and embracing the move to public limited company operating models; (iii) reduce the number of contracts and procurements to minimize processing and implementation delays; and (iv) actively engage local community stakeholders through extensive consultations to ensure stronger commitment and smoother implementation.

18. ADB is taking the lead in supporting water supply improvements in Dhaka, while the World Bank is focusing on sewerage and drainage improvements, as well as scaling up successful WSS service provision models in low-income communities and slums of Dhaka, jointly with Department for International Development (DFID). The Government of Japan is focusing on WSS services in Chittagong. Danish International Development Assistance (Danida) is providing assistance for a new surface water treatment plant (Saidabad, phase II) to augment the water supply sources in Dhaka.

III. THE PROPOSED SECTOR DEVELOPMENT PROGRAM

A. Impact and Outcome

19. The overall expected impact of the DWSSDP is to contribute to sustained economic growth and improved public health conditions in the urban centers of Bangladesh, particularly in the DMA, by improving water supply services. The DWSSDP is the first phase of a long-term support program for the urban water supply sector based on the Partnership Framework that the external development partners and the Government agreed upon (paragraphs 57–58 for details). The successful implementation of the DWSSDP will help reduce child mortality and improve general health, increase the productivity of women by shortening the time required to fetch and store water, and conserve precious natural resources—the surface and groundwater. The program and project loans under the DWSSDP are designed to complement each other in achieving progress towards these key goals.

B. The Program Loan

1. Outcomes

20. The program loan will support the reforms in the urban water supply sector laid out in SDP-WSSB 2006 by assisting the Government in improving the governance and management of urban water supply institutions, including pourashavas and WASAs. The reforms under the program loan will help achieve the sustainable provision and operation of improved water supply

¹⁴ ADB. 2004. *Project Completion Report on the Second Water Supply and Sanitation Project in Bangladesh*. Manila.

¹⁵ ADB. 2002. *Project Completion Report on the Dhaka Integrated Flood Protection Project*. Manila (Loan 1124-BAN [SF], para. 40); and ADB. 2001. *Project Performance Audit Report on the Dhaka Urban Infrastructure Improvement Project*. Manila (Loan 942-BAN[SF], page iv). It also mentioned on the same page: “DWASA component is generally sustainable, although DWASA cannot maintain good levels of services in the lower-income plots where unauthorized users have broken water supply pipes.”

services in the urban areas. The reforms include (i) improving local governance, and strengthening local institutional framework; (ii) preparing sector strategy (demand-side management); (iii) improving financial sustainability; and (iv) strengthening DWASA governance, organizational structure, and financial management capacity. Appendix 4 presents a development policy letter and policy matrix of the Program along with strategic goals, key targets, and process for each output.

2. Policy Framework and Actions

a. Improving Local Governance, and Strengthening Local Institutional Framework

21. Decentralize and Improve the Financial Autonomy of Pourashavas and WASAs.

The urban sector in Bangladesh comprises six city corporations (Barisal, Chittagong, Dhaka, Khulna, Rajshahi, and Sylhet) and 309 pourashavas.¹⁶ WSS services in urban areas are the responsibility of WASAs (in Dhaka and Chittagong), and the WSS sections established by the authorities in the other city corporations and pourashavas. The DPHE under LGD implements water supply system network expansion and major rehabilitation programs in pourashavas. After completing the programs, DPHE hands over the systems to the PWSSs for O&M. The activities of the PWSSs are restricted mostly to operation of the electrical pumps for the production wells and reactive maintenance of the existing systems (e.g., repair of leaks). WASAs and PWSSs still lack autonomy in many areas. For example, pourashavas need to obtain permission from the Government to create posts or to appoint staff in their setup. They also have to seek approval from the Government on tariff changes. In the past, this practice has restricted the pourashavas and WASAs to managing the O&M of water supply in their respective areas. Pourashavas and WASAs need to be decentralized and given broader administrative and financial autonomy to (i) manage the water supply system, including the installation and O&M of the facilities in their respective areas; (ii) manage billing; and (iii) determine the appropriate tariff increase.

22. Establish an Independent Water Supply Sector Regulatory Commission. In Bangladesh, regulatory bodies for telecommunications and power were approved in 2002. In the same year, the establishment of a regulator for the water sector was proposed, but little progress has been made since then. Regulators are often perceived as protectors of the interests of the general public (the customers of a public services utility) against commercial interests of private operators. Regulators should ensure a fair, stable, and clear enabling environment for service providers and consumers. The Program will support LGD to prepare a study on the most appropriate form for regulatory body for the Bangladesh WSS sector, and make recommendations to the appropriate authority (the Cabinet). The study will clarify the functions, roles, and responsibilities of the regulator. Once LGD makes the recommendation, the Government is expected to establish an independent water supply regulatory commission, as envisaged in SDP-WSSB.

23. Enhance Capacity of Pourashavas and WASAs in Managing and Delivering Water Supply Services. To improve the performance of the water supply utilities, and to cope with the increasing demand for high-quality services and investments, the capacity of the staff and workforce should be enhanced constantly. LGD, DWASA, and DPHE need to prepare and publish a 5-year capacity building program for PWSS and WASA staff, including (i) meter

¹⁶ The pourashavas are classified into class A, B, and C, depending on their revenue. The primary targets of the Program are large pourashavas, rated class A, with established PWSS.

connection, (ii) water conservation, (iii) O&M, (iv) billing and accounting, (v) financial management, and (vi) public health. Starting in 2010, LGD, pourashavas, and WASAs will implement the program, and the PWSS and WASA staff will receive training under the program. Each year, LGD will allocate sufficient budget to the pourashavas and the WASAs for the training of the water section staff.

b. Preparing Sector Strategy and Plan (Demand-side Management)

24. Promote Effective Water Management and Conservation. As consumers are not accustomed to conserving water, they will use and waste water whenever water is in the pipe. Water consumption depends on the availability of water in the pipe network, and is not based on the actual demand. Incentives to conserve water and penalties for wasteful use are absent. Likewise, no incentives or penalties are in place for hygienic sanitation. The Government should address the physical problem to realize stable and regular water flow in the network. It also must educate the public through awareness campaigns that explain in simple terms that water distribution incurs costs, and that each user is responsible for keeping the entire system clean, efficient, and sustainable. The Program should target all age groups, including primary school children. To further promote water conservation, LGD together with pourashavas and WASAs should suspend the practice wherein each household installs its own water connections and meters. To ensure that meters installed in households meet the desired standard of quality, the pourashavas and WASAs should install them.

c. Improving Financial Sustainability

25. Decentralize and Improve the Financial Autonomy of Pourashavas and WASAs. The SDP-WSSB points out that water tariffs in Bangladesh generally are too low. In most towns, tariffs are insufficient to cover even the O&M costs, meaning the capital investment costs are not recovered. Poor collection efficiency exacerbates the situation. LGD and DPHE will allow pourashavas to keep their revenues from water billings. LGD will instruct each of pourashava to set up a separate account for water revenues, establish double-entry bookkeeping for the PWSS, and maintain a sound inventory of the pourashava's water supply assets. Further, LGD will allow the pourashavas and the WASAs to set and increase the water tariff in their respective areas annually, maintaining a level that would enable them to recover at least O&M costs after adjusting for inflation.

d. Strengthening DWASA Governance, Organizational Structure, and Financial Management Capacity

26. Introduce and Apply Good Governance. To achieve good governance, the organizational structure and management of DWASA should be improved, and compliance with the WASA Act of 1996¹⁷ should be ensured. Three main issues related to the implementation of the 1996 act are pending for DWASA: (i) appointment of the managing director,¹⁸ (ii) approval of the DWASA organization chart,¹⁹ and (iii) implementation of the rules and regulations of the act. The DWASA Act grants the managing director a tenure of 3 years. However, managing directors have been replaced frequently in the past 3 years. The previous four managing

¹⁷ Government of Bangladesh. 1996. *Water Supply and Sewerage Authority Act, 1996*. Dhaka.

¹⁸ During the ADB Appraisal Mission in August 2007, a new DWASA managing director was selected through a competitive process, appointed, and assumed office on 17 August. The new managing director is given an initial tenure of 3 years.

¹⁹ Organization chart is commonly referred to as "Organogram" in Bangladesh, showing the overall structure of an organization with departments, divisions, levels and number of posts.

directors were officials seconded from the Government. With frequent changes in top management, it is difficult for DWASA to improve performance in a well-planned and coordinated manner. Each managing director usually brings a different approach, leading to frequent changes in the way DWASA operates. The second issue is that DWASA does not have an organization chart. A draft organization chart was prepared and has been awaiting approval for 10 years. Without an approved organization chart, DWASA has been unable to make major changes in staff positions from the organizational structure prescribed by the outdated 1963 act.²⁰ As a result, some departments might have too many staff for the required tasks, while others might not have enough. The third issue is the implementing rules and regulations of the 1996 act. Draft rules and regulations have been prepared, but not approved. While the 1996 act governs the overall operation, the rules and regulations are still based on the 1963 ordinance, much of which is outdated and obsolete. The main constraints on the institutional setting of DWASA are political. Reforms to overcome these limitations must promote DWASA's ownership. An immediate amendment of the 1996 act is not considered essential, but the act must be implemented properly to strengthen the operation of DWASA.

27. Delineate Responsibilities Between the Board and the Managing Director. The institutional strengthening of DWASA will aim to modify the rules and regulations to ensure an autonomous operational environment, including restructuring of the board and management, and the establishment of effective management systems. The 1996 act is not clear on how much authority the managing director has to make decisions on day-to-day business affairs. Some provisions contradict others. In many of the provisions, the day-to-day business decisions by the managing director must be endorsed by the board and approved by the Government. This means that the Government might delay decisions on small matters that need to be addressed quickly. As a result, DWASA is not an efficient, responsible, and customer-oriented institution. To be efficient, the roles and responsibilities of the board and the managing director must be defined clearly. In addition, certain day-to-day activities of DWASA still require board approval. DWASA management should initiate immediately a dialogue with the board to determine how much power it will delegate.

28. Under the 1996 act, WASA should be able to manage its facilities and operate with a high degree of autonomy. DWASA should have a board that consists of key professionals from civil society, and should be headed by a chairman appointed by the Government. However, its autonomy is constrained by a provision in the 1996 act that requires the board to seek approval from the Government on all matters in which the Government finances or acts as a warranty for finance.²¹ The financial dependency of WASAs on the Government further constrains their performance. This situation results in decisions on crucial operational and organizational aspects, including human resource development and employment, setting of tariffs and salaries, not being made without the prior approval of the Government. This often can affect decisions on day-to-day operations.

29. Improve DWASA Operation and Business Performance Through a Medium-Term Business Plan. The 1996 act established a framework for the responsibilities and mandate of WASAs. However, as an agency responsible for the water supply, sewerage, and drainage in Dhaka, DWASA should have an organizational vision of its own. DWASA should have at least a 5-year business plan that explains its current strengths and weaknesses. In addition, a practical operations manual should be devised and put into effect, laying out concrete day-to-day

²⁰ Government of Bangladesh. 1963. *Water Supply and Sewerage Authority Ordinance*. Dhaka.

²¹ The Government of Bangladesh. 1996. DWASA Act. Dhaka (Clause 17.[4], Chapter IV. Powers and Duties of Authority).

business procedures. The performance of WASAs should encompass key elements such as (i) network monitoring; (ii) water quality control; (iii) metering, billing, and collection; and (iv) consumer grievance redress.

30. Explore Private Sector Participation and Elimination of Conflicts of Interest. The active presence of various labor unions and employers' cooperative societies constrains the management of DWASA. Billing and revenue collection in three of six water supply zones of Dhaka, covering approximately half the population and service connections, has been handled by DWASA Employees Consumer Supplies Co-operative Society through the Program for Performance Improvement (PPI) agreement.²² The PPI agreements are based on performance. The billing efficiency of the PPI zones are generally higher than in the DWASA zones. However, the division of responsibilities between DWASA staff and PPI staff is unclear and impractical in some areas. For example, controlling unaccounted-for water is DWASA's responsibility, while PPI handles identification and disconnection of illegal connections. Further, meter maintenance is under DWASA, while meter reading is under PPI. This PPI arrangement has various problems, as it creates new vested interests within DWASA and has conflict of interests that should be eliminated. The metering, billing, and collecting must be outsourced to a separate entity; and PPI should be abolished or revamped to create a more appropriate system. Two of the unions are affiliated with the two major political parties, while the third is independent. Political interventions interfere with and jeopardize the management's ability to recruit, promote, and post the right persons at the right positions. A committee must be established to explore private sector participation to bring good corporate governance into WASAs. The committee will prepare a study and make recommendations with a time-bound action plan. The committee also will review the existing PPI and recommend ways to eliminate conflicts of interest.

31. Develop Financial Plan and Model for Future Investment. DWASA needs to assess future investment needs at least up to 2025,²³ and recommend a financial modeling and management structure to manage those needs. In this exercise, DWASA needs to analyze the tariff structure, determine the required tariff increases to address future financing needs, and assess financing conditions and capital investment needs. As semiautonomous utilities, WASAs need a financial model of their operations that is based on audited WASA financial data, and several scenarios for key performance enhancement. The key performance areas will include (i) reduction of nonrevenue water, (ii) improvement in the collection ratio and reduction in accounts receivables, (iii) improvement in staffing ratio, and (iv) adjustment of energy and chemical consumption.

32. Increase Transparency in DWASA Operation and Address Corruption Issues. DWASA is not immune to allegations of illegal practices ranging from unrecorded connections, meter tampering, overbilling, and non-transparent collections. DWASA will establish an anticorruption ethics committee and appoint members to the committee. The committee, which reports to the managing director, is assigned to investigate corruption allegations within DWASA. DWASA also will establish a grievance redress mechanism to address concerns of customers and stakeholders.

33. Improve DWASA Financial Management and Performance. With the support of advisory technical assistance from the World Bank's Performance Improvement Program (PIP)

²² On 10 June 2007, the High Court ruled that allowing private operators to carry out the PPI initiative is against the provision of WASA Act 1996, and revoked DWASA's move to outsource the billing and tariff collection.

²³ DWASA. 2007. *Past, Present and Future of Dhaka WASA*. Managing director presentation material; includes needs until 2025.

to DWASA, and Japan Bank for International Cooperation (JBIC)'s support to Chittagong Water Supply and Sewerage Authority (CWASA), both WASAs have gone through a diagnostic analysis. The analyses focused on the WASAs' overall performance against the provisions of the 1996 Act and 1963 Ordinance respectively to identify main constraints of WASA management. The financial regulations (1969) still govern the financial transactions of DWASA. The regulations need to be updated for the organization to transform itself into a commercially sustainable entity.²⁴ Roles and responsibilities of the staff who are involved in financial management and transactions must be clearly defined with proper delegation of financial powers. During the early to mid-1990s, with the assistance of a World Bank project²⁵, DWASA introduced a computer-based, double-entry accounting system. However, when implementation of the World Bank project was terminated, DWASA reverted to the old single-entry, handwriting-based system. For sound corporate financial accounting, all assets should be evaluated properly, and an internationally accepted double-entry accounting system must be reintroduced. For the past several years, audit reports produced by DWASA have been unable to attach an audit opinion. Audits have not followed internationally acceptable accounting guidelines, and inconsistencies have been observed. This needs to be improved, reflecting the recommendations of the World Bank diagnostic analysis. The same applies for CWASA on its audit. Based on the improvement in auditing, as well as the introduction and implementation of the PIP, DWASA will issue audited annual reports that will be made publicly available in preparation for becoming a public limited company in future.

34. Reduce Illegal Connections and Assign DWASA Full Responsibility in Water Connection and Metering System. DWASA will establish a baseline survey on illegal connections by the end of 2009. Based on the survey, DWASA will issue a time-bound action plan to address the problem of illegal connections. In line with the action plan, DWASA will reduce illegal connections by at least 25% by the end of 2010 in the four zones of Dhaka city that will be covered by the ADB-supported Project.

3. Financing Plan

35. The Government has requested a loan of SDR31,843,000 (\$50 million equivalent) from ADB's Asian Development Fund (ADF) to help finance the Program. The loan will have an amortization period of 24 years, including a grace period of 8 years, with an annual interest charge of 1.0% during the grace period and 1.5% thereafter. The loan proceeds will be available for withdrawal in two tranches of SDR15,922,000 (first tranche) and SDR15,921,000 (second tranche), (\$25 million equivalent) upon compliance with the agreed upon conditions. The first tranche will be released upon meeting all first tranche release conditions and upon loan effectiveness; the second tranche will be released upon meeting the second tranche release conditions, as provided in the policy matrix in Appendix 4.

36. In determining the amount of the program loan, the following factors were considered: (i) the relative importance of urban infrastructure sector in terms of public spending, (ii) the scope and strength of the reform package in the WSS sector, and (iii) the short- and medium-term costs of the reforms and the associated financing gap. The loan amount covers part of the adjustment costs for the measures included in the policy matrix from FY2007 to FY2013 for the program loan and its update.

²⁴ CWASA also has been assisted by JBIC on capacity building to improve its financial performance.

²⁵ World Bank. 1996. *Fourth Dhaka Water Supply Project*. Washington, DC.

4. Program Management

37. **Program Implementation Arrangements.** For the program loan, the executing agencies (EAs) will be the Finance Division of the Ministry of Finance (MOF) and LGD of the Ministry of Local Government, Rural Development and Cooperatives. DWASA will be the Implementing Agency (IA) for certain activities, as specified in the policy matrix. The EAs will be responsible for coordination of the program loan during implementation, including complying with all policy actions, program administration, and maintenance of all program records.

38. **Implementation Period.** The program implementation period is from December 2007 to December 2013.²⁶ The Government will have to complete all conditions for the first tranche before its release, which is expected by December 2007. The main triggers for the first tranche are (i) DWASA organization chart, (ii) Rules and Regulation of WASA Act 1996, and (iii) appointment of DWASA managing director. The remaining policy actions during the program implementation period, as well as certain policy actions, must be fulfilled before the second tranche may be released. Some of the main triggers for the second tranche are (i) broader administrative and financial autonomy to WASAs, (ii) separation of water accounts, (iii) DWASA 5-year business plan, and (iv) anticorruption ethics committee within DWASA. The second tranche release is expected before 15 December 2010. Details are in Appendix 4.

39. **Procurement and Disbursement.** The loan proceeds will be used to finance the foreign exchange cost (excluding local duties and taxes) of items produced and procured in ADB member countries, excluding ineligible items (Appendix 5) and imports financed by other bilateral and multilateral sources. In accordance with the provisions of ADB's *Simplification of Disbursement Procedures and Related Requirement for Program Loans*,²⁷ the reimbursement procedure will be used to disburse the loan proceeds based on certification by the Government. Supporting import documentation will not be required if, during each year that loan proceeds are expected to be disbursed, the total value of the imports minus imports from nonmember countries, ineligible imports, and imports financed under other official development assistance is equal to or greater than the amount of the loan expected to be disbursed during that year. For the first tranche, the import certification may cover goods procured 180 days before loan effectiveness. With each withdrawal request, the Government will certify its compliance with this formula. Otherwise, import documentation under existing procedures will be required. ADB reserves the right to audit the use of the loan proceeds.

40. **Counterpart Funds.** The Government will use the counterpart funds generated by the program loan, under arrangements satisfactory to ADB, to support sector reform and meet the adjustment costs associated with the loan. Further, the counterpart funds will be transferred from MOF to LGD to meet the costs and counterpart funding requirements for implementing the sector reform.

41. **Program Performance Monitoring and Evaluation.** LGD will monitor continually the implementation of the Program and its impact, in line with the program framework and outcome indicators ADB and the Government agreed upon. Further, LGD will submit to ADB quarterly reports until the Program is completed. Data from the PIP, annual report, audit reports, and auditor's opinion will be used to monitor the progress of the Program.

²⁶ The second tranche disbursement is projected at the end of 2010, but the program loan duration is until the end of 2013 to monitor the reforms progress.

²⁷ ADB. 1998. *Simplification of Disbursement Procedures and related Requirements for Program Loans*. Manila.

C. The Project Loan

1. Outcomes

42. The Project will contribute to sustainable provision and operation of urban water supply services, particularly in Dhaka city, by rehabilitating and strengthening the water supply system based on the long-term policy and investment road map. The physical investment under the Project will be complemented by capacity building of DWASA to enable the authority to competently manage the water supply systems for approximately 12.3 million people in Dhaka city. The Project has three main components:

a. Component A: Distribution System and Quality Improvement

43. This component of the Project will involve physical rehabilitation and optimization of DWASA's water distribution network to minimize losses and enable 24-hour pressurized water supply, and provision of water quality assurance and control measures. Four zones (zones 3, 4, 5, and 6) have been selected for priority improvement by the Project for the following reasons:²⁸

- (i) DWASA has progressively rehabilitated and replaced most of the old pipes dating to the 19th century in zones 1 and 2 under various Government-funded projects. Further, despite their dense populations, zones 1 and 2 have low to moderate pressure in the supply lines, resulting in less leakage than in the remaining zones.
- (ii) DWASA is planning to bring additional water from the proposed Saidabad II and Khilkhet water treatment plants (WTP) to meet the growing future demands of the city (Supplementary Appendix A). The distribution network in the project zones will receive most of the additional water. If the project zones are not rehabilitated, this water supply will cause more leakage from the system and minimize the impacts from the proposed supply augmentation.
- (iii) Zone 4 has the most "spaghetti connections"²⁹ with resulting leakage. Similarly, zones 3, 5, and 6 reportedly account for more physical losses than zones 1 and 2.
- (iv) Population growth in zones 1 and 2 seems to have reached saturation level, while the population in the remaining four zones continues to increase rapidly.
- (v) DFID is assisting DWASA with improvements in many slum and low-income areas of zones 1 and 2 and improvement in the project zones is expected to benefit the largest number of poor and slum dwellers.

44. The component consists of the following:

i. Distribution Network Rehabilitation and Strengthening

45. This subcomponent involves the following physical works in the project zones: (i) rehabilitation of primary and secondary distribution networks, including lining or replacement of pipes, as required; (ii) removal of spaghetti connections, and provision of tertiary distribution network (optimization) and house connections; (iii) provision of additional supply lines to

²⁸ DWASA is responsible for seven zones, however, the seventh zone Narayanganj is geographically isolated from other six, and is outside the traditional Dhaka City boundary. In early 1990, Narayanganj Town merged with DWASA; however Narayanganj is not part of the Project's first phase.

²⁹ Spaghetti connection refers to illegally tapped water (not formally arranged by DWASA), usually connected via rubber lines that look like boiled spaghetti.

identified fringe and slum areas;³⁰ (iv) rehabilitation of 24 overhead reservoirs, and provision of 14 new overhead reservoirs; and (v) installation of valves, and bulk and household water meters to isolate hydraulic zones and allow measurement of supply and consumption at all ends. In conducting the outlined activities, this subcomponent also aims to remove and regularize all illegal or unregistered connections within the project zones. Based on market pricing and viability, a significant portion of the distribution network rehabilitation works is expected to be carried out using trench-less technologies.

ii. Water Quality and Monitoring System Improvement

46. This subcomponent involves provision and rehabilitation of disinfection or chlorination facilities at all supply points in DWASA's service area in Dhaka city. It also entails establishment of a two-tier water quality monitoring system, including provision of water quality monitoring in the inadequate existing laboratory facility.³¹

b. Component B: Capacity Building and Institutional Strengthening

47. Component B consists of the following subcomponents: (i) institutionalization of sound financial management, efficient billing, revenue collection, and customer record systems; (ii) provision of comprehensive training for all levels of DWASA staff to optimize operational performance and upgrading of training facilities; and (iii) an extensive demand control and awareness campaign for consumers.

i. Financial Management Improvement

48. The subcomponent will assist DWASA in substantially reforming and improving financial management for (i) strategic business planning using financial simulation models, (ii) results-oriented budget mechanisms, (iii) sustainable debt management, (iv) tariff reforms, (v) efficient and accurate double-entry accounting system and auditing procedures, (vi) accurate billing and payment collection through staff training and establishment of customer database, and (vii) transparency through compulsory publication of annual reports. The financial and capacity building (FCB) consultants will assist DWASA in designing the most appropriate and financially sustainable tariff structure to recover all costs. The tariff structure will be designed with due consideration on affordability of low-income households.

49. After the completion of the pipeline rehabilitation, a management contract will be awarded on a pilot basis to a private contractor for one of the four project zones to assist DWASA in operating the rehabilitated assets during the contract period. In addition, twinning arrangements are considered with other water utilities in south and south-east Asia operating efficiently at a high quality standard, to learn and gain hands-on knowledge transfer from them. A technical assistance (TA) project³² has supported the establishment of twinning arrangements

³⁰ The NGO and CBO sector in Bangladesh is very well developed, and the Project aims to leverage their capacity by involving them in efforts to increase awareness among the population in Dhaka. At least 15% of the improved water supply flowing through the Project is expected to target low-income communities using standpipes and communal taps.

³¹ Currently, the laboratory does not have an analytical environment. The laboratory facilities are lacking basic things, such as reagents, glassware, working table, distilled water, and proper electrical balance; as well as a computer for proper documentation and air conditioning. A superintending engineer should be appointed and designated as laboratory coordinator.

³² This will be financed through ADB. 2007. *Technical Assistance for Supporting Water Operator's Partnership in Asia*. Manila. TA 6396, approved on 16 April 2007, for \$2 million. (Financed by the Japan Special Fund: \$2 million). This is separate from an attached TA, which is described in Chapter IV of this document.

with successful regional water utilities, such as the Public Utility Board Singapore or Phnom Penh Water Supply Authority, which will assist DWASA in developing the managerial, technical, and financial capabilities required for efficient management of a commercially oriented water utility.

50. The Project will work with the World Bank-supported project, which is assisting DWASA with aligning its core business procedures based on a new PIP. The design and management (D&M) consultants will support the project management unit (PMU) by identifying key indicators and business procedures for monitoring DWASA's operational performance, increasing water supply coverage, establishing appropriate service and consumption levels, and ensuring efficiency in operations and financial management, and consumer satisfaction. Monitoring performance indicators will include time-bound target and achievement reporting (monthly, quarterly, and annually) for the individual major items of works (e.g., construction and rehabilitation of pipelines, new connections, repair responsiveness, and bill collection).

ii. Training and Capacity Building

51. This subcomponent will involve developing training modules and providing training to DWASA staff for optimized operational performance, as well as to staff of the zone offices (each serving about 1.5 million people) to provide all services to the customers as a one-stop service center. It also will entail capacity building of plumbers, pump operators, and technicians through the provision of training guidelines, and continuation or provision of plumbers and technician training.³³

52. Under this subcomponent, the DWASA training center established under the World Bank-financed project³⁴ at Lalmatia³⁵ will be strengthened, the physical facilities of the training center will be rehabilitated, and training tools will be provided.

iii. Demand Control and Public Awareness

53. A comprehensive and phased public awareness campaign will be designed with the objectives of (i) informing the public on the purpose and outline of the proposed tariff reforms; (ii) creating awareness that water is a scarce and valuable commodity; (iii) informing the public of possible service disruptions and measures undertaken during project implementation; (iv) improving public relations and the image of DWASA; (v) educating the public on negative consequences of using suction pumps, and minimizing wasted water at household level; (vi) offering incentives to the public on meter installation and meter reading to allow consumers to report artificial bill inflation from the meter readers; and (vii) informing the public about the customer grievance redress mechanism introduced under the Project.

54. The subcomponent will address these objectives through (i) a mass media campaign, such as through television, radio, and cinema, to disseminate and educate the population; (ii) engagement of nongovernment organizations (NGO) to develop educational materials, and to engage and coordinate field-workers in conducting community meetings and household visits; and (iii) development of information materials, such as brochures and display boards before, during, and after rehabilitation work in the supply zones.

³³ More than 600 plumbers working for DWASA are being trained as part of the pilot Manikdi study.

³⁴ World Bank. 1996. *Bangladesh Fourth Dhaka Water Supply Project*. Washington, DC (\$80.3 million, 1996–2002).

³⁵ The center occupies the entire third floor and part of the second floor of the zone 3 office, where it has two classrooms, one computer classroom, one conference room, and seven office rooms for the officers and staff.

c. **Component C: Project Management and Implementation Support**

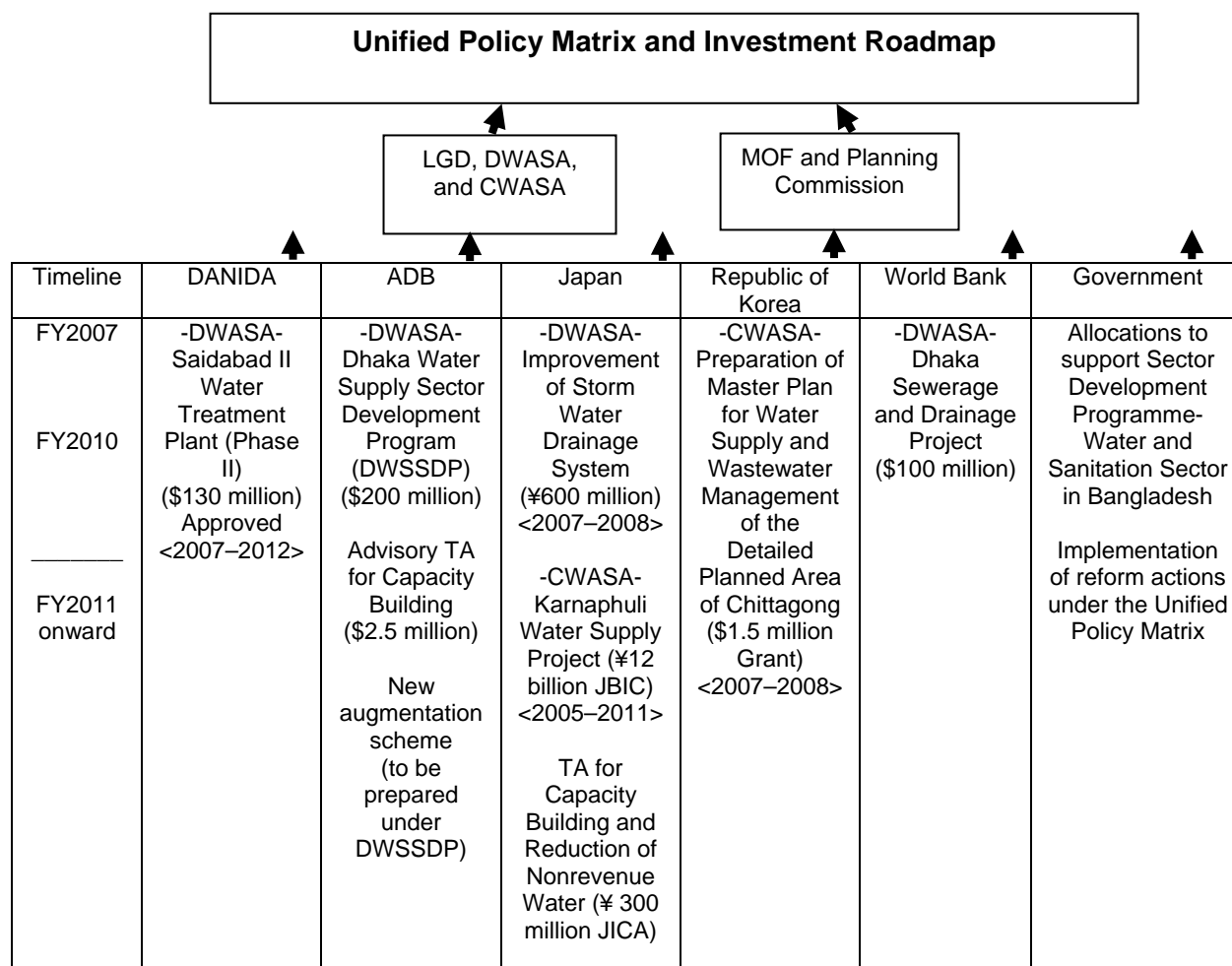
55. Consultants will be engaged to assist the PMU in implementing, monitoring, and supervising the Project. Consulting support will include (i) project management and monitoring; (ii) detailed planning and design activities; (iii) contract structuring, tendering, execution, and management; (iv) construction supervision; (v) preparation of demand control and public awareness campaign, including the tariff awareness program; and (vii) identification and development of institutional strengthening measures, training modules, and guidelines and manuals, and provision of training. Consulting services also will include engagement of NGOs to manage parts of the demand control and community awareness program.

56. In addition, consultants will assist DWASA in conducting a feasibility study for an optimal location for a future surface WTP with a capacity of 500 million liters per day (mld). The consultants also will prepare an outline design and prepare tender documents for the WTP. (A detailed project description is in Supplementary Appendix B).

2. **Special Features**

57. The proposed Program is part of a coordinated partnership between external development partners and the Government to reform the urban WSS sector in Bangladesh, with a focus on Dhaka city, through a medium-term reform and investment program. The proposed reforms under the Program are based on the Government's SDP-WSSB 2006, and have been formulated in consultation with the main development partners in the sector, including Danida, DFID, JBIC, and World Bank. Each development partner's activities have been coordinated both in terms of reform actions and support for investment loans. Figure 1 shows how the development partners' programs fit together to support the Government's reforms and investment programs for the urban WSS sector. For example, Danida is providing about \$130 million for the construction of Saidabad II WTP and an adjoining small-scale pre-treatment plant. DFID is planning to provide sector budget support to LGD. JBIC has committed around ¥12.2 billion to CWASA for the Karnaphuli WTP and capacity development of CWASA; Government of Japan (JBIC) plans to further assist CWASA in future capital investments jointly with Korea International Cooperation Agency(KOICA), Government of Italy, and World Bank. Government of Korea will extend assistance to the preparation of a master plan for water supply and wastewater management in Chittagong. World Bank is planning to assist DWASA with its sewerage and drainage services improvements with \$100 million.

58. **Unified Policy Framework and Investment Road Map.** In November 2007, the external development partners and the Government signed a partnership framework (Appendix 3) outlining the partnership arrangements and agree on the urban WSS sector reforms to be carried out by the Government, particularly by the LGD, DWASA, and CWASA. The framework will include (i) core understandings that specify and outline the reforms to be implemented urgently; (ii) a unified policy framework for DWASA and CWASA, which list all reforms to be carried out by the Government and two WASAs in 2007–2010; and (iii) a brief sector investment road map, which outlines the TA and investment projects planned for Bangladesh in the urban WSS sector (Figure 1).

Figure 1: Partnership Framework for the Urban Water Supply and Sanitation Sector

ADB = Asian Development Bank, CWASA = Chittagong Water Supply and Sewerage Authority, DANIDA = Danish International Development Assistance, DWASA = Dhaka Water and Sewerage Authority, DWSSDP = Dhaka Water Supply Sector Development Program, JBIC = Japan Bank for International Cooperation, JICA = Japan International Cooperation Agency, LGD = Local Government Division, SDP-WSSB = Sector Development Programme—Water and Sanitation Sector in Bangladesh (2006), TA = technical assistance.

Sources: Government of Bangladesh and all participating donors' estimates. Figure 1 (above), Appendix 3 and Supplementary Appendix L (Memorandum of Understanding on Partnership Framework) serve as Development Coordination Matrix.

59. **Manikdi Pilot Study.** To address the serious water supply problems in Dhaka, ascertain the cause of irregular water supply, and showcase some concrete steps in remedying the situation, ADB conducted a pilot study in Manikdi area (within zone 4 of DWASA'S service area) in Dhaka. The main purposes were to change the mindset of DWASA by demonstrating that 24-hour pressurized supply is possible, and that unaccounted-for water can be reduced to an acceptable level by addressing the following key issues: (i) accuracy of records; (ii) quality and type of materials (pipes and joints) used; (iii) workmanship traditions; (iv) magnitude of unregistered connections; (v) O&M quality; (vi) water demand analysis and expectations; and (vii) quantification of produced water into four categories: physical losses, where water escapes from the network through leaks before it reaches customers; administrative losses, where water reaches the consumer but is not billed; water wasted by consumers; and water serving the

demand of the beneficiary. The pilot study (from March 2006 to December 2007) covered 440 service connections in Manikdi. It confirmed that the high technical losses were due to (i) bad service connections and clamps, (ii) poor quality pipe joints, (iii) spaghetti connections using poor quality coil pipes, (iv) invisible leaks in most of pipes and fittings, (v) several connections under one registered connection, and (vi) bypass line consumption. Through appropriate interventions to address these issues, the Manikdi pilot project reduced the physical losses from 53% in March 2006 to 14% in January 2007, along with increasing water pressure and improving meters and meter reading in the pilot area. Similarly, the length of distribution network pipes increased from 2.5 kilometers (km) to 4.6 km, spaghetti connections reduced from 418 to zero, and average hours of supply increased from 4.8 hours to 24 hours in the pilot area.³⁶ Through the Manikdi pilot study, some essential data have been collected and adopted in the design of the Project, including (i) actual water demand at the household level, (ii) tariff collection challenges and improvement, (iii) technical improvement options for water leaks, and (iv) social mobilization methodology.

60. **Plumbers' Training.** During the rectification activities in Manikdi, it became clear that majority of the *mistries* (plumbers) in Dhaka have little understanding of the required methodologies and tools for proper pipe installation and maintenance, and that training the plumbers in this area is greatly needed. The Manikdi pilot project trained more than 600 plumbers working in the DWASA service area to equip them with required skills in installing and maintaining the transmission and distribution networks. Since the Project will need a significant number of quality plumbers to carry out the proposed rehabilitation and optimization of supply pipelines, as well as to maintain the network in future, having skilled plumbers would help to ensure the successful implementation of the Project.

61. **Community Involvement and Awareness Campaign.** Community sensitization was carried out with local social workers and technical workers through public meetings, street meetings, and dialogue in individual houses as part of the project preparatory TA. During these meetings the purpose of the Project, need for repairs, benefits of 24-hour supply, and the need for the households to improve their plumbing system to reduce losses were stressed. All households in the pilot area were trained in reading the water meter, calibrating the meter, and understanding the water bills. Such extensive community involvement through this awareness campaign was found to be instrumental in the success of the Manikdi pilot project. As such, this has been included as a core component of the proposed Project.

3. Project Investment Plan

62. The project is estimated to cost \$212.7 million, including taxes and duties of \$16.1 million (Table 1). The cost estimates are presented in more detail in Appendix 6 (detailed cost estimates is in Supplementary Appendix C).

³⁶ Details on the Manikdi pilot project are in Supplementary Appendix K.

Table 1: Project Investment Plan
(\$ million)

Item	Amounts
A. Base Cost ^a	
Part A: Distribution System and Quality Improvement	160.4
Part B: Capacity Building and Institutional Strengthening	8.3
Part C: Project Management and Implementation Support	17.1
Subtotal (A)	185.8
B. Contingencies ^b	23.2
C. Financing Charges During Implementation ^c	3.7
Total	212.7

^a In mid-2007 prices. Includes taxes and duties of \$16.1 million. Includes resettlement cost under preconstruction heading in the detailed cost estimates.

^b Physical contingencies computed at 5% for total civil works, material, and equipment costs. Price contingencies for parts A to D computed at 1.2% on foreign exchange costs and 6.0% on local currency costs.

^c Includes interest during construction. Interest during construction on foreign exchange cost has been computed at 1% for Special Funds resources,

Source: Asian Development Bank estimates.

4. Financing Plan

63. The Government has asked ADB to provide a loan equivalent to SDR95,530,000 (\$150 million equivalent) from its Special Funds resources to finance the Project. The Government will finance the balance of the cost, \$62.7 million. ADB will finance the costs of civil works, materials, equipment, survey, safeguard compliance support, training, consulting services, project O&M, and financial charges during implementation. The Government counterpart funds will be used for financing taxes and duties, resettlement costs, land acquisition, and part of the civil works.

64. The loan will have a term of 32 years, including a grace period of 8 years and an interest charge of 1.0% per annum during the grace period and 1.5% per annum thereafter. The Borrower will be the People's Republic of Bangladesh, and the proceeds will be relend to DWASA through a subsidiary loan agreement with terms and conditions acceptable to ADB. Relending terms will include a repayment period of 20 years, including a 5-year grace period, and interest of 5% per year. The Government will assume the foreign exchange risk. A summary of the financing plan is in Table 2; the detailed financing plan is in Appendix 6.

Table 2: Financing Plan
(\$ million)

Source	Foreign Exchange	Local Currency	Total Cost	Percent
Asian Development Bank (ADF)	35.4	114.6	150.0	70.5
Government of Bangladesh	0.0	62.7	62.7	29.5
Total	35.4	177.3	212.7	100.0

ADF = Asian Development Fund.

Sources: Government of Bangladesh and ADB estimates.

5. Project Management

65. As the EA, DWASA will be responsible for the overall management, supervision, and execution of the Project. A PMU will be established and will consist of one full-time project director in the rank of Deputy Managing Director (DMD) or chief engineer or additional chief engineer. In addition, there will be three dedicated deputy project directors. The deputy project

director (finance) will be recruited from outside of DWASA through competitive selection process. The other two deputy project directors, who will head the technical eastern zone and the technical western zone, will be the rank of the superintending engineers or above. The project director and the three deputy project directors will be appointed exclusively to the Project. Four executive engineers will assist the deputy project directors in managing the works under them. The PMU will be responsible for all day-to-day management of the Project, including but not limited to (i) preparing the overall project implementation plan and detailed work program; (ii) providing overall monitoring and guidance on implementation of works under the Project; (iii) tendering and executing all contracts; (iv) monitoring and supervising all project management activities; (v) preparing necessary project progress and project completion reports; and (vi) ensuring full compliance with the ADB's resettlement, environmental, and other safeguards issues and policies.

66. Project coordination units (PCU) will be established in the four project zones, each headed by the responsible executive engineer. The PCUs will be responsible for liaising and coordinating with the contractors, the D&M consultants, NGOs, and other stakeholders on all day-to-day implementation of project activities under the concerned zones. The project implementation arrangements are in Appendix 7. To strengthen the PCUs in conducting these activities and addressing their day-to-day O&M issues, DWASA will assign additional staff, for the project period.

67. An inter-ministerial project steering committee (PSC), chaired by the secretary of LGD, will be established to provide policy guidance and overall coordination of project implementation. Its membership will include the managing director, DWASA; project director of PMU; representatives from Dhaka City Corporation, Economic Relations Division and the Finance Division of MOF, Planning Commission; the Implementation Monitoring and Evaluation Division, RAJUK (the capital development authority); Ministry of Environment and Forestry, Ministry of Housing and Works, Ministry of Home Affairs. The PSC will hold its first meeting within 3 months of loan effectiveness, and will meet at least twice annually thereafter, to coordinate and resolve any issues in project implementation. Minutes of its meetings will be forwarded to ADB for information.

6. Implementation Period

68. The Project will be implemented over 6 years, from January 2008 to December 2013. The implementation schedule of the Project is in Appendix 8.

7. Procurement

69. Procurement of all goods and services to be financed under the Project will be carried out in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time). All civil works contracts estimated to cost the equivalent of \$1 million or more will be procured through international competitive bidding (ICB). Civil works contracts estimated to cost less than \$1 million will be procured using national competitive bidding (NCB). To the extent practicable, goods will be grouped into procurement packages larger than \$500,000 to be suitable for ICB procedures. Goods that cannot be grouped into larger contracts and are estimated to cost less than \$500,000 per contract will be procured through national competitive bidding. A third-party, pre-shipment inspection provision will be adopted to ensure quality of goods and equipment. The feasibility of community contracting will be examined on a case-by-case basis for slum and/or bulk water supply and other community-level works not exceeding \$10,000 in value, and will need pre-fact approval by ADB. NCB procedures applicable to the Project are specified in

the Government's *Public Procurement Act 2003*, the Procurement Plan (Appendix 9) and the Loan Agreement. Miscellaneous minor goods expected to cost less than the equivalent of \$100,000 will be purchased using shopping procedures.³⁷ Any necessary modifications or clarifications to Government's procedures will be recorded in the legal document. NCB packages valued at more than \$100,000 each will be subject to prior review by ADB. The PMU will ensure that procurement complies with the applicable procedures. Specifically, the PMU will (i) determine bid packages and propose procurement methods, as approved by ADB; (ii) prepare detailed material lists and specifications; and (iii) evaluate bids and award contracts.

70. The PMU will update annually the procurement plan (Appendix 9), which details indicative packages to be funded under the Project, and submit it to ADB for approval. The contract packages, especially for component A, have been designed according to the water supply zones, incorporating lessons learned from Manikdi pilot works, as well as past projects implemented by ADB and other external partners in Bangladesh.

8. Consulting Services

71. Consultants will be selected and engaged under the Project in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). An international consulting firm will be engaged as the design and managing consultants (D&M) (183 person-months of international and 664 person-months of national experts) following ADB's quality- and cost-based selection (QCBS) procedures. The D&M consultants, who will be based in Dhaka, will assist the PMU in managing the Project, preparing the detailed design, supervising the works, and ensuring the technical quality of design and construction. The D&M consultants also will conduct the feasibility study for future water source development, and will prepare preliminary design and tender documents.³⁸

72. Similarly, one international consulting firm will be engaged as financial and capacity building consultants (FCB) (80 person-months of international and 390 person-months of national experts) following ADB's QCBS procedures. For better coordination and implementation, the FCB consultants will conduct and be responsible for implementing all activities outlined in component B of the Project, in particular: (i) preparing and providing operational and technical training to DWASA staff; (ii) providing corporate financial planning, financial reforms, and management advisory assistance to DWASA; and (iii) conducting public awareness and demand control, as well as resettlement implementation activities. The FCB consultants will engage NGOs to manage parts of the demand control, community awareness program, and resettlement implementation works (with prior approval of ADB). They also may engage professional media firms to conduct the public outreach programs and media campaigns. ADB will review and approve the terms of such engagements before they begin. An international consulting firm (6 person-months of international and 36 person-months of national experts) also will be engaged under ADB's QCBS procedures as the project performance monitoring and evaluation (PPME) consultants to conduct project performance monitoring (Appendix 10).

³⁷ Shopping is a procurement method based on comparing price quotations obtained from a minimum of three suppliers (in the case of goods) or contractors (in the case of civil works) to ensure competitive prices. It is an appropriate method for procuring readily available off-the-shelf goods or standard specification commodities of small value, or simple civil works of small value.

³⁸ To expedite implementation, the Government requested advance action for the recruitment of consultants. Engagement of consultants is expected to advance up to the stage of technical proposal evaluation. The Government was informed that approval of advance contracting does not commit ADB to finance the Project.

73. In addition, a performance-based management contract (PBMC) will be awarded to handle outsourced O&M operations (under component B-1 after the rehabilitation work is completed) on a pilot basis for one of the four zones. For the recruitment of the PBMC, ADB's QCBS procedures will be followed, possibly with fewer short-listed bidders than the six mandated under ADB's applicable guidelines, based on experience. Details on the PBMC are in Appendix 11.³⁹

9. Disbursement Arrangements

74. Disbursements of the loan proceeds will be in accordance with ADB's *Loan Disbursement Handbook* (2007, as amended from time to time). An imprest account will be opened at the Bangladesh Bank in the name of DWASA. The account will be established, managed, and liquidated in accordance with ADB's *Loan Disbursement Handbook*. The imprest account ceiling will be 10% of the loan or the forecast expenditure for the next 6 months, whichever is lower. ADB's statement of expenditures procedures will be used to reimburse, replenish and liquidate the imprest account for eligible expenditures not exceeding \$100,000 per payment.

10. Accounting, Auditing, and Reporting

75. The Government and DWASA will maintain records and accounts to identify all goods and services financed by the loan proceeds. The PMU will be responsible for maintaining the records, and will submit annual accounts and financial statements to MOF and ADB. The Government will ensure that accounts and financial statements are audited annually, in accordance with sound accounting principles, by independent external auditors acceptable to ADB. DWASA will provide ADB, not later than 6 months after the close of each fiscal year, certified copies of audited accounts and financial statements, as well as the report of the auditor. The imprest account and statement of expenditure records will be audited annually and a separate audit opinion will be provided.

76. The PMU will prepare quarterly progress reports and submit them to ADB and LGD within 20 days of the end of the applicable period. The reports will be prepared in a format acceptable to ADB and will include (i) project progress in each zones and components, (ii) the status of institutional development activities, (iii) delays and problems encountered and actions taken to resolve them, (iv) compliance with loan covenants, and (v) expected progress during the next 6 months. Within 6 months of the Project's physical completion, DWASA will prepare and submit to ADB through the Government a project completion report, including costs and compliance with loan covenants.

11. Anticorruption Policy and Governance Measures

77. ADB's *Anticorruption Policy* (1998, as amended to date) was explained to and discussed with the Government and the EAs. Consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate, directly or through its

³⁹ A two-stage procedure is proposed. The first stage will be for the preparation of a short list of well-qualified potential bidders among those who submitted expressions of interest in response to an advertisement. The short-listed companies or consortia will then be invited to submit second-stage proposals containing detailed technical plans for the improvements to and operation of the water supply and sewerage systems with financial proposals in line with the request for proposals documents. More details of the proposed procedures are in Appendix 11. With ADB assistance, the attached TA consultants will develop the respective set of requests for proposals and draft contract documents for the PBM modes based on lessons from global experiences with similar contracting approaches.

agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the Program. To support these efforts, relevant provisions of ADB's *Anticorruption Policy* are included in the loan regulations and the bidding documents for the Program. In particular, all contracts financed by ADB in connection with the Program shall include provisions specifying the right of ADB to audit and examine the records and accounts of the EAs and all contractors, suppliers, consultants, and other service providers as they relate to the Program.

78. The Project incorporates several other measures, in addition to the standard ADB requirements, to deter corruption and increase transparency. The Project will (i) build the EA's capacity to comply with ADB and Government procedures, to be outlined in the Project Administration Manual during the early stage of the implementation; (ii) establish a project website to disclose information about project implementation; and (iii) establish a grievance redress mechanism to ensure greater accountability. The project website will provide updated, detailed information on project implementation. For example, the website will include procurement-related information, such as the list of participating bidders, name of the winning bidder, basic details on bidding procedures adopted, amount of contract awarded, and the list of goods and/or services procured. The grievance redress mechanism will be set up to receive and resolve complaints, as well as to act upon stakeholders' reports of irregularities on project-related matters, including grievances concerning resettlement. The EA will widely publicize the existence of this mechanism to ensure that stakeholders are aware that a venue is available to address concerns or grievances relating to fraud, corruption, abuse, and any other aspects of project implementation. In addition, consultants acceptable to the ADB will undertake an annual performance audit on physical and financial performance through the attached TA (Appendix 12).

12. Project Performance Monitoring and Evaluation

79. The PMU will ensure that a project performance monitoring and evaluation (PPME) acceptable to ADB is carried out to (i) examine the Project's technical performance, (ii) evaluate the delivery of planned facilities, (iii) assess the achievement of the project objectives, and (iv) measure the Project's social and economic benefits. The PMU and D&M consultants, in consultation with stakeholders and ADB, will develop a set of PPME indicators at the start of the Project. Indicators might include the number of household water connections, the number of participants in awareness campaigns, incidence of waterborne diseases, volume of water produced, volume of unaccounted-for water, and billing and collection efficiency.

80. The PMU will conduct baseline physical and socioeconomic surveys. It will submit a detailed implementation plan for monitoring performance and for preparing benchmark information for ADB's review and concurrence within 9 months of loan effectiveness. The PMU will prepare annual PPME reports, which will be submitted to ADB throughout project implementation. Monitoring of implementation performance will integrate physical and financial aspects. During and after project implementation, the PPME consultants will assist the PMU in measuring the beneficial impacts, and in assessing whether the project facilities are managed efficiently and the benefits reach the targeted groups.

13. Project Review

81. ADB, with the Government and DWASA, will jointly review project progress at least twice a year. In addition to regular reviews, ADB will undertake a midterm review within 36 months of loan effectiveness. These reviews will include a detailed evaluation of the project scope, implementation arrangements, and achievement of scheduled targets. Further, they will assess

progress on project implementation activities, institutional development, and performance of consultants and DWASA.

IV. TECHNICAL ASSISTANCE

82. A TA grant will be provided for advisory assistance to the Government in improving and strengthening the management and operation of urban water supply and sanitation services. This will include assistance to LGD and DWASA in preparing and implementing key policy reforms. The TA also will assist DWASA in conducting the necessary technical preparation for, introducing optimization measures in the existing water supply sources; and in supporting the smooth start-up of project implementation (Appendix 12 and details is in Supplementary Appendix M).

83. **Financing Plan.** The total amount of the TA is estimated at \$3,125,000. ADB will finance \$2,500,000 on a grant basis from ADB's Technical Assistance funding program. The Government will provide the remaining financing, equivalent to \$625,000, in terms of counterpart staff and other support facilities.

84. **Objectives and Purpose.** The objective of the TA is to assist the Government (LGD) and DWASA in meeting the policy reforms being proposed under the Program, optimizing the existing water supply sources, and ensuring smooth start of project implementation. The TA outcomes will include (i) increased autonomy of, and strengthened governance of DWASA, (ii) development of a strategic plan for effective demand-side management, (iii) improved financial management capacity of DWASA, (iv) detailed analyses of and recommendations on organizational and tariff reforms required by the Program, (v) pilot program to assess the merits of trench-less technology in rehabilitation works versus open-trench technology, (vi) preparation of the performance-based management contract and the request for proposals for one of the project zones as outlined under subcomponent B1 of the Project, (vii) introduction of optimization measures in the existing water supply sources, (viii) studies to establish the independent regulatory entity for the urban water sector, and (ix) a feasibility study of the long-term water supply source augmentation option for Dhaka city from surrounding river(s).

85. **Implementation Arrangements.** For the TA, the EA will be LGD and the IA will be DWASA, but the team will be based at the DWASA office. DWASA will provide an executive engineer or above as the TA coordinator and three counterpart staff to work with the consultants. ADB will engage a qualified consulting firm and individual consultants (for a total of 131 person-months) to implement the TA. Additional individual consultants may be recruited as necessary to strengthen the process. The TA will be undertaken intermittently over 3 years, from January 2008 to January 2011. Some of the outputs (including studies, recommendations, draft rules and regulations, draft business plans, and draft operations manual) are expected to support LGD, DWASA, and other key stakeholders in fulfilling the policy actions under the program and project loans. To facilitate implementation, the TA will use an advance payment facility for equipment; training, seminars, and workshops; surveys; and miscellaneous administration and support costs.

V. PROJECT BENEFITS, IMPACTS, ASSUMPTIONS, AND RISKS

A. Poverty Reduction and Social Development

86. The project loan is expected to improve the management and operation of DWASA and increase its capacity to serve the population of Dhaka. The socioeconomic survey undertaken

during project preparation shows that slum households generally are not supplied directly with DWASA water. According to the survey, in slum areas (similar to other un-served areas), water is supplied through hand tube wells (HTW) (30%), small-scale operators (20%), long-coil pipes (20%), and vendors (13%). More than 55% of households in the slum areas reported spending Tk306, or 6% of their monthly income, on average to treat diarrhea. The Project will bring water to several poor neighborhoods at the connection point. Beyond the connection point, other development partners (including DFID) and local NGOs will implement their programs to connect the poor to the water supply. Through these, poor households in DWASA's coverage area will be provided with a constant and pressurized supply of higher-water quality. Poverty impact analysis shows that the Project will significantly reduce water costs, water collection time for women, and morbidity and associated health care costs. It also will improve public health where the poor live. This will increase time in productive and income-generating activities. Project construction and operation will generate employment opportunities for local people. The Project will ensure that (i) children are not employed, (ii) appropriate facilities for workers and their families are provided at construction campsites, and (iii) men and women are paid the same amount for work of equal value. The summary poverty reduction and social strategy is in Appendix 13. The Project is also expected to benefit women through, for example, reduced burden in water collection, better health, and jobs.⁴⁰

B. Social and Environment Safeguards

87. **Social Safeguards.** The Project is designed to minimize land acquisition and resettlement by (i) continuing the practice in Dhaka of burying new water pipes in roads and avoid the need to acquire land, (ii) using trench-less technology where possible in relining pipes and installing new pipes to limit the excavation of trenches and reduce disturbance of residents and business, and (iii) locating new facilities (overhead reservoirs and chlorination units) on vacant government land wherever possible. Anticipated impacts are limited to (i) loss of income by shops and other businesses if trenches and excavated soil make access difficult for customers, (ii) loss of income by hawkers if they have to move from their normal location, and (iii) loss of land if some private land has to be acquired for some new overhead reservoirs. Losses of income are expected in minor roads, because work is allowed on major roads only at night when most businesses are closed to reduce traffic congestion. The overall impacts are to be minimized further through careful selection of sites and alignment during detailed design implementation. To ensure compliance with the policy and requirements on involuntary resettlement of the Government, EA, and ADB, a resettlement framework was prepared based on the EA's national Acquisition and Requisition of Immovable Property Ordinance (ARIPO), 1992 the resettlement policy framework, and ADB's *Involuntary Resettlement Policy* (1995). A summary of the resettlement framework is in Appendix 14 and a full version is in Supplementary Appendix D. Resettlement plans will be prepared for subzones based on the framework. Resettlement plans will ensure that socioeconomic conditions, needs, and priorities of vulnerable groups are identified; and that land acquisition and resettlement does not disadvantage vulnerable groups. A short resettlement plan was prepared for a sample subzone (Supplementary Appendix E).

88. During program development and design, no impact on indigenous peoples were identified. The Program will result in environmental and public health benefits to the whole program population. The likelihood the Program affecting indigenous peoples is small. Any likely

⁴⁰ The gender action plan, which ensures that gender issues are addressed, women benefit equally from the DWSSDP, and interventions avoid gender bias, is in Supplementary Appendix J.

impacts are addressed by resettlement plans. Further, no permanent land acquisition is envisaged.

89. **Environmental Safeguards.** The Program is designed to maximize environmental and public health benefits. The Initial Environmental Examination (IEE: summarized in Appendix 15 with the full IEE in Supplementary Appendix F) and the environmental assessment of the policy matrix (Supplementary Appendix G) conducted for the Program show that net environmental benefits are positive and large. The main beneficiaries of the improved network are Dhaka City residents, who will be provided with a constant and pressurized supply of higher-quality water, which serves a large proportion of the population. This will improve the quality of life and raise standards of individual and public health as improvements in hygiene reduce diseases from poor sanitation. It also will result in social benefits from reduced time spent on water collection, increased time for productive and income-generating activities, and reduce expenditures on health care due to waterborne diseases.

90. During program development, measures were included in program design to mitigate potential negative environmental impacts. These included (i) adopting trench-less technology to the extent possible to reduce excavation and disturbances to residents and businesses, (ii) continuing the practice of burying water distribution pipelines within roads and locating new facilities on vacant government-owned land to avoid land acquisition, and (iii) prohibiting the use of asbestos cement pipes to avoid potential health risks from inhalation of asbestos fibers. The remaining negative impacts relate to construction and O&M, whose potential impacts on the physical environment and people will be mitigated by a range of identified measures. These include (i) reducing waste disposal by finding beneficial uses for waste soil and stone, (ii) reducing dust by covering soil and sand when stored on site or carried on trucks, and (iii) planning work to minimize disruption on traffic and communities. The IEE identified environmental assessment and review procedures to ensure that the implementation of the subcomponents comply with the Government and ADB environmental guidelines and requirements in the design and implementation of the Program.

C. Economic and Financial Analysis

1. Economic Analysis

91. The economic internal rate of return (EIRR) was calculated for the project loan and some cost implications of the policy actions. The overall EIRR is 16.7%, which exceeds the opportunity cost of capital of 12% per year. The EIRR also were subjected to a sensitivity analysis of key variables. The key variables tested were (i) a 20% increase in capital costs, (ii) 20% underachievement in water quality improvement, (iii) 20% underachievement in water pressure increase. Sensitivity analysis indicates that the EIRR for the project loan is robust under most conditions. The detailed economic evaluation and sensitivity analysis are available (Supplementary Appendix H).

2. Financial Management

92. Using financial management assessment questionnaires, interviews and financial management assessments were undertaken during the project preparatory TA to evaluate the EA's ability to undertake and fulfill ADB's fiduciary requirements for the project components. The EA's financial management needs to be strengthened, and will be acceptable with support from corporate financial planning and management consultants. Project implementation delays will

be minimized through extensive support from project management and design and supervision consultants, who will be familiar with ADB procedures and requirements.

3. Financial Sustainability

93. Financial projections were prepared for DWASA based on the financial action improvement plan. Financial projections also assume better cash flow management, including improved user charge collection efficiency to be achieved under the Project and the Program. From FY2018, DWASA is expected to fully recover its costs.

94. Financial variability of the project loan was assessed in real terms using constant 2006 prices. The project cost estimates and financial projections in nominal terms were converted to real terms by adjusting for the projected effects of foreign and domestic inflation and currency fluctuations. Incremental costs and benefits were derived by evaluating the financial position of the EAs under with- and without-project scenarios. The financial internal rate of return (FIRR), computed on an after-tax basis, was 3.99%. This compares favorably with the weighted average cost of capital, also computed on an after-tax basis, of 2.33% on an aggregate basis. All parts of the project loan are considered financially viable and sustainable. Sensitivity and risk analysis indicates that the FIRR is sensitive to delays in each item of the implementation of financial improvement action plan. Detailed financial analysis is available (Supplementary Appendix I).

D. Risks and Assumptions

95. Rehabilitation of the existing pipeline, the major component of the Project, carries risks. Although DWASA maintains digital maps of its pipelines and has general ideas of where prevalent illegal and poor connections might be, the real extent only emerges at the time of excavation. Though the Project is based on conservative assumptions, the required works and costs to rehabilitate and optimize the system might exceed the original estimate. This risk will be mitigated by careful preparatory works based on lessons learned from the pilot scheme, and substantial engineering consulting support to DWASA during project implementation.

96. Despite firm commitment of the Government, resistance to the reforms program might arise from outside and within (for example, from unions). Tariff adjustment may face opposition, undermining political support to the reform. The reforms program is underpinned by the Partnership Framework between the Government and major development partners to support the Government initiative in a coherent manner. To minimize the social impact and sustain broad public support) frequent dialogue with other ministries addressing wastewater and water resources management, the tariff adjustment will be carried out gradually with careful affordability study and communication programs with involvement of community-based organizations (CBOs) and NGOs.

VI. ASSURANCES AND CONDITIONS

A. Specific Assurances

97. In addition to the standard assurances, the Government, LGD, and DWASA have given the following assurances, which are incorporated in the legal documents:

98. For the program and investment Loan:

The Government will promptly adopt the policies and take the actions as specified in the policy letter and the policy matrix, and ensure that such policies and actions continue in effect during and after the DWSSDP period.

99. For the investment loan:

- (i) The Government will provide counterpart funds for project implementation on time. The Government will make timely submission of annual budgetary appropriation request and ensure prompt disbursement of appropriated funds during each year of project implementation.
- (ii) The Government is fully committed to the Project and will ensure that all its ministries, agencies, and divisions involved in the implementation of the Project, including the local government authorities, give their full cooperation to ensure smooth implementation of the Project. Specifically, the Government will ensure and will cause the Dhaka City Corporation to give full cooperation in issuing any licenses, permits, or approvals required in connection with the laying of pipes, road cutting, and road resurfacing works within the project zones, as required under component A of the Project.
- (iii) Within 9 months of the effective date, DWASA will create a Project website to disclose information about various matters on the Project, including procurement. With regard to procurement, the website will include information on the list of participating bidders, name of the winning bidder, basic details on bidding procedures adopted, amount of contract awarded, and the list of goods and/or services procured.
- (iv) Within 9 months of the effective date, DWASA will prepare a grievance redress mechanism, acceptable to ADB, and establish a task force at the DWASA to receive and resolve complaints and/or grievances or act upon reports from stakeholders on misuse of funds and other irregularities, including grievances due to resettlement. The task force will (a) make public of the existence of this grievance redress mechanism, through public awareness campaign; (b) review and address grievances of stakeholders of the Project, in relation to either the Project, any of the service providers, or any person responsible for carrying out any aspect of the Project; and (c) proactively and constructively responding to them.
- (v) Within 9 months of the Effective Date, DWASA will reactivate the existing training center located at DWASA by filling in all the vacant positions with qualified training people from outside DWASA.
- (vi) The Government and DWASA will ensure that all land and right-of-way required for the Project will be made available in a timely manner and adequate compensations have to be paid to affected people prior to dispossession of assets and any civil works contract's award. Any involuntary resettlement will be carried out in accordance with the resettlement framework (RF) agreed upon between the Government and ADB, and ADB's *Involuntary Resettlement Policy* (1995). A resettlement plan (RP) will be prepared for each sub-zone involving land acquisition or resettlement and will be submitted to ADB for review and approval prior to any related civil works contract's award. The RP, that has been prepared and agreed by the Government and ADB, for the sample sub-zone, will be updated and provided to ADB for review and approval following detailed design and prior to the awarding of civil work contracts' award. The draft RPs and

draft updated RPs will be disclosed to affected people prior to submission to ADB for review and approval.

- (vii) The Government will assure that the design, construction, operation, and implementation of all project facilities will be carried out in accordance with the IEE and the environmental assessment and review procedures in the IEE agreed upon the Government and ADB, and complies with the Government's environmental laws and regulations and ADB's *Environment Policy* (2002). The Government will ensure that any adverse environmental impacts arising from the construction, operation, and implementation of project facilities will be minimized by implementing the environmental mitigation and management measures, and other recommendations specified in IEE. The Government will ensure environmental requirements will be incorporated in bidding documents and civil works contracts.
- (viii) Although the Project does not envisage any adverse impact on indigenous peoples, the Government and DWASA will ensure the Project will be prepared and implemented in accordance with ADB's *Policy on Indigenous Peoples* (1998).
- (ix) To ensure that women benefit equally from the Project and interventions avoid gender bias, the Government and DWASA will ensure that the Project will be carried out in accordance with ADB's *Policy on Gender and Development* (1998) and the gender action plan that has been prepared and agreed upon by the Government and ADB.
- (x) The Government and DWASA will ensure that the civil works contractors comply with all applicable labor, health, and safety laws and regulations of Bangladesh and, in particular, (a) do not employ child labor for construction and maintenance activities, and (b) provide appropriate facilities (latrines, etc.) for workers at construction sites. The Government will require contractors not to differentiate wages between men and women for work of equal value. The Government will ensure that specific clauses will be included in bidding documents to ensure adherence to these provisions, and that compliance will be strictly monitored during project implementation.
- (xi) The Government and DWASA will ensure that financial management capacity of DWASA is maintained, strengthened with qualified staff with proper education and job experience, and allow those staff to actively attend training and enhance their capacity.
- (xii) Within 9 months from the effective date, the DWASA will conduct initial baseline physical and socioeconomic surveys and submit a detailed implementation plan for monitoring performance and for preparing benchmark information, which will be submitted to ADB, for review and concurrence. Throughout project implementation period, DWASA will prepare annual PPME reports and submit them to ADB.

B. Conditions for Loan Effectiveness

100. Prior to loan effectiveness, the following will have been completed:

- (i) The Government and DWASA will have established a PMU within DWASA and the project director, the three deputy project directors, and four executive engineers will have been appointed in accordance with paragraph 65 of this document.

- (ii) The Government will have established an inter-ministerial steering committee, in accordance with paragraph 67 of this document.
- (iii) A draft Subsidiary Loan Agreement, in the form and substance acceptable to ADB, shall have been submitted to ADB.

VII. RECOMMENDATION

101. I am satisfied that the proposed loans would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the following:

- (i) the loan in various currencies equivalent to Special Drawing Rights 31,843,000 to the People's Republic of Bangladesh for the Dhaka Water Supply Sector Development Program, from ADB's Special Funds resources, with an interest charge at the rate of 1.0% per annum during the grace period and 1.5% per annum thereafter; a term of 24 years, including a grace period of 8 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft Loan Agreement presented to the Board;
- (ii) the loan in various currencies equivalent to Special Drawing Rights 95,530,000 to the People's Republic of Bangladesh for the Dhaka Water Supply Project, from ADB's Special Funds resources, with an interest charge of 1.0% per annum during the grace period and 1.5% per annum thereafter; a term of 32 years, including a grace period of 8 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
- (iii) the provision of technical assistance not exceeding the equivalent of \$2,500,000 on a grant basis to the Government of Bangladesh for the Management Support for Dhaka Water Supply and Sewerage Authority.

Haruhiko Kuroda
President

15 November 2007

PROJECT DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
Impact Sustained economic growth and public health improvement in urban centers in Bangladesh, particularly in Dhaka Metropolitan Area	3 years after project completion (2016): <ul style="list-style-type: none"> • Maintain current economic growth at 6.5% • Waterborne diseases reduced by 20% in Dhaka Metropolitan Area 	<ul style="list-style-type: none"> • Government census and statistical records • ADB and development partners' reports 	Assumption <ul style="list-style-type: none"> • Macroeconomic and political stability Risks <ul style="list-style-type: none"> • Natural disaster • High in-migration
Outcome Provision and sustainable operation of improved water supply services through rehabilitation and improvement of management and operation in the urban water supply institutions, particularly in Dhaka	By the end of the Program (2013): <ul style="list-style-type: none"> • Strengthened governance and organizational structure of DWASA • Improved financial management and operational capacity of DWASA, • Improved access to water supply for more than 8 million people in the project areas • Improved water quality (meeting WHO guidelines) and 24-hour pressurized supply for about 157,000 service connections in the project area • DWASA fully recovering costs for its operation and maintenance after adjusting inflation • Collection efficiency of DWASA maintained above 90% 	<ul style="list-style-type: none"> • New circular or decrees on DWASA governance and responsibilities • Full financial audit reports with legal opinion • DWASA customer and MIS records • PPME reports • ADB loan review mission reports 	Assumptions <ul style="list-style-type: none"> • Government and DWASA keep its commitment and implement Institutional, governance and tariff reforms • Skilled human resources are engaged and remain in place • Willingness of the community to pay Risk <ul style="list-style-type: none"> • Lack of political will to implement tariff, institutional, and governance reforms
Outputs a. Increased autonomy, improved local governance and strengthened local institutional management framework (program component 1)	By the end of the Program (2013): <ul style="list-style-type: none"> • New administrative order to decentralize and give broader administrative and financial autonomy to the <i>pourashavas</i> and WASAs on (i) O&M, (ii) billing and collection, and (iii) tariff setting • Study on Water Supply Regulator • 5-year capacity building program for pourashavas water section staff and WASA staff • New DWASA guidelines on the water meters prepared and operational • New rules and regulations on O&M and staff appropriation, to be reflected in revised organization chart (organogram) • Streamlined manuals for quality assurance and control on tubewell installation 	<ul style="list-style-type: none"> • PPME reports • ADB loan review mission reports 	Risks <ul style="list-style-type: none"> • Frequent change in the political environment and DWASA's management • Households are not willing to connect or pay • Financial, institutional, and governance reforms are not sustained at all levels of DWASA's management and staffs • Change in key DWASA staff
b. Improved sector strategy and plan (program component 2)	<ul style="list-style-type: none"> • Signed MOU on water supply and sanitation sector development partnership arrangements with development partners • Water conservation program 	<ul style="list-style-type: none"> • Signed MOU by LGD and development partners' representatives 	Assumption <ul style="list-style-type: none"> • Other development partners continue their assistance to DWASA

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
c. Improved financial sustainability in urban water supply sector (program component 3)	<ul style="list-style-type: none"> Tariff structure reformed to cover O&M after adjusting inflation WASA's budget prepared on actual expenditure needs Debt repayment plan approved and fully adopted 	<ul style="list-style-type: none"> DWASA and pourasahava MIS records Financial audit reports ADB loan review mission reports 	Assumption <ul style="list-style-type: none"> Continued commitment of Government and public support to tariff adjustment
<p>d. Strengthened DWASA organizational structure and financial management (program component 4)</p> <p>d1. Strengthened institutional, governance and managerial structure and capacity of DWASA</p> <p>d2. Improved financial management capacity and performance of DWASA</p> <p>d3. Reduced illegal connections</p>	<ul style="list-style-type: none"> Adoption of the new DWASA organization chart Appointment of a new DWASA managing director, as per the DWASA Act 1996, with at least 3-year tenure Full approval of the rules and regulations under the 1996 DWASA Act Official circular on the delineation of responsibilities between the Board and the managing director 5-year business plan and operational manual for DWASA (2009–2013) prepared and approved Streamlined strategy for private sector participation or outsourcing of O&M prepared and approved 5-year tariff adjustment projection prepared Anticorruption ethics committee established and staffed in DWASA Improved consumer grievance mechanism in place Based on World Bank's diagnostic analysis report, DWASA produces financial management improvement plan with time-bound action Past accounts converted to accrual-based double-entry accounting system Baseline survey on illegal connections Renewed guidelines on the installation of water connections and meters Detection and reduction of illegal connections 	<ul style="list-style-type: none"> DWASA customer and MIS records PPME reports ADB loan review mission reports Financial audit reports Monitoring of program loan tranches release conditions DWASA, MIS records Financial Audit reports ADB loan review mission reports Baseline survey results Clear decree from LGD regarding utilities responsibility on connection MIS reports 	Assumptions <ul style="list-style-type: none"> Governance, institutional, and financial reforms implemented are sustained with continued commitment of Government Timely program implementation Assumption <ul style="list-style-type: none"> Key staffs trained and remaining in place in DWASA Risks <ul style="list-style-type: none"> Households are not willing to connect or pay Delays in project implementation
<p>e. Improved distribution system and quality control in DWASA (project component A)</p> <p>e1. Rehabilitated and strengthened distribution network</p>	<ul style="list-style-type: none"> Rehabilitation of about 1,536 km of water distribution network Provision of about 1,600 km of tertiary network Rehabilitation of about 157,000 service connections, including installation of new water meters 	<ul style="list-style-type: none"> Bangladesh Pollution Control Board and project environmental monitoring reports DWSSDP quarterly 	Assumptions <ul style="list-style-type: none"> Timely program implementation Counterpart funds made available. DWASA is allowed to provide and replace tertiary

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
e2. Improved water quality and monitoring system	<ul style="list-style-type: none"> • Installation of about 600 bulk water meters and sluice valves • Provision of 14 new and rehabilitation of 24 existing storage reservoirs • Assistance provided to about 20,000 temporarily affected persons (potential maximum) • Water connections and supply points improved for about 2,000 registered slum areas • Provision of about 300 chlorination units at all water supply points • Establishment of two-tier water quality monitoring system • Upgrading of existing water quality laboratory and provision of water quality monitoring equipment 	<ul style="list-style-type: none"> • progress reports • ADB loan review mission reports • DWASA customer and MIS records 	<ul style="list-style-type: none"> • network, household connections, and meter installations • Communities are receptive to awareness and demand control programs • Other development partners continue their assistance to DWASA • Implementing agencies amenable to capacity building
f. Strengthened DWASA capacity and institution (project component B)	<ul style="list-style-type: none"> • Accounting staff trained on and using accrual-based, double-entry accounting system • Pilot of one-zone management contract completed • Customer database established and fully functional • 90% accuracy in billing and payment collection achieved • Receivables minimized to 5 months collection equivalent • Training center rehabilitated • All operational staff trained in O&M procedures • Minimum 80% of plumbers working for DWASA trained • Zone offices strengthened to provide one-stop services to customers 	<ul style="list-style-type: none"> • DWSSDP quarterly progress reports • ADB loan review mission reports • DWASA customer and MIS records • Training modules, guidelines and manuals and record of trainings 	<p>Risks</p> <ul style="list-style-type: none"> • Frequent change in the political environment and DWASA's management • Households are not willing to connect or pay • Delays in project implementation • Change in key DWASA staff • Poor tariff collection
f1. Strengthened financial and operational management capacity of DWASA	<ul style="list-style-type: none"> • Leak detection and other O&M tools procured • All zone distribution network technicians trained on leak detection and emergency response techniques • Water meter testing and repair units established and functional at the zone offices • A mass media campaign through TV, radio, or cinema on water consumption and the importance of correct billing 		
f2. Trained staff and resources for DWASA			
f3. Demand control and public awareness			
g. Project management and implementation support (project component C)	<ul style="list-style-type: none"> • Key consultants short-listed and fielded by January 2009 • Bidding and contract award documents are processed according to manner and timing agreed by the Government and ADB, and civil works and capacity building subcomponents are implemented 	<ul style="list-style-type: none"> • PMU reports • Withdrawal application, disbursement, and contract award records 	<p>Assumptions</p> <ul style="list-style-type: none"> • Timely recruitment of consultants • Key staff with appropriate qualifications and skills are appointed
g1. PMU and management support adequate and			

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
operational g2. Feasibility study of the future water treatment plant completed and tender documents prepared	according to the schedule <ul style="list-style-type: none"> Bidding, detailed design, and RFP documents approved by the Government and ADB on the new WTP Completed technical, environmental, and social safeguards study on the impact of raw water intake improvement solution 	<ul style="list-style-type: none"> Bidding document and detailed design document Publication of raw intake study 	on time.
Activities with Milestones 1. Program preparation 1.1. PMU established and fully staffed by November 2007 1.2. Key consultant teams (D&M and FCBC) appointed by June 2008 1.3. Engineering designs and RFP preparation for network rehabilitation works under component A completed by November 2008 1.4. All other consulting services contracts awarded by December 2008 1.5. Baseline data collection and indicator setting for benefit monitoring and evaluation of all project components completed by December 2008 1.6. Initiate awareness campaign and demand control activities by June 2008 2. Implementation of activities under component A 2.1. Update construction plans and schedules by June 2008 2.2. Initiate land acquisition and resettlement, if any, by December 2007 2.3. Prepare bid documents by October 2008 2.5. Procure equipment and materials—water meters, chlorinators, etc.—by December 2008 2.6. Approximately 1,536 km of water distribution pipelines rehabilitated by 2013 2.7. Approximately 157,000 service connections are upgraded and household meters installed by 2013 2.8. 600 bulk meters and sluice valves are installed by 2011 2.9. 24 existing overhead reservoirs are rehabilitated by 2011 and 14 new reservoirs constructed by 2012 2.10. 300 disinfection units are established by 2010 2.11. Existing water quality laboratory is upgraded by 2010 3. Implementation of activities under component B 3.1. Improvement of financial management and accounting and computerization initiated in DWASA by October 2008 3.2. Operational improvement of zone offices, staff trained by December 2009 3.3. Training of central level DWASA staff initiated by June 2008 3.4. Establishment of PPME by January 2009			Inputs Project Loan: <ul style="list-style-type: none"> ADB: \$150 million equivalent Government: \$62.7 million Program Loan: <ul style="list-style-type: none"> ADB: \$50 million equivalent Piggy-backed TA: <ul style="list-style-type: none"> ADB: \$2,500,000 Government: \$625,000

ADB = Asian Development Bank, D&M = design and managing consultants, DWASA = Dhaka Water Supply and Sewerage Authority, DWSSDP = Dhaka Water Supply Sector Development Program, FCBC = financial and capacity development consultants, LGD = Local Government Division, MIS = management information system, MOU = memorandum of understanding, PPME = project performance monitoring and evaluation, O&M = operation and maintenance, MIS = management information system, pourashavas = peri-urban town, RFP = request for proposal, PMU = project management unit, WASA = water supply and sewerage authority, WTP = water treatment plant.

SECTOR ANALYSIS

A. Urban Water Supply and Sanitation Sector Indicators

1. Of the 135 million people in Bangladesh, 23.5% live in urban areas. The urban population is growing about 2.5% annually, nearly double the national growth rate of 1.3%. More than half of urban population is concentrated in Dhaka and three other metropolitan areas—Chittagong, Khulna, and Rajshahi. Urban services in the towns and cities are generally deficient and the quality of service is poor. Inadequate urban services, including water supply and sanitation, is a severe hindrance to the continued development of urban areas, as well as to the Government's efforts to reduce poverty and improve economic growth in the country.

2. In most towns, groundwater is the source of the municipal piped water supply as well as the private water supply. About 5% of the country's population receives water from stand posts, 15% from public tube wells, 60% from shallow tube wells, and less than 20% from their own house connection for municipal piped water supply. Of the 309 *pourashavas* (*peri-urban town*), only 102 have municipal piped water supply. Water supply operation in the *pourashavas* generally is characterized by (i) limited service hours, (ii) average unaccounted-for water of 33–40%, (iii) low billing and collection rates, and (iv) inadequate tariffs. Further, because of the intermittent supply of electricity, pumps generally run for only 10–12 hours per day, and piped water supply is available to consumers usually for 2–4 hours per day. Urban water quality is extremely poor. Arsenic and bacteriological contamination from water sources in various regions of the country is posing a serious public health risk. Rehabilitation of the existing systems in parallel with investment in provision of supply infrastructure, such as water treatment plants and development of surface sources, is urgently needed in most towns and cities. In most areas, depletion of groundwater resources is also a grave concern, as often observed by the rapid fall of water levels during the dry season below what can be reached with hand pumps.

3. Urban sanitation is a major challenge since 26% of urban households still do not have access to latrines or another form of hygienic sanitation. Sewerage systems are absent in all urban areas except Dhaka, where 20% of the population is served by an expensive sewer network. Inadequate drainage in most of the urban centers aggravates this situation by adding to potential contamination/pollution of drinking water supply. Similarly, only 20% of the households in the urban areas have access to a solid waste collection system.

4. Urban water supply and sanitation (WSS) services are carried out by water supply and sewerage authorities (WASAs) in Dhaka and Chittagong, city corporations, and *pourashava* water supply sections (PWSSs). The Department of Public Health Engineering (DPHE) implements new water supply systems and carries out major rehabilitation programs except in the areas managed by the WASAs. After completion of the works, DPHE hands over the WSS systems to local government institutions (LGIs) to handle operation and maintenance (O&M). In reality, the local DPHE offices also assist the PWSSs with O&M if necessary and possible.

5. The semiautonomous Dhaka Water Supply and Sewerage Authority (DWASA) and Chittagong Water Supply and Sewerage Authority (CWASA) were created under the East Pakistan Ordinance of 1963. DWASA is responsible for the provision, operation, and maintenance of water supply, sanitation, and storm water disposal services to the population of Dhaka city, as stipulated in the Water Supply and Sewerage Authority Act, 1996. In 2005, the population of Dhaka city within the Dhaka Metropolitan Area (DMA) was estimated at 11 million, including 8.6 million within the DWASA service area. DWASA provides an estimated 7.7 million people with water, which is nearly 90% of the people living in the DWASA service area. The remaining 10% are served mostly by private wells abstracting water from the same aquifer under the city. Though the number of employees in DWASA

is high (17 per 1,000 connections), each connection serves approximately 4–5 households, or more than 30 people on average.

6. Population of Dhaka city is growing extremely rapidly. Based on a detailed analysis of available census data and current land use patterns, the population living within the DWASA service area is projected to increase to 21.63 million¹ by 2025, while an additional 4.4 million will be living outside the DWASA service area but within the DMA. A sizeable percentage of people in the DWASA service area live in slums (estimates vary from 15% to 60%). A survey carried out during the program preparation showed that the majority of the people living in slums are indirectly receiving water from DWASA. However, most of vulnerable slum dwellers still do not benefit from DWASA services due to statutory restrictions. However, the Government recently approved a guideline for Dhaka Water Supply (April 2006)² that states DWASA is allowed to extend basic WSS services to slums within its service areas, providing legal connection and introducing formal billing and collections.

7. Groundwater accounts for 82% of water supplied by DWASA. The water is obtained mainly from production tube wells drilled to a depth less than 200 meters below ground. The remaining 18% of DWASA's water is supplied from surface sources after being treated at Saidabad water treatment plant (WTP), which is producing 225 mld (million liter per day) of water.³ Extensive investigations have found that, although arsenic contamination of groundwater is widespread in the country, arsenic levels in the groundwater of Dhaka are low and within permissible limits. Groundwater availability is influenced by seasonal variations resulting from recharge in the upstream catchments. Effectively, all wells in Dhaka have shown a steady decline in the water table, with some at 65–70 meters below surface level. The lower groundwater tables already are causing well failures.

8. While the projected future demand of areas covered by DWASA varies between 2,450 mld and 3,100 mld⁴ in 2025, DWASA's current production level is 1,570 mld. DWASA has carried out various studies and detailed modeling over the years, which clearly indicate that little further abstraction from the groundwater resources is sustainable.⁵ Therefore, Dhaka is expected to face a severe supply shortage by 2015 unless it implements a sustainable supply augmentation plan.

9. The distribution system, consisting of approximately 2500 kilometer (km) of primary and secondary pipes, has been developed on a piecemeal basis over the past two decades. Currently, distribution system losses are estimated at about 40% based on the project preparatory TA consultants report.⁶ To save the highly valued resources, supply higher-quality water, and prepare for any future injection of additional water, the system needs rehabilitation to minimize losses.

B. Institutional, Governance, and Financial Constraints for the Sector

10. **Inadequate Decentralization and Local Governance.** In practice, local governments have not been strengthened adequately for them to respond sufficiently to local urban services needs. This is largely the result of the concentration of urban administrative authority in the office of the pourashava chairperson. Further delegation of power from the pourashava chairpersons to the

¹ ADB. 2007. *Technical Assistance to People's Republic of Bangladesh for Preparing the Dhaka Water Supply Project*. TA 4651 PPTA Final Report. Manila.

² DWASA. 2006. *Guidelines for Water Supply in Dhaka City*. Dhaka (official circular, 18 April).

³ The WTP was constructed under the World Bank-funded Fourth Dhaka Water Supply Project.

⁴ See Supplementary Appendix A: Sector Road Map for details.

⁵ Based on the steady decline in water table at most wells, more than 40% of the production tube wells are expected to be out of service within the next decade.

⁶ The actual losses from the system is a subject of much debate. The pilot project in Manikdi found more than 60% of the water supplied is lost for a variety of reasons.

elected commissioners and the citizen groups will be required to foster greater accountability of elected officials to local residents. Most of the government institutions involved in urban development and service provision at the national and local levels desperately need adequate resources, facilities, and operational capacities to undertake satisfactory planning, coordination, implementation, enforcement, regulation, and monitoring tasks and responsibilities. Capacity building and training of staff, as well as increasing the manpower, in pourashavas is required to complement capital investments in urban development to ensure sustainability and maximize economic benefits, especially in the implementation of urban development programs for urban centers.

11. Institutional and Financing Weaknesses. The pourashavas suffer from a range of staff, training, equipment, and organizational constraints, as well as weak capacity of elected commissioners, local public officials, and community groups. These factors undermine the management of municipal affairs. Improvements are required to enhance the awareness and participation of local stakeholders in urban planning and management (e.g., citizen awareness and participation, women's participation, and integration of the urban poor), and then to improve accountability and transparency (financial accountability and sustainability, and administrative transparency) in the management of local governments. Insufficient finance is a key reason for inadequate infrastructure and services. As long as municipalities remain heavily dependent on the Government for much of their revenues, they will not have an adequate incentive to assume greater financial responsibility. In addition to augmenting local government authority to mobilize revenues, improving the financial management practices at the pourashava and city corporation levels must be prioritized. Property tax is the most important source of local revenue, but the collection efficiency is very low. Government agencies also add to the collection problem by defaulting on their tax payments. On the expenditure side, there is a chronic shortage of funds for O&M of existing assets, as well as long-term financing to meet capital expenditure responsibilities. Financial management also warrants improvement at the pourashava and city corporation level. A relatively low level of budgeting and accounting skills at all levels is a major obstacle to improving employee productivity and expenditure effectiveness.

12. Lack of Regulatory Framework. To ensure better service standards, governance, and institutional environment, a regulatory entity is urgently needed. Policy making, regulation, and service delivery functions must be clearly separated with each assigned to a different entity. For instance, while the central Government departments are responsible for policy development, WSS utilities should be given full responsibility and autonomy to provide water and sanitation services, and the municipalities should own the assets. Meanwhile, the water supply regulatory commission should be responsible for regulating, fixing applicable service standards, setting tariffs, monitoring utility performance, and enforcing compliance. Such a regulatory body is also necessary to set standards and foster private sector involvement, the lack of which has contributed to institutional weaknesses at the national and at pourashava level.

13. Institutional, Governance, and Financial Management Issues in DWASA. DWASA operates within the provisions of the Water Supply and Sewerage Authority Act 1996. According to the act, DWASA should be able to manage its facilities and operate with a high degree of autonomy. However, an essential provision of the act is that when Government financing is being provided to DWASA, or when Government is providing guarantee for finance, all information relating to the concerned scheme will have to be submitted to the Government for approval. Thus, the autonomy of DWASA in practice is constrained by its financial dependence on the Government. Consequently, decisions on almost all day-to-day management issues, such as human resource development, staff hiring and firing, setting of tariffs, staff salaries, have to be sent to the Government for approval. In addition, there are many pending issues with the Government, such as the approval of the rules and regulations and the organogram (organization chart), under the 1996 Act, which hinder DWASA's

institutional, operational, and managerial efficiency and autonomy. Furthermore, the roles and responsibilities of the management and the board are not clearly delineated.

14. The organizational performance of the administrative and financial departments, including recording of consumption and billing is weak and lacks computerized systems for transparent and accurate data processing. Moreover, the current O&M practices, particularly allowing unskilled persons (private household owners and their plumbers) to access the network, cause serious damage to the system and increase system losses.

15. Human resource management within DWASA suffers from (i) lack of an effective performance-based human resource development plan whereby active steps are taken to enhance the overall performance of the authority; (ii) lack of continuity in management positions due to frequent changes and absences of the managing director and deputy managing directors; (iii) a lack of incentive schemes to attract more qualified staff to key positions; (iv) recruitment that is not based on functional requirements; (v) political and bureaucratic interference in the recruitment process; (vi) vacancies in key positions; and (vii) top-down management structure, stifling initiative and personal development.

16. Management of DWASA is also constrained by the unusual roles of labor unions and employees' cooperative societies. Billing and revenue collection functions in three of the six water supply zones of Dhaka, comprising approximately half the population and service connections of DWASA service area, have been outsourced to DWASA Employees Consumer Supplies Co-operative Society through a program for performance improvement (PPI) agreement. The PPI agreements are performance based, and the employers working under the PPI agreements also benefit from bonus arrangements. The billing efficiency of the PPI zones are generally higher than the DWASA zones. However, splitting responsibilities between DWASA staff and PPI staff is unclear and unpractical in many areas. For instance, DWASA is responsible for controlling of unaccounted-for-water UFW, while the PPI identifies and disconnects illegal connections. DWASA handles meter maintenance, while the PPI does the meter reading. Frequently, functioning meters are lacking at the service connection, and inadequate records and mapping leave the revenue inspectors as the only people who can identify the right bill to the right connection. As a result, billing is up to the revenue inspector, or what agreements the revenue inspector makes with the beneficiaries. Such experiences have shown that the PPI arrangement is creating vested interests within DWASA and conflict of interests that should be changed. Further, no efficient mechanisms are in use to make defaulters pay their bills. According to an ADB PPTA study (footnote 1), 60% of the water produced is billed, but only 62% of the bills are paid. Thus, only 37% of the water produced is paid for. However, according to DWASA's monitoring and information system (MIS) report of June 2007, the cumulative collection rate for the six zones is 97.28%. However, this figure is based against the "billing" target, not necessarily counting all households tapping water from DWASA. The DWASA MIS figure needs further examination, as some zones are achieving higher than 100% collection.

17. DWASA's organizational structure was modified during the World Bank-supported Fourth Dhaka Water Supply Project.⁷ While DWASA's board comprised members from the civil society, the top management was redesigned to comprise an independently recruited managing director and three deputy managing directors. However, the organization is still top heavy, where little is done without approval of the top management, the managing director, and even to the board and ministry. There are no incentives for the staff to take full responsibility of their work and perform better. Although the number of employees is high in DWASA (about 3,500 staff, or 17 per 1,000 connections), each connection serves approximately 4–5 households, or more than 30 people on average. Apart from the head office, where the entire management, chief engineer, and all superintending engineers are located, six zone offices have been established for operational

⁷ World Bank. 1996. *Fourth Dhaka Water Supply Project*. Washington, DC.

purposes. Each zone office—or management, operation, and development system (MODS)—is jointly headed by an executive engineer on the technical side and a revenue officer on the financial side. The joint and unclear management, and the three management levels between the executive engineer and the managing director, makes the MODS weak and inefficient.

C. Overview of Government's Sector Strategies and Policies

18. Eight national policies and strategies govern the WSS sector. The National Policy for Safe Water Supply & Sanitation (1998) is the most significant policy for the sector. It emphasizes user participation, decentralization to the LGIs and community-based organizations (CBOs), and involvement of nongovernment organizations (NGOs) and the private sector in WSS service delivery. Subsequently, the Sector Development Framework (2004), National Sanitation Strategy (2005), and Pro-Poor Strategy (2005) were formulated to further define and complement the 1998 WSS policy. The National Policy of Arsenic Mitigation (2004) was formulated specifically to address the widespread arsenic contamination of groundwater. On the other hand, the National Water Policy (1998) and the National Water Management Plan (2004) give broad direction for water resources management.

19. Recently, the Government has included improvement of WSS as part of its seven-point strategic agenda for reducing poverty in its poverty reduction strategy 2005.⁸ The strategy recognizes the importance of water and sanitation as a means of achieving accelerated poverty reduction in the country. Poverty and rapid population growth, combined with having to rely on open ponds for drinking water and poor sanitary habits, contributed to a high level of water-related morbidity and mortality in the 1960s and 1970s in Bangladesh. Introduction of safe drinking water through tube wells, higher sanitation coverage, and improved primary health care contributed to halving of the mortality rate—caused by diarrheal diseases—from 300,000 deaths per year in 1980 to 150,000 in 1997. The 2005 strategy aims to reduce poverty by 30%, extreme poverty by 5%, and child mortality to 31 per 1,000 live births by 2015. Water-related diseases continue to account for the majority of deaths of infants and children under 5 years old in the country. Further, the Government has committed to achieving the Millennium Development Goals, including reducing by half the proportion of people without sustainable access to safe water supply and sanitation, by 2015.

20. The Government's goals, and the priority accorded the provision of safe drinking water and appropriate sanitation, are consolidated in its new Sector Development Program—Water and Sanitation Sector in Bangladesh (SDP-WSSB), which was approved in January 2006.⁹ The SDP for the WSS sector assembled all the relevant national and international policies, strategies, and targets and drew up a 10-year framework for development and cooperation in the sector. The preparation of the SDP-WSSB is a result of a sequential development of WSS policies and strategies over a long period. The most important ones are (i) National Policy for Safe Water Supply & Sanitation 1998; (ii) sector development framework, 2004; (iii) Pro-Poor Strategy, 2005; and (iv) National Policy for Arsenic Mitigation, 2004.

21. The sector development framework has suggested optimistic targets and time scale for implementation of the WSS sector improvements. It aims for 100% coverage of basic water supply and sanitation services in towns and rural areas during 2005–2015. The coverage target for piped water supply in the urban areas is 70% by 2010 and 90% by 2015. While the Millennium Development Goals set the target of halving the percentage of people without safe water and basic sanitation by 2015, the Government has set a more ambitious target, in the case of sanitation, of 100% coverage by 2010.

⁸ Government of Bangladesh. 2005. *Poverty Reduction Strategy*. Dhaka.

⁹ The SDP-WSSB was developed with support from the Danish International Development Assistance.

**DEVELOPMENT COORDINATION MATRIX
(EXTERNAL ASSISTANCE TO THE WATER SUPPLY AND SANITATION SECTOR)**

Name of Project		Executing Agency	Amount Approved (\$ million unless otherwise stated)	Implementation Period
A. Asian Development Bank (ADB)				
1.	Southwest Area Water Resources Management Study	BWDB	3.8	1991
2.	Southwest Area Water Development	BWDB	3.5	1993
3.	Small-Scale Water Resources Development Sector	LGED	32.0	1995
4.	Command Area Development	BWDB	30.0	1995
5.	Flood Damage Rehabilitation	BWDB	20.0	1998
6.	Southwest Flood Damage Rehabilitation	BWDB	13.2	2000
7.	Second Small-Scale Resources	LGED	34.0	2001
8.	Jamuna-Meghna River Erosion Mitigation	BWDB	42.2	2002
9.	Emergency Flood Damage Rehabilitation	BWDB	31.8	2005
10.	District Towns Water Supply Project	DPHE	14.40	1982
11.	Dhaka Urban Infra Improvement (DWASA Part)	DWASA	4.42	1989–1997
12.	Dhaka Integrated Flood Protection (Drainage Component)	DWASA	42.20	1991–1996
13.	Second Water Supply and Sanitation Project	DPHE	31.00	1994–2002
14.	Secondary Towns Water Supply and Sanitation Sector Project	DPHE	41.00	2006–2012
B. World Bank/IDA				
1.	Dacca Water Supply	DWASA	14.40	1973–1979
2.	Dacca Water II	DWASA	22.00	1979–1984
3.	Dhaka WASA III	DWASA	30.00	1986–1994
4.	Fourth Dhaka Water Supply	DWASA	80.30	1996–2002
5.	Bangladesh Arsenic Mitigation Water Supply Project	DPHE	22.08	1998–2005
6.	Bangladesh Water Supply Program Project	DPHE	35.69	2004–2010
7.	DWASA Sanitation and Drainage	DWASA	[100]	[2007–2012]
C. Danida				
1.	Water Supply, Sanitation, Drainage and Waste Management Project at Pourashava, Thana and Growth Center	DPHE	22.85	1996–2005
2.	Rural Water Supply and Sanitation Project at Coastal Belt	DPHE	12.64	1999–2005
3.	Water Supply And Sanitation Sector Programme Support (WSSPS) Phase II	DWASA	60.82	2006–2010
4.	Saidabad II Water Treatment Plant (Phase II)	DWASA	Tk8,840 M	[2008–2011]
D. UNICEF				
1.	Social Mobilization for Sanitation	DPHE	2.85	1993–1998
2.	Environmental Sanitation, Hygiene Water Supply in Rural Areas of Bangladesh	DPHE	20.06	1996–2005
3.	Study on Arsenic Affected Area of Bangladesh	DPHE	0.19	1996–2000
4.	Environmental Sanitation, Hygiene and Water Supply Project in Slum Areas	DPHE	2.42	1997–2005
5.	Action Research on Community Based Arsenic Mitigation in 15 Upazila Projects	DPHE	2.11	2001–2005
6.	WS Rehabilitation Project for the Flood Affected People in 2004	DPHE	5.86	2005–2006
7.	Sanitation Health Education and Water Supply Project	DPHE	65.83	2006–2010

Name of Project	Executing Agency	Amount Approved (\$ million unless otherwise stated)	Implementation Period
E. Japan			
1. Urgent Sewerage Construction and Rehabilitation	DWASA	30.00	1989–1992
2. Improvement of Drainage system in Dhaka City	DWASA	12.50	1991–1993
3. BMRE of Chadnighat Water Treatment Plant	DWASA	24.00	1994–1998
4. Crash Program for Procurement of 100 Generators	DWASA	2.00	1999–2000
5. Study on Groundwater Development of Deep Aquifers for Safe Drinking Water Supply to Arsenic Affected Area in western Bangladesh	DPHE	3.79	2000–2001
6. Establishment of DPHE Central Laboratory for Strengthening Water Supply Examination System	DPHE	4.19	2004–2006
7. CWASA Water Supply and Institutional Reform	CWASA	¥12.2 B	2006–2010
F. Netherlands			
1. Water Supply, Sanitation and Drainage Project in 18 Districts	DPHE	18.58	1978–1999
2. Char Development and settlement Project-2	DPHE	0.5	1999–2005
G. IDB			
1. Water Supply Project at coastal Belt (second phase)	DPHE	7.64	2003–2006
2. Water Supply Project at Coastal Belt (first phase)	DPHE	8.13	1998–2003
H. DFID			
1. TA Project for Research on Arsenic-Affected Groundwater of Bangladesh	DPHE	0.57	1997–2000
2. Supporting Government's Service Delivery and AntiCorruption Initiatives	MOF	[£150 M]	[2008–2013]

ADB = Asian Development Bank, CWASA = Chittagong Water Supply and Sewerage Authority, Danida = Danish International Development Assistance, DFID = Department for International Development (United Kingdom), DPHE = Department of Public Health Engineering, DWASA = Dhaka Water and Sewerage Authority, IDB = Islamic Development Bank, JICA = Japan International Cooperation Agency, MOF = Ministry of Finance, TA = technical assistance, UNICEF = United Nations Children's Fund, B = billion, M = million, ¥ = yen, £ = pound sterling.

Note: Programs and projects in brackets have not been approved, and are only in pipelines. Respective donors are in discussion with the Government.

Sources: Department of Public Health Engineering, DWASA, and Asian Development Bank.

PARTNERSHIP FRAMEWORK

**Partnership Framework
Among
The Government of Bangladesh (GOB),
And
Asian Development Bank (ADB), Danish International Development Assistance (DANIDA),
The Government of Japan (GOJ), The Government of the Republic of Korea (ROK), and World
Bank (WB),
(ADB, DANIDA, GOJ, ROK and WB collectively referred to as the “Development Partners”).**

A. OBJECTIVE

1. The Government of Bangladesh (GOB) and the Development Partners jointly intend to enter into this partnership framework (Partnership Framework) in order to contribute to the People's Republic of Bangladesh's (Bangladesh) socio-economic development in the urban water supply and sanitation sector through addressing long-standing reforms issues that have hampered effective operations, sound financial management and continuation of good supply of services in the sector, and to cooperate to improve and expand sustainable service delivery of water, sanitation, wastewater and drainage services to the people living in Dhaka and Chittagong, including slum dwellers.

B. BACKGROUND

2. The GOB has included the improvement of water supply and sanitation as part of its seven-point strategic agenda for reducing poverty in its 2005 national poverty reduction strategy¹ (NPRS). The GOB is committed to achieve the Millennium Development Goal (MDG) targets, including the reduction by half of people without access to sustainable access to safe drinking water and improved sanitation by 2015. These commitments are consolidated in the Sector Development Programme – Water and Sanitation Sector in Bangladesh (SDP-WSSB) 2005. GOB has also approved in April 2006 the Guidelines for Water Supply in Dhaka City, which reaffirms that Dhaka Water Supply and Sewerage Authority (DWASA) will provide basic water supply and sanitation services to slums within DWASA's service area.

3. The key emphasis of the SDP-WSSB 2005 are: (i) meeting basic minimum needs related to water supply and sanitation for all citizens, especially that of the poor, (ii) decentralizing the service delivery mechanism and strengthening capacity of the local government institutions for sustainability of investments and good governance, (iii) recommending optimal service delivery options and institutional framework; (iv) drawing a blueprint to realize sector reform and capacity building to achieve desired coverage and performance levels; and (v) outlining a sector investment plan for the next 10 years for fulfillment of sector targets, sector reforms and capacity building needs within the available resources.

4. It is estimated that in 2025, 50% of the about 180 million people of Bangladesh would live in urban areas, and about one fourth would live in Dhaka City². This implies that DWASA will have to meet the demands of nearly 30 million people, more than three times the present. An equally critical situation will be faced in Chittagong by the Chittagong Water Supply and Sewerage Authority (CWASA).

¹ Government of Bangladesh. 2005. *Unlocking the Potential: National Strategy for Accelerated Poverty Reduction*. Dhaka.

² Carl Bro, et al. February 2007. *Final Report: TA 4651-BAN: Dhaka Water Supply Project*. Dhaka.

5. In Dhaka and Chittagong, the responsibility for water supply and sanitation is given to a semi autonomous water and sewerage authority (WASA), i.e., the DWASA and CWASA, respectively. These water utilities operate and manage the system, as well as collect fees. Water sources are from both ground water and surface water. Both DWASA and CWASA face numerous institutional and financial constraints in delivering good quality water, recovering user charges, controlling losses and effectively managing the institution. A lack of commercial orientation and low tariff has led to inefficient practices and poor financial performance. In addition, the sewerage network covers a tiny portion of Dhaka city and there is no formal management of pit and septic tank wastes, which are usually dumped into storm water drains or sewers.

6. Despite the challenges, Bangladesh's water sector presents a significant opportunity at this time. The Policy Support Unit of the Local Government Division (LGD), Ministry of Local Government Rural Development and Cooperatives, has initiated a process of review and update of the SDP-WSSB 2005, establishing GOB leadership and multi-donor support. Within the urban water and sanitation sector the Development Partners have joined together in a partnership with the GOB to assist in formulating and implementing the necessary projects and programs for the wellbeing of the people of Dhaka and Chittagong. The GOB and the Development Partners intend to enter into this partnership framework arrangement to improve and expand the service delivery of water, wastewater and drainage services provided to the people of Dhaka and Chittagong at all levels, including slum dwellers.

C. SCOPE OF PARTNERSHIP

7. Currently, ADB is supporting the GOB in water supply improvements in Dhaka, while WB plans to assist on sewerage and drainage improvements in Dhaka. Together with DFID, WB is scaling-up successful water supply and sanitation service provision models in low income communities and slums of Dhaka. WB and ADB will also assist to improve the performance and management efficiency of DWASA. DANIDA is extending credit to the GOB to construct a new water treatment plant (Saidabad II). The GOJ is focusing its assistance on water supply service in the city of Chittagong. The Government of the Republic of Korea is supporting the GOB in preparation of a master plan for water supply and wastewater management in Chittagong.

8. To ensure the success of the development partners' assistance, the GOB and the Development Partners will address the challenges through the following three strategies, i.e., (i) improving the business strategy and organizational structure of DWASA and CWASA; (ii) improving the financial management capacity of DWASA and CWASA; and (iii) improving and expanding sustainable service delivery.

9. The GOB and the Development Partners have decided on a set of policy actions, as contained in the Core Understandings, as set out in Annex 1 to this Partnership Framework and the Unified Policy Frameworks, as set out in Annex 2 to this PF for DWASA and Annex 3 for CWASA, to materialize the three strategies stated in paragraph 8 of this Partnership Framework.

10. The GOB and the Development Partners recognize that certain policy actions are necessary for the smooth implementation of this Partnership Framework and the implementation of the policy actions set out in the Unified Policy Framework. Hence, the GOB will complete the policy actions contained in the Core Understandings, within the stipulated time frame.

11. The Development Partners will jointly support and monitor the implementation of the Core Understandings and the Unified Policy Frameworks.

12. The Development Partners are planning to continue and extend their support to the GOB's efforts in improving the service delivery in the urban water supply and sanitation sector, through the future assistance program, indicated in the attached future investment programs (Annex 4).

13. The Development Partners will consider that their future investment programs in urban water supply and sanitation sector are dependent on satisfactory implementation progress of the reform program as outlined in the Unified Policy Frameworks.

D. EXCHANGE OF INFORMATION

14. The Development Partners and the GOB will keep each other informed of the implementation progress and/or completion of each of the policy actions.

15. The Development Partners will keep each other informed of their respective policies/strategies and programs of assistance in Bangladesh in water supply and sanitation sector. Similarly, the Development Partners will share information on any projects or studies in which the other has expressed, as referred to in paragraph 11 of this Partnership Framework.

16. The Development Partners and the GOB will inform each other of any event which interferes or threatens to interfere with the successful implementation of any of the policy actions.

17. Each of the Development Partners will remain independent in its right in making decisions and taking actions under its respective agreement or agreements with the GOB.

18. a. A working group (Working Group) will be established and will consist of representatives from GOB, to be represented by LGD, and the Development Partners. The role of the Working Group mainly include: (i) keeping the members of this Partnership Framework informed through exchange of progress of each party's respective assistance (programs and projects including technical assistance), (ii) discussing ways and means to maximize coordination and avoid duplication, (iii) sharing information on best practices and lessons learned (areas that need improvement by GOB and the WASAs), (iv) leading on monitoring of implementation under the Core Understandings and Unified Policy Frameworks, and (v) sharing information and coordinating with stakeholders other than GOB and Development Partners where necessary.

b. The representatives of the GOB and the Development Partners assigned to the Working Group will be the contact person for each of the members of this Partnership Framework. The contact personnel for communications and notices required with regard to the Partnership Framework is indicated in Annex 5 of this document.

E. REVIEW

19. The partnership arrangements set forth herein will be reviewed by the Working Group on a biannual basis by the Development Partners and the GOB.

F. OTHER

20. This is a shared intention between the GOB and the Development Partners, and does not constitute a legally binding instrument. Other bilateral or multilateral development assistance organizations who share an interest in jointly supporting the improvement of water supply and sanitation services as set out in this Partnership Framework, may subsequently join the Partnership Framework, with the concurrence of the GOB and the Development Partners.

21. This Partnership Framework is signed by the duly authorized representatives of the Development Partners and GOB, on this Saturday, the 10th of November, 2007 in Dhaka, People's Republic of Bangladesh.

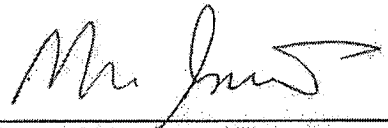
For:
Ministry of Local Government, Rural
Development and Cooperatives,
The Government of Bangladesh


Safar Raj Hossain
Secretary, Local Government Division

For:
Asian Development Bank


Hua Du
Country Director, BRM


For:
The Government of Japan


Masayuki Inoue
Ambassador of Japan

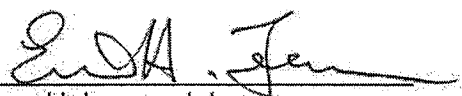
For:
The World Bank


Zhu Xian
Country Director, WBDO

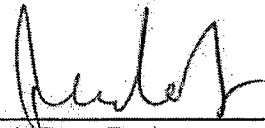
For:
Ministry of Finance,
The Government of Bangladesh


Md. Aminul Islam Bhuiyan
Secretary, Economic Relations Division

For:
Danish International Development Assistance


Einar Hebogaard Jensen
Ambassador of Denmark

For:
The Government of the Republic of Korea


Suk Bum Park
Ambassador of the Republic of Korea

DEVELOPMENT POLICY LETTER AND POLICY MATRIX

Development Policy Letter

Ministry of Finance, Planning,
Commerce, Posts & Telecommunications



Dr. A.B. Mirza Md. Azizul Islam
Adviser
Government of the People's
Republic of Bangladesh

D.O. No. ERD/ADB-3/DWSSP/2007/234

Date: 05 November 2007

Mr. Haruhiko Kuroda
President
Asian Development Bank
Manila, Philippines

**Subject: Development Policy Letter in connection with the proposed
'Dhaka Water Supply Sector Development Program'**

Dear Mr. Kuroda,

1. Safe water supply and sanitation are essential for the development of public health and improvement in the quality of life. The Government's goal is to ensure that all people have access to safe water and sanitation services at affordable costs. The Government place special attention given that at the national level, access to decent level of clean water is only 59% in rural and 71% in urban areas. Only 30% of urban households use tap water for drinking, and less than 20% have their own connection. We are committed to achieving the Millennium Development Goal targets, which include reduction of infant mortality rate (reduce by two thirds the mortality rate among children under five), and access to safe water supply and sanitation by 2015 by reducing the proportion of people without sustainable access to safe drinking water to half of the current figure. Efforts are continuing to mobilize adequate funding to develop the water supply and sanitation sector from both domestic and external sources.

2. In 2006, the Government has issued the Sector Development Programme for Water and Sanitation Sector in Bangladesh (SDP-WSSB). The SDP-WSSB assembled all the relevant national and international policies, strategies and targets and drew-up a 10-year framework for development and cooperation in the sector. The preparation of the SDP-WSSB is a result of a sequential development of Water Supply and Sanitation (WSS) policies and strategies over a long period of time, the most important ones being (i) National Policy for Safe Water Supply and Sanitation 1998, (ii) Sector Development Framework (SDF) 2004, (iii) Pro-poor Strategy 2005, and (iv) National Policy for Arsenic Mitigation 2004.

3. The key emphasis of the SDP-WSSB 2006 are: (i) ensuring basic minimum needs related to water supply and sanitation for all citizens, especially that of poor; (ii) decentralizing the service delivery mechanism and capacity building of the

Ministry of Finance, Planning,
Commerce, Posts & Telecommunications



Dr. A.B. Mirza Md. Azizul Islam
Adviser
Government of the People's
Republic of Bangladesh

local government institutions for sustainability of investments and good governance; (iii) recommending optimal service delivery options and institutional framework; (iv) drawing a blueprint to realize sector reform and capacity building to achieve desired coverage and performance levels; and (v) outlining a sector investment plan for the next 10 years for fulfillment of sector targets, sector reforms and capacity building needs within the available resources. Recognizing the ambitious target, the Government critically re-examined and acknowledged that, the policy addresses the key issues, but lacks in operational strategies and tools, such as financial allocations, time frame, institutional arrangements, legal instruments and policy directives.

4. The Government has calculated the water supply and sanitation sector investment needs by all sub-sectors (i.e. rural water supply and sanitation, urban water supply and sanitation) for 2005- 2015 has amounted to total \$ 3.01 billion; which brings the need to \$302 million per annum, of which 98.5% is designated as public sector investment. Urban water supply is in need of major reforms to effectively attract additional investments. The Government needs ADB's support in its initiative to reform the urban water supply sector and ensure the success of the SDP-WSSB.

5. The Government is fully committed to the reform in the urban water supply sector and is determined to implement the actions outlined in the Policy Matrix attached hereto within the agreed timetable. The Government is committed to maintaining an active policy dialogue with development partners on implementation of the agreed actions and the progress of the reform to ensure that the objectives of the SDP-WSSB are met.

6. In conclusion, we are convinced that the water supply and sanitation reform as outlined in the SDP-WSSB is a right approach and it will bring efficiency, professionalism and demand-needs based dynamism in the water supply and sanitation sector.

With regards,

Yours sincerely,

(Dr. A. B. Mirza Md. Azizul Islam)

POLICY MATRIX

**Table A4: Policy Matrix - Dhaka Water Supply Sector Development Program
(Actions for Tranche Release indicated in Bold)**

The policy areas and actions are grouped into the following:

- (i) improving local governance, and strengthening local institutional framework;
- (ii) preparing sector strategy and plan;
- (iii) improving financial sustainability; and
- (iv) strengthening DWASA governance, organizational structure, and financial management capacity.

Policy Areas and Medium Term Objectives	Actions before First Tranche Release	Responsible Agency/Target Date	Actions before Second Tranche Release	Responsible Agency [and Target Date for achievement]
A. Improving Local Governance, and Strengthening Local Institutional Framework				
1. Increase the autonomy of the <i>pourashavas</i> and WASAs to manage water supply effectively within their respective area			1. LGD will issue an administrative order to decentralize and give broader administrative and financial autonomy to the pourashavas and WASAs to (i) manage water supply, including installation, operation, and maintenance; (ii) billing management; and (iii) set and adjust tariff	LGD and DPHE [end of 2009]
2. Establish an independent water regulatory commission			2.1. LGD will prepare a study on the most appropriate form of an independent water supply regulatory commission or regulator for Bangladesh and make recommendations to the Cabinet. The study will include clarification on the functions, roles, and responsibilities of the regulator	LGD and Government [end of 2009]
3. Enhance the capacity of the pourashavas and WASAs in managing and delivering water supply services			3.1. LGD (DWASA and DPHE) will prepare a 5-year capacity building program for the pourashavas' water section staff and WASA staff. The capacity building program will include training in the following areas: (i) meter connections, (ii) water conservation, (iii) operation and maintenance, (iv) billing and accounting, (v) financial management, and (vi) public health 3.2. Starting from 2010, LGD, the pourashavas, and the WASAs will implement the program. LGD will	LGD and DPHE [July 2009] LGD and MOF [from FY 2009/10]

Policy Areas and Medium Term Objectives	Actions before First Tranche Release	Responsible Agency/Target Date	Actions before Second Tranche Release	Responsible Agency [and Target Date for achievement]
			allocate sufficient budget annually to the pourashavas and the WASAs to implement the program	
B. Preparing Sector Strategy and Plan (Demand-side Management)				
1. Promote good water resource management and water conservation	1. The Government, represented by LGD, will have signed the water supply and sanitation sector development partnership framework (Partnership Framework) with development partners including ADB, Danida, Government of Japan and World Bank. The Partnership Framework and its salient features will be disclosed to the public.	LGD [Nov. 2007]	<p>1.1. LGD will initiate and socialize a water conservation program. LGD will actively conduct an awareness campaign at the national level to raise public awareness on the importance of water conservation</p> <p>1.2. LGD will instruct the pourashavas and the WASAs to promote water conservation and to participate in the program. LGD will provide budget assistance to the pourashavas and the WASAs to implement the program</p> <p>1.3. To promote water conservation and improve quality of work, LGD together with the pourashavas and the WASAs will revise the service regulations so that poursahavas and WASAs, not households, install meters and do connections to households</p>	<p>LGD [by the end of 2009]</p> <p>LGD and MoF from of the end of 2008]</p> <p>LGD [end of 2009]</p>
C. Improving Financial Sustainability				
1. Increase the financial autonomy and cost recovery of the pourashavas and the WASAs			<p>1.1. LGD (DPHE) will issue a decree that will allow large pourashavas to keep their water billing revenues. LGD will instruct the pourashavas to have a separate account for water revenues, to establish a double-entry bookkeeping, and to maintain inventory of the pourashava's water supply assets</p> <p>1.2. DWASA will have the authority to set and adjust annually the water tariff, which covers (i) inflationary adjustments; and (ii) recurrent costs (O&M expenses) of the water supply operation, in line with the 5-year tariff adjustment projection and plan as part of DWASA 5-year business plan (see</p>	<p>LGD [from FY2009/10]</p> <p>LGD [July 2009]</p>

Policy Areas and Medium Term Objectives	Actions before First Tranche Release	Responsible Agency/Target Date	Actions before Second Tranche Release	Responsible Agency [and Target Date for achievement]
			clause 3.1 and 5 also)	
D. Strengthening DWASA Governance, Organizational Structure, and Financial Management Capacity				
1. Introduce and apply good governance by improving DWASA organizational structure and management, and by ensuring compliance with the WASA Act of 1996	<p>1.1. The first organization chart (organogram) of DWASA will have been approved by the Secretaries Committee. Once approved, DWASA will issue a circular to make the organization chart effective.</p> <p>1.2. DWASA will appoint a managing director, who was selected on competitive basis in accordance with the provisions of WASA Act 1996</p> <p>1.3. LGD will have approved and issued the (i) Rules of Business 2007 on Water Connction and Water Tariff, (ii) Rules of Business 2007 on Sewer Connection and Sewer Tariff. DWASA will have approved the (iii) DWASA Financial Regulations 2007, (iv) DWASA Employees Regulations, 2007, and (v) DWASA Employees Services Regulations, 2007.</p>	<p>Ministry of Establishment, MOF, the Secretaries Committee and DWASA [Nov. 2007]</p> <p>The Board of Directors of DWASA [August 2007] Complied</p> <p>LGD and DWASA [Nov. 2007]</p>	<p>1.1. DWASA prepares and approves a human resource development medium-term strategy for DWASA. The strategy will include plans for staff appropriation, staff training, and development and salary increase projections</p> <p>1.2. DWASA board of directors will issue an administrative order or circular on the staff recruitment, promotion, and remuneration in DWASA</p>	<p>DWASA Board of Directors and Management [end of 2008]</p> <p>DWASA [from FY 2009/10]</p>
2. Clarify and define the respective roles and responsibilities of DWASA board of directors and management			<p>2.1. DWASA, with the approval of LGD, will issue an administrative order or circular that provides clear delineation of roles and responsibilities between DWASA board and management</p> <p>2.2. DWASA will issue an administrative order or circular on the delegation of authority from the board to the</p>	<p>DWASA [end of 2008]</p> <p>LGD and DWASA [end 2008]</p>

Policy Areas and Medium Term Objectives	Actions before First Tranche Release	Responsible Agency/Target Date	Actions before Second Tranche Release	Responsible Agency [and Target Date for achievement]
			management relating to the day-to-day management of DWASA	
3. Improve DWASA operation and business performance through a medium-term business plan			<p>3.1. DWASA will prepare and issue an operations manual. The manual will be implemented and distributed to all departments within DWASA and published on the DWASA website</p> <p>3.2 DWASA will prepare and approve a 5-year business plan (FY2009/10–14/15). The business plan should be approved by the board and endorsed by LGD</p>	<p>DWASA [July 2009]</p> <p>LGD and DWASA [July 2009]</p>
4. Explore private sector participation in water supply and sanitation sector, and eliminate the conflict of interest practice currently in place due to the PPI			<p>4.1. DWASA will set up a committee to explore appropriate O&M management modes, including private sector participation and review on PPI in water supply and sanitation sector</p> <p>4.2. The committee will prepare a study on private sector participation and make recommendations with time-bound action plan. The study will be endorsed by DWASA board</p>	<p>DWASA [end of 2008]</p> <p>DWASA [July 2009]</p>
5. Improve DWASA financial autonomy through realistic tariff adjustment			5. DWASA management will prepare a 5-year tariff adjustment projection and plan to be approved by the DWASA board. The tariff adjustment plan will be submitted to LGD for approval	DWASA and LGD [end of 2008]
6. Increase transparency in DWASA operation and address anticorruption issues			<p>6.1. DWASA will establish an anticorruption and ethics committee and appoint sufficient members to the committee. The committee reports directly to the managing director and is assigned to investigate any corruption allegations within DWASA</p> <p>6.2. DWASA will establish a grievance redress mechanism to address the concerns of customers and stakeholders</p>	<p>DWASA [end of 2008]</p> <p>DWASA [end 2008]</p>

Policy Areas and Medium Term Objectives	Actions before First Tranche Release	Responsible Agency/Target Date	Actions before Second Tranche Release	Responsible Agency [and Target Date for achievement]
7. Improve DWASA financial management and performance	<p>7.1. DWASA will have approved and submitted to LGD the diagnostic analysis report on DWASA financial performance (report) and recommendations on the introduction of performance improvement program (PIP).</p> <p>7.2. Based on the approved diagnostic analysis report, DWASA will have commenced the key performance indicators (KPI) for the implementation of the PIP.</p>	<p>LGD and DWASA [Nov of 2007]</p> <p>DWASA [Nov 2007]</p>	<p>7.1. DWASA will adopt and implement internationally acceptable and transparent accounting systems, linked to PIP</p> <p>7.2. DWASA will prepare a financial plan for FY2009/10- 2014/15 and the PIP systems will be adopted and implemented</p> <p>7.3. DWASA reduces its account receivables from 9 months to 6 months for FY2009/10.</p> <p>7.4. Starting from FY2009/10, DWASA will prepare a full financial statement and audit report annually with proper audit opinion. The audited financial statement will be published and made available to the public</p>	<p>LGD/DWASA [end of 2009]</p> <p>LGD/DWASA [July 2009]</p> <p>LGD/DWASA [July 2010]</p> <p>LGD/DWASA [from FY 2009/10]</p>
8. Reduce illegal connections			<p>8.1. DWASA will establish baseline for survey on illegal connection by the end of 2009</p> <p>8.2. Based on the survey, DWASA will issue time-bound action plan to address the problem of illegal connections</p> <p>8.3. DWASA will reduce illegal connections in the four zones of Dhaka city covered under the DWSSDP, by the end of 2010</p>	<p>DWASA [end of 2008]</p> <p>DWASA [July 2009]</p> <p>LGD/DWASA [July 2010]</p>

DPHE = Department of Public Health Engineering, DWASA = Dhaka Water Supply and Sewerage Authority, DWSSDP = Dhaka Water Supply Sector Development Program, KPI = key performance indicators, LGD = Local Government Division, MOU = Memorandum of Understanding, MOF = Ministry of Finance, O&M = operation and maintenance, PIP = Performance Improvement Program, PPI = Program for Performance Improvement, pourashava = peri-urban town (refers only to class A for the program), WASA = water supply and sewerage authority.

Note: The Government of Bangladesh uses the format "FY2009/2010" for the fiscal year starting 1 July 2009 and ending 30 June 2010.

Source: Based on consultation between Asian Development Bank and Government of Bangladesh.

DESCRIPTION OF INELIGIBLE ITEMS

1. Loan proceeds will finance the foreign currency expenditures for the reasonable cost of imported goods required during the Dhaka Water Supply Sector Development Program.
2. No withdrawals shall be made in respect of:
 - (i) expenditures for goods included in the following groups or subgroups of the United Nations Standard International Trade Classification, Revision 3 (SITC, Rev. 3), or any successor groups or subgroups under future revisions to the SITC, as designated by the Asian Development Bank (ADB) by notice to the Borrower;

Table A5: Ineligible Items

Chapter	Heading	Description of Items
112		Alcoholic beverages
121		Tobacco, unmanufactured; tobacco refuse
122		Tobacco, manufactured (whether or not containing tobacco substitute)
525		Radioactive and associated materials
667		Pearls, precious and semiprecious stones, unworked or worked
718	718.7	Nuclear reactors, and parts thereof, fuel elements (cartridges), non-irradiated for nuclear reactors
728	728.43	Tobacco processing machinery
897	897.3	Jewelry of gold, silver, or platinum group of metals (except watches and watch cases) and goldsmiths' or silversmiths' wares (including set gems)
971		Gold, nonmonetary (excluding gold ore and concentrates)

Source: United Nations.

- (ii) expenditures in the currency of the Borrower, or of goods supplied from the territory of the Borrower;
- (iii) expenditures for goods supplied under a contract that any national or international financing institution or agency will have financed or had agreed to finance, including any contract financed under any loan or grant from the ADB;
- (iv) expenditures for goods intended for a military or paramilitary purpose, or for luxury consumption;
- (v) expenditures for narcotics;
- (vi) expenditures for environmentally hazardous goods, the manufacture, use, or import of which is prohibited under the laws of the Borrower or international agreements to which the Borrower is a party; and
- (vii) expenditures on account of any payment prohibited by the Borrower in compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations.

PROJECT COST ESTIMATES AND FINANCING PLANS BY CATEGORY

Table A6.1: Detailed Cost Estimates by Expenditure Category

Item	Cost (\$'000)	% of Total Base Cost
A. Investment Costs^a		
1. Civil Works ^b	52,115	28.1
2. Materials	56,997	30.7
3. Road Cutting and Surfacing	32,348	17.4
4. Equipment	577	0.3
5. Information, Education, and Communication	4,085	2.2
6. Socioeconomic and Monitoring Survey	543	0.3
7. Resettlement Compensation	1,706	0.9
8. Safeguards Compliance Assistance	520	0.3
9. Training Programs	200	0.1
10. Consultants		
a. Project Management	13,629	7.3
b. Capacity Development	3,614	1.9
11. Taxes and Duties	15,962	8.6
Subtotal (A)	182,295	98.1
B. Recurrent Costs		
1. Salaries	2,504	1.3
2. Office Accommodation and Operations	901	0.5
3. Taxes and Duties	45	0.0
Subtotal (B)	3,450	1.9
Total Base Cost	185,745	100.0
C. Contingencies		
1. Physical ^c	6,687	
2. Price ^d	16,565	
Subtotal (C)	23,252	
D. Financing Charges During Implementation		
1. Interest During Implementation	3,751	
2. Commitment Charges	0	
3. Front-end Fees	0	
Subtotal (D)	3,751	
Total Project Cost (A+B+C+D)	212,748	

^a In mid-2007 prices.^b Excludes road cutting and surfacing costs.^c Computed at 5% for civil works, equipment, and materials.^d Computed at 1.2% on foreign exchange costs and 6.0% on local currency costs, based on ADB. 2007. *Domestic and International Cost Escalation Factors (2007–2011)*. Manila.^e Includes interest, commitment charges, and front-end fees. Interest during construction has been computed at 1.0%.

Source: Asian Development Bank estimates.

Table A6.2: Detailed Cost Estimates by Financier

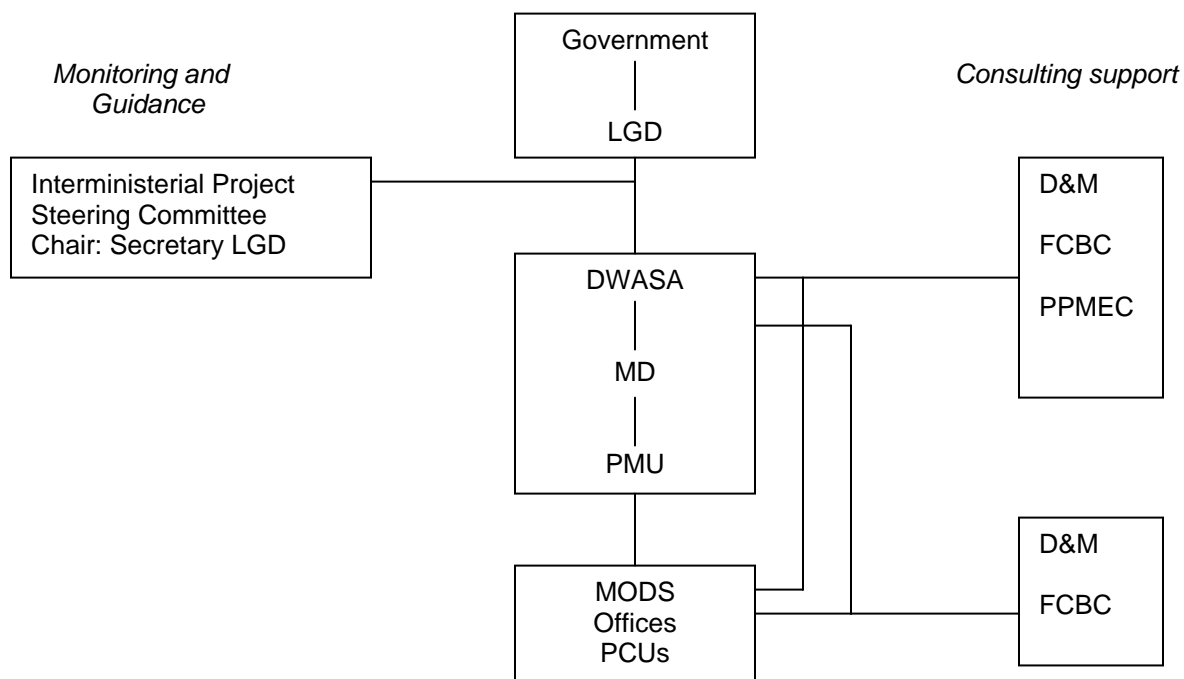
Item	Cost (\$'000)	ADB		Government	
		Cost \$ ^a	% of Cost Category ^b	Cost \$	% of Cost Category ^b
A. Investment Costs					
1. Civil Works ^b	109,112	103,201	94.6 ^c	5,911	5.4
2. Road Cutting and Surfacing	32,348	0	0	32,348	100.0
3. Equipment	577	577	100.0	0	0.0
4. Surveys and Training					
a. Socioeconomic and Monitoring Survey	543	543	100.0	0	0.0
b. Training Programs	200	200	100.0	0	0.0
5. Workshops, Meetings, and Consultation					
a. Information, Education, and Communication	4,085	4,085	100.0	0	0.0
b. Safeguards Compliance Assistance (Workshops, Meetings)	520	520	100.0	0	0.0
6. Resettlement Compensation	1,706	0	0.0	1,706	100.0
7. Consultants					
a. Project Management	13,629	13,629	100.0	0	0.0
b. Capacity Development	3,614	3,614	100.0	0	0.0
8. Taxes and Duties	15,962	0	0.0	15,962	100.0
Subtotal (A)	182,295	126,367	69.3	55,927	30.7
B. Recurrent Costs					
1. Salaries	2,504	2,504	100.0	0	0.0
2. Office Accommodation and Operations	901	901	100.0	0	0.0
3. Taxes and Duties	45	0	0.0	44	100.0
Subtotal (B)	3,450	3,406	98.7	44	1.3
Total Base Cost	185,745	129,773	69.9	55,972	30.1
C. Contingencies	23,252	16,476	70.9	6,776	29.1
D. Financing Charges During Implementation	3,751	3,751	100.0	0	0.0
Total Project Cost (A+B+C+D)	212,748	150,000	70.5	62,748	29.5

ADB = Asian Development Bank.

^a Amount of ADB loan proceeds allocated to the cost category.^b The amounts disbursed by ADB for eligible expenditures under a cost category will be subject to the ceiling set by the allocation of loan proceeds for such cost category. Category 1: Civil Works will include procurement of materials (mainly pipes) under supply and install (but not including design) contract.^c Figure represents the percentage to be disbursed by ADB in the total civil works cost excluding tax and duties. Tax and duties on civil works are estimated at \$13.3 million. The percentage in the total civil works cost including tax and duties is 84.3%. This does not result in ADB financing taxes and duties.

Source: ADB estimates.

PROJECT IMPLEMENTATION ARRANGEMENT



D&M = design and managing consultant, DWASA = Dhaka Water Supply and Sewerage Authority, FCBC = financial and capacity building consultants, LGD = Local Government Division, MD = managing director, MODS = management, operation, and development system offices, PCU = project coordination unit, PMU = project management unit, PPMEC = project performance monitoring and evaluation consultants.
Source: Asian Development Bank estimates.

PROJECT IMPLEMENTATION SCHEDULE

Component-A: Distribution System and Quality Improvement	2007				2008				2009				2010				2011				2012				2013			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Network Rehabilitation and Strengthening																												
- MODS Zone 3																												
- MODS Zone 6																												
- MODS Zone 4																												
- MODS Zone 5																												
Overhead Balancing Reservoirs																												
- Rehabilitation of Overhead Balancing Reservoirs																												
- Construction of New Overhead Balancing Reservoirs																												
Water Quality and Monitoring Improvement																												
- Installation of Chlorination Equipment on DTWs																												
- Upgrading of Three Tier Water Quality Monitoring																												
Procurement of Materials																												
- Service Connection Water Meters, Batch 1																												
- Service Connection Water Meters, Batch 2																												
- Bulk Meters and Valves																												
Land Acquisition / Resettlement																												
Component-B: Institutional Strengthening	2007				2008				2009				2010				2011				2012				2013			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Improved Financial Management																												
- Implementation of Billing, Revenue Collection and Accounting System																												
- Twinning Arrangement with Regional Utility																												
- Performance Improvement Program (PIP)																												
Training and Capacity Building																												
- TNA at Central and Zonal Levels																												
- Implementation of Training at Central and Zonal Levels																												
- Strengthening Training Centre at Lalmatia																												
Demand Control and Public Awareness																												
- Mass Media Campaign																												
- Community and Household Level Campaign Using NGOs																												
- Development of Information Materials																												
Consulting Services																												
Component-C: Project Management and Implementation Support	2007				2008				2009				2010				2011				2012				2013			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Consulting Services																												
- Project Management and Monitoring																												
- Design and Supervision Consultancies																												
- Capacity Building Consultancy																												
- Public Relation Consultancy																												
- Community and Awareness (NGOs)																												
- Project Performance and Monitoring Consultants																												
- Feasibility Study for 500 Mld SWTP																												

DTW = deep tube well; MODS = management, operations, distribution, and services; NGO = nongovernment organization; PIP = performance improvement program; SWTP = surface water treatment plant.

Source: Asian Development Bank estimates.

PROCUREMENT PLAN

Project Information	
Country	Bangladesh
Name of Borrower	People's Republic of Bangladesh
Project Name	Dhaka Water Supply Sector Development Program
Loan or TA Reference	TBD
Date of Effectiveness	TBD
Amount	\$150 million
Of which Committed, \$	
Executing Agency:	Dhaka Water Supply and Sewerage Authority
Approval Date of Original Procurement Plan	
Approval of most recent Procurement Plan	
Publication for Local Advertisements	
Period Covered by This Plan	2007–2013

TA = technical assistance, TBD = to be determined.

Procurement Thresholds, Goods and Related Services, Works and Supply and Install

Procurement Method	
International Competitive Bidding (ICB) Works	\$1,000,000 and above
ICB Goods	\$500,000 and above
National Competitive Bidding (NCB) Works	Below \$1,000,000
NCB Goods	Below \$500,000
Community Participation in Procurement	Below \$10,000
Shopping	Below \$100,000

Note: NCB packages valued at more than \$100,000 each will be subject to prior review by the Asian Development Bank. The feasibility of community contracting will be examined on a case-to-case basis for slum and/or bulk water supply and other community-level works not exceeding \$10,000. Shopping works and shopping goods will be used for procuring readily available off-the-shelf goods or standard specification commodities or small value, or simple civil works valued at less than \$100,000.

Indicative Contract Packages

No	Contract Description	Method	Advertisement	Contracts Value	Prior Review	Comments
1	Zone 3 distribution network rehabilitation and strengthening	ICB	June 2009	\$17.0 million	Required	Supply and install contract
2	Zone 4 distribution network rehabilitation and strengthening	ICB	June 2009	\$27.3 million	Required	Supply and install contract
3	Zone 5 distribution network rehabilitation and strengthening	ICB	June 2009	\$29.5 million	Required	Supply and install contract
4	Zone 6 distribution network rehabilitation and strengthening	ICB	June 2009	\$27.3 million	Required	Supply and install contract
5	Water meters	ICB	June 2009	\$1.7 million	Required	Goods
6	Rehabilitation of overhead tanks	NCB	June 2009	\$0.4 million	Required	
7	Construction of new overhead tanks	ICB	June 2009	\$3.9 million	Required	
8	Disinfection chlorination facility installation	ICB	June 2009	\$2.1 million	Required	
9	Water quality and monitoring equipments at surface WTPs laboratory	NCB	June 2009	\$0.3 million	Required	Consist of Two contracts
10	Water quality and monitoring equipments at Asad Gate Laboratory	NCB	June 2009	\$0.8 million	Required	

ICB = international competitive bidding, NCB = national competitive bidding, WTP = water treatment plant.

Procurement Thresholds, Consultants Services

Procurement Method	
Quality- and Cost-Based Selection	\$200,000 and above

Indicative Contract Packages

No	Contract Description	Method	Advertisement	Contracts Value	Prior Review	Comments
1	Design and Management Consultants	QCBS	October 2007	\$11.1 million	Required	IC: 183 pm NC: 664 pm
2	Financial and Capacity Building Consultants ^a	QCBS	October 2007	\$3.6 million	Required	IC: 80 pm NC: 390 pm
3	Project Performance Monitoring Consultants	QCBS	October 2007	\$0.4 million	Required	IC: 6 pm NC: 36 pm
4	Management Contract	QCBS	June 2011	\$2.0 million	Required	1 contract (about 229 pm)
	Total					IC: 269 pm NC: 1319 pm

IC = international consultants, NC = national consultants, pm = person-months, QCBS = quality- and cost-based selection.

^a Financial and capacity building consultants will engage nongovernment organizations to manage parts of the demand control, community awareness program, and resettlement implementation works. It may engage professional media firms to conduct the public outreach programs and media campaigns outlined in component B of the Project. The Asian Development Bank will review and approve the terms of such engagements before they begin.

OUTLINE TERMS OF REFERENCE FOR PROJECT CONSULTANTS

A. General

1. To assist the Dhaka Water Supply and Sewerage Authority (DWASA) in implementing the Project, project consultants will be engaged, who will work closely with the project management unit (PMU) and the zone project coordination units (PCUs). Project consultants will be selected and engaged in accordance the *Guidelines on the Use of Consultants* (2007, and as amended from time to time) of the Asian Development Bank (ADB).

B. Brief Description of Scope of Work of the Project Consultants

2. Outline scope of work of the consultants is as follows:

- (i) **Design and management (D&M) consultants.** The D&M consultants will assist the PMU in managing and implementing the Project, planning for detailed design, preparing the detailed design and tendering documents, assisting the PMU in tendering contractors, assisting the PMU and PCUs in supervising all works, liaising with ADB, procuring goods and works under the Project, handling financial management of the Project, and monitoring safeguards compliance of the Project. Project management activities of the D&M consultants also include (a) strengthening the PMU's capacity to manage and implement the Project; (b) delineating the PMU's method of working, procedures, and reporting; (c) assisting the PMU and DWASA in introducing and implementing institutional, financial, and governance reforms; (d) overseeing the work of the contractors; (e) assisting the PMU in preparing bid documents and contracts, and carrying out all tendering of contracts under the Project; (f) assisting the PMU in designing, contracting, installing and implementing new systems and procedures, as required under the Project; (g) establishing criteria for supervision, coordination, and management, and assisting the PCUs and PMU in supervising the works; (h) strengthening DWASA's capacity, with assistance from other project consultants, for improved financial, institutional, and operational management of services; and (i) ensuring that all project works are carried out in accordance with ADB's environmental, social, and resettlement safeguards and policies (including the governance and anticorruption measures). In addition, the D&M consultants will assist DWASA by conducting a detailed feasibility study of the proposed water treatment plant in Khilkheth. The consultants will conduct all technical, environmental, social, and financial feasibility study and prepare reports, as well as outline design and tender documents for the works.
- (ii) **Financial and capacity building (FCB) consultants.** The FCB consultants will assist DWASA in improving its financial and operational management; identify the needs for, develop training modules for, and provide training to central and zone staff of DWASA on human resources, management, and institutional and operational (technical) strengthening; and conduct all public relations, awareness raising, and demand control activities as outlined under component B of the Project. On the financial reforms and management improvement side, the FCB consultants will assist DWASA in (a) conducting strategic business planning in consultation with other external development partners, such as the World Bank; (b) preparing and training DWASA in implementing results-oriented budget mechanisms; (c) assisting DWASA in its sustainable debt management; (d)

preparing details of the tariff reforms and financial models; (e) developing, implementing, and training DWASA in efficient and accurate double-entry accounting system and auditing procedures; and (f) assessing, introducing, and training DWASA staff in accurate billing and payment collection. The FCB consultants also will work closely with the D&M consultants in internalizing and sustaining the new systems introduced/promoted under the Project. On the capacity building side, the FCB consultants will (a) conduct a thorough assessment of training needs for all categories of staff under DWASA; (b) develop training modules for, and provide training to, DWASA staff at head office and at zone offices; and (c) develop training modules for plumbers, pump operators, and technicians and provide training to them. On the public relations side, the FCB consultants will carry out a comprehensive and phased awareness campaign to (a) inform the public about the purpose and outline of the proposed tariff reforms; (b) create awareness that water is a scarce and valuable commodity; (c) inform the public of possible disturbances and measures undertaken during project implementation; (d) improve public relations and the image of DWASA; (e) educate the public on negative consequences of using suction pumps, and on minimizing water wastage at household level; (f) educate the public on meter reading and billing mechanisms so artificial bill inflation from the revenue inspector can be reported by the consumers; (g) inform the public of the customer grievance mechanism introduced under the Project; and (h) assist DWASA's public relations cell in overseeing and managing the customer grievance mechanism for the duration of the Project.

- (iii) **Project performance monitoring and evaluation (PPME) consultants.** One consulting firm will be engaged as the PPME consultants to assist the PMU in measuring the beneficial impacts of the Project, and assessing whether the project facilities are managed efficiently and whether the benefits reach the targeted groups.

3. Indicative staffing requirements for the project consultants are in Table A11.

Table A11: Consultant Requirement Table

Key Specialists (Professional Staff)	Type	Person-Months
Design and Management Consultants		
Project management specialist/team leader	International	50
Water supply engineer/deputy team leader	International	50
Construction supervision specialist	International	21
Network modeling specialist	International	12
Civil engineering specialist	International	12
Quantity survey specialist	International	12
Hydrology specialist	International	4
Electrical engineering specialist	International	4
Mechanical engineering specialist	International	4
Water quality specialist	International	4
Project financial management specialist	International	10
Procurement expert	National	60
Project financial management expert	National	60
Information technology expert	National	30
Environmental monitoring expert	National	10
Environmental (IEE/EIA) expert	National	24
Municipal water quality experts	National	6
Public health experts	National	6

Key Specialists (Professional Staff)	Type	Person-Months
Resettlement expert	National	18
Social development/gender expert	National	6
Water supply engineer *2	National	120
Contract management expert	National	60
Network modeling expert	National	60
Hydrology expert	National	48
Civil engineering experts	National	60
Mechanical engineering expert	National	24
Water quality expert	National	24
Quantity survey expert	National	48
Total		847
Financial and Capacity Development Consultants		
Utility management specialist/team leader	International	50
Financial management specialist/deputy team leader	International	30
Financial planning expert/deputy team leader	National	60
Tariff expert/economist	National	6
Chartered accountants	National	18
Account System Engineer	National	18
Management training expert/deputy team leader	National	60
Financial training expert	National	60
Technical training expert	National	60
Information technology expert	National	12
Management information systems expert	National	36
Community awareness expert	National	60
Total		470
PPME		
Project performance monitoring specialist/team leader	International	6
Project performance monitoring expert	National	21
Social development expert	National	15
Total		42

IEE = initial environmental examination.

Source: Asian Development Bank estimates.

KEY FEATURES AND OUTLINE TERMS OF REFERENCE FOR MANAGEMENT CONTRACT

A. Recruitment Procedures

1. Management contractors will be recruited in accordance with the *Guidelines on the Use of Consultants* (2007, and as amended from time to time) of the Asian Development Bank (ADB). The management contractor will be a company or consortium of companies that will be responsible for providing advisory services in managing the operations of one of the project zones. The management contractor will have to bear much more risk than a typical consultant, because the contractor's total remuneration will depend on its success in improving the delivery of services provided by DWASA. Because of the limited number of private contractors with the required expertise and possible limited interest due to the high costs of preparing a competitive proposal, the short list may not meet the requirements of six firms as mandated by ADB's guidelines.

2. To come up with a short list of qualified companies and/or consortia, the criteria for short-listing will include (i) a set of criteria to identify companies and/or consortia that have the necessary practical operating experience to be able to execute the contract successfully; and (ii) a summary of the experience and skills of the companies and/or consortia, with brief responses to a list of questions that focus on how they have addressed or would address problems similar to those the DWASA would face in improving service provision. An evaluation committee would consider private contractors meeting these criteria for short-listing based on expressions of interest received.

B. Outline Terms of Reference

3. The management contract will have two key features. First, it will have a 3-year tenure (typically), with remuneration consisting of a fixed fee and performance-based incentive payments. Second, the contract will have a limited number of easily measurable key performance indicators, whose baseline levels will be determined during the first year of operations, and to which performance-based payments will be linked. ADB anticipates that the management contractor will bring in a limited number of expatriate staff, and that its management team will likely include several Bangladesh nationals.

4. The management contractor will be responsible for managing the operation, as well as the systems and services, for the concerned project zone. The tasks of the management contractor will include:

- (i) improving the midterm performance and efficiency of services, and expanding their coverage in the DWASA's service area;
- (ii) enhancing the delivery of services to the poor through a targeted program of connections and service improvements in low-income communities;
- (iii) upgrading the operation and management of water and wastewater systems through various means, such as more efficient revenue collection, implementation of computerized billing and accounting, introduction of management information systems, improved customer service, improved occupational safety practices, and reduced leaks;
- (iv) assisting and advising DWASA in relation to strategic planning, budget preparation, and other operational and system optimization issues;
- (v) improving the effectiveness of the DWASA's human resources through a coordinated capacity building program; and
- (vi) resolving customer complaints and measuring customer satisfaction.

TECHNICAL ASSISTANCE MANAGEMENT SUPPORT FOR DHAKA WATER SUPPLY AND SEWERAGE AUTHORITY

1. A technical assistance (TA) grant will be attached to provide advice to the Government of Bangladesh¹ on improving and strengthening organizational, regulatory, and financial sustainability of its urban water and sanitation service utilities. This will include assistance to the Local Government Division (LGD) and the Dhaka Water Supply and Sewerage Authority (DWASA) in preparing and implementing key policy reforms. The TA also will assist DWASA in conducting the necessary technical preparation, including piloting optimization measures of the existing supply sources, and preparing for the implementation of the Project.

A. Impact and Output

2. The objective of the TA is to (i) foster and strengthen the autonomy of the urban water supply and sanitation service utilities, (ii) develop appropriate institutional and regulatory frameworks to enable successful implementation of the urban water supply and sanitation sector reforms being proposed under the Program, and (iii) assist DWASA in optimizing the existing supply sources and ensuring smooth start-up of the project implementation.

3. The TA outcomes will include (i) increased autonomy and strengthened governance and managerial structures within the WASAs; (ii) development of sector strategy and plan for the urban water supply and sewerage sector; (iii) improved financial sustainability and management capacity of DWASA and selected pourashava water supply sections (PWSSs); (iv) detailed analyses of and recommendations on tariff reforms required by the Program; (v) piloting and assessment of the merits of the trench-less technology in rehabilitation works versus the open-trench technology; (vi) preparation of the management contract and request for proposals; (vii) introduction of optimization measures in the existing supply sources; (viii) analysis and recommendation on the regulatory framework for the urban water sector; and (ix) a feasibility study of the long-term water supply source augmentation option for the Dhaka city from surrounding river(s). The TA will consist of the following components and outputs:

1. Component A: Institutional and Management Support to the Urban Water Supply and Sanitation Sector

4. Major activities under this component will include (i) assessment and preparation of an appropriate regulatory framework for the urban water supply and sanitation sector in Bangladesh in consultation with all stakeholders and the external development partners; (ii) comprehensive willingness-to-pay survey; (iii) development of appropriate tariff structures for DWASA and some selected key PWSSs, based on the willingness to pay study and detailed financial analysis of DWASA to achieve full cost recovery, while ensuring affordability of the low-income households; and (iv) development of the request for proposal (RFP) documents and the draft contract documents for the management contract for the selected project zone, based on lessons learned from global experiences with similar contracting approaches.

2. Component B: Optimization and Project Preparatory Support to DWASA

5. Under this component, the consultants will assist DWASA in (i) piloting and assessing the merits of the trench-less technology in rehabilitation works versus the open-trench technology, (ii) preparing for the smooth start-up of the project implementation, (iii) exploring

¹ From the Asian Development Bank's Technical Assistance Special Fund (\$2.5 million).

and introducing optimization measures in the existing supply sources, and (iv) completing a feasibility study for long-term water supply source for Dhaka city.

B. Methodology and Key Activities

6. The advisory services under the TA will be grouped into two consulting packages comprising (i) institutional and management support consultants, who will be responsible for delivering outputs under component A of the TA; and (ii) optimization and technical support consultants, who will be responsible for delivering outputs under component B of the TA. Under component A, the following key activities will be carried out: (i) comprehensive survey to assess the willingness to pay and affordability in Dhaka; (ii) detailed financial modeling and assessment of DWASA and some selected key PWSSs to establish the tariff levels required to achieve full cost recovery; (iii) short governance risk assessment on DWASA, based on findings of World Bank Performance Improvement Program (PIP) governance assessment, for operation more specific to water supply operation; (iv) extensive stakeholder consultations, including focus group discussions on the proposed tariff structures and options; (v) review of regulatory frameworks in the region and stakeholder consultations to discuss and devise the appropriate regulatory framework for the urban water supply and sanitation sector; and (vi) assessment of the existing operational and management needs, and the physical system to prepare the RFPs and contract documents for the proposed management contract in the selected project zone, and to carry out transaction advisory of the same.

7. Under component B of the TA, the following key activities will be carried out: (i) pilot rehabilitation of a selected sub-zone using trench-less technology; (ii) setting up the quality assurance and control mechanisms—energy audits in particular—for the groundwater supply facilities to optimize the existing system; (iii) preparation and update of the quality control and assurance guidelines for DWASA; (iv) engineering surveys, and technical, financial, social, and environmental feasibility study of long-term water supply source augmentation option for the Dhaka city from surrounding river(s); and (v) preparation of any technical documents and procedures within DWASA for speedy implementation of the Project.

C. Cost and Financing

8. The TA will cost the equivalent of \$3,125,000. The Asian Development Bank (ADB) will finance \$2,500,000 on a grant basis from ADB's TA funding program. The Government will contribute the balance of \$625,000, mostly through in-kind contribution by paying the project management unit (PMU) consultant office rent (in DWASA building), utilities (telephones, electricity, etc.), remuneration of government counterpart staff, and provision of local transport (existing DWASA cars and vans).

D. Implementation Arrangements

9. The Executing Agency (EA) for the TA will be LGD, but the consultant team will be based in the DWASA office, which will appoint an executive engineer or above as the TA coordinator and three counterpart staff to work with the consultants. ADB will engage a qualified consulting firm as the optimization and technical support (OTS) consultants for 41 person-months to conduct activities under component B of the TA, and individual consultants as the institutional and management support (IMS) consultants for 90 person-months to implement activities under component A of the TA. ADB will engage the consultants in accordance with its *Guidelines on the Use of Consultants* (2007, and as amended from time to time). Additional individual consultants may be recruited as necessary to strengthen the process. To facilitate

implementation, the TA will use an advance payment facility for equipment; training, seminars and workshops; surveys; and miscellaneous administration and support costs.

10. The TA will be undertaken intermittently over 3 years, from January 2008 to January 2011. The consultants will prepare a TA implementation plan before the start of services, which will include a timetable for deliverables defined under each component of the TA. For component B, within 4 weeks of starting the TA, the team leader will submit a brief inception report summarizing initial findings, identifying specific issues, and suggesting any changes needed to the methodology and program. The consultants also will submit interim, quarterly, and annual reports, in addition to specific reports covering the baseline, midterm, and final evaluation studies. The EA and ADB will review the interim reports. Draft final reports will be submitted within the deadline specified in the work plans after incorporation of feedback from EA, LGD, and ADB. Tripartite meetings will be held before finalization of the draft final reports. The final report, incorporating the comments of EA, LGD, and ADB during and after the tripartite meetings, should be submitted upon completion of the service. The final output of the TA will be a comprehensive report of findings, recommendations, and draft documents (including DWASA business plan and DWASA operations manual) for DWASA, LGD, and ADB.

E. Indicative Staffing Requirements for the TA Consultants

Table A12.1: TA Consultant Requirement Table

Specialist (Professional Staff)	Type	Person-Months
Component A. Institutional and Management Support to DWASA		
Transaction Advisor	International	3
Regulatory and Institutional Specialist	National	10
Legal Specialist	International	2
Legal Specialist	National	3
Governance Risk Assessment Specialist	National	6
Program Loan Policy Support Specialist/Deputy Team Leader	National	36
Financial Management and Tariff Specialist	International	9
Water Supply Engineer	International	8
Procurement Specialist	National	10
Water Utility Management Specialist	International	3
Component B. Optimization and Project Preparatory Support to DWASA		
Water Resource Management Specialist/Team Leader	International	6
Water Supply Engineer/Deputy Team Leader	National	10
Quality Assurance and Control Specialist	National	2
Groundwater Management Specialist	International	3
Energy Specialist	International	1
Hydrologist	International	3
Civil Engineer	National	5
Mechanical Engineer	National	5
Environment Specialist	International	3
Social Safeguards Specialist	International	3

Note: Detailed Terms of Reference is in Supplementary Appendix M.

Source: Asian Development Bank estimates.

Table A12.2: Cost Estimates
(\$)

Item	Total Cost
A. Asian Development Bank Financing	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	1,280,500
ii. National Consultants	303,000
b. International and Domestic Travel	170,000
c. Reports, Communications, and Office Operations	8,400
d. Technical and Administrative Support Staff	63,000
2. Survey	150,000
3. Equipment ^a	40,010
4. Capacity Building Program	180,000
5. Conferences, Seminars, Workshops, and Study Visits	114,000
6. Contingencies	191,090
Subtotal (A)	2,500,000
B. Government Financing	
1. Office Accommodation and Services	180,000
2. Counterpart Staff	261,720
3. Local Transport	108,000
4. Miscellaneous Administrative Expenses	42,840
5. Contingencies	32,440
Subtotal (B)	625,000
Total	3,125,000

^a Equipment includes office goods, including scanner/copier, digital camera, and hard disk that will not be provided under the loan, plus any additional desktop computer that might be needed for the implementation of technical assistance for the project manage unit and six zone offices (no more than two in each office) (total cost less than \$20,000); water pipes for testing (about 10 types of class B, C, and D, total costs less than \$10,000); and various tools necessary for conducting plumbers' training, including pipe joints, pressure gauge equipment, etc., (total cost less than \$10,000).

Notes:

1. Component A (institutional management support) includes an estimated \$90,000 for a willingness-to-pay and socioeconomic survey. It also envisages five seminars and/or workshops (\$1,000 each) for training and consultative activities to explain and educate the institutional reforms targeting Dhaka Water Supply and Sewerage Authority staff and employees.
2. Component B estimate is \$671,400. Component B includes engineering survey of \$50,000 for raw water intake study. It also includes a pilot study and plumbers' training for procurement of various meters and pipes totaling \$5000 for each of two locations.

Source: Asian Development Bank estimates.

SUMMARY POVERTY REDUCTION AND SOCIAL STRATEGY

A. Linkages to the Country Poverty Analysis

Is the sector identified as a national priority in country poverty analysis? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is the sector identified as a national priority in country poverty partnership agreement? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Contribution of the sector or subsector to reduce poverty in Dhaka, Bangladesh <p>A third of the urban population in Bangladesh is classified as poor (Poverty Monitoring Survey 2004),³ and urban income inequality is worsening. Based on the 2001 census, the population in the Dhaka megacity was 10.7 million, and current estimates place the population at 13 million. Based on the World Food Program's poverty estimates, more than 1 million in Dhaka are poor (8%). The urban poor live mainly in slum areas. Various agencies estimate the slum population differently—the Bureau of Statistics places the 2005 slum population at 1.2 million and the Dhaka Transport Coordination Board Survey estimates population density in the slums at 250,000 per square kilometer, or six times more dense than the rest of Dhaka. The socioeconomic survey conducted during preparation of the Dhaka Water Supply Sector Development Program (DWSSDP) shows that 70% of the slum population is poor. The survey also indicates that the poor live in fringe areas and pockets within Dhaka⁴ as well as in slum areas. Of Dhaka's population, about 10 million are within the Dhaka Water Supply and Sewerage Authority (DWASA) service area.</p> <p>Inadequate urban services, including water and sanitation, are a severe hindrance to the continued development of urban areas, as well as efforts to reduce severe poverty. In most urban areas of Bangladesh, piped water depends on deep tube wells. Due to high electricity costs, pumps run only for 10–12 hours per day, and piped water is available to consumers for only 2–4 hours daily. Those not covered by piped water often depend on unreliable, unsafe, and more expensive alternative sources. Waterborne diseases continue to account for the majority of deaths among infants and children under 5 years old. The Government of Bangladesh, as identified in its 2005 poverty reduction strategy paper, emphasizes supplying safe water and providing sanitation services to reduce health costs, decrease malnutrition, and increase labor productivity. Based on the Government's 2006 Guideline for Dhaka Water Supply, DWASA is allowed to extend basic water supply and sanitation services to slums within its service areas, providing legal connection and introducing formal billing and collection. The DWSSDP is expected to improve the management and operation of the municipal water supply service of Dhaka, and increase its capacity to serve the future population. DWSSDP will bring poor households under DWASA water supply coverage by providing additional supply lines to identified fringe and slum areas. It will provide a constant and pressurized supply of higher-water quality, of which 15% is estimated to benefit low-income communities using standpipes and communal taps. Poverty impact analysis shows that the Program will significantly reduce water costs, water collection time for women, and morbidity and associated health care costs; and improve public health where the poor live. This will increase time in productive and income-generating activities.</p>	

B. Poverty Analysis

Poverty Classification: General intervention

What type of poverty analysis is needed?

A socioeconomic survey was conducted during DWSSDP preparation covering 3,017 households from the slum areas, 945 households from pocket areas, and 1,057 households from fringe areas to supplement previous surveys, namely: the Asian Development Bank's Dhaka Water Services Survey (October 2005) and Pilot Testing of Zonal Approach in Manikdi Area of Dhaka City (November 2005). The survey was undertaken in six zones of DWASA. A poverty profile, generated from these surveys and secondary data, shows that the main causes of poverty are (i) differences in human resources, including literacy, knowledge, and skills; (ii) uneven distribution of physical assets, including housing structures, equipment, and implements; (iii) increased vulnerability due to certain demographic characteristics, such as households headed by females; and (iv) frequent movement and changes in shelter due to natural disasters, such as floods and man-made hazards including eviction.

³ 2004. Bangladesh Bureau of Statistics, *Poverty Monitoring Survey*. Dhaka.

⁴ These findings are consistent with 2005. Local Government Division, *Water Aid Bangladesh Survey*. Dhaka.

Slum households generally are not supplied directly with DWASA water. According to the socioeconomic survey, in slum areas (and unserved areas), water is supplied through hand tube wells, small-scale operators, long-coil pipes, and vendors. The survey noted that 90% of slum dwellers reported that they have used DWASA-owned water through illegal channels. Due to difficulties in obtaining water and inadequate sanitation, morbidity rates are high. The prevalence of diarrhea is widespread among children under 5 years old in poor communities compared with the nonpoor ones. In the slum areas, more than 55% of households reported spending Tk306, or 6% of their monthly income on average, to treat diarrhea.

C. Participation Process

Is there a stakeholder analysis? ☒ Yes ☐ No

Consultations were undertaken with stakeholders, including consumers and Dhaka residents, policy makers (ministers), local government departments, DWASA board members, DWASA management, DWASA staff, zone water supply offices, union members, DWASA enlisted contractors, academicians, media, nongovernmental organizations (NGOs), and the private sector. Different stakeholders were consulted to ensure their involvement in DWSSDP development and design. Stakeholder workshops were conducted to share the findings of stakeholder interviews and solicit views from workshop participants. At the field level, focus group discussions were held with women and men to provide gender perspectives. Various water-related issues were identified by stakeholders through key informant interviews to obtain views, issues, and priorities on water supply, and to seek suggestions provided by stakeholders.

Is there a participation strategy? ☒ Yes ☐ No

DWSSDP development and design were conducted in a highly participatory fashion involving several stakeholders. The strategy for community consultation and participation was successfully demonstrated through the Manikdi pilot project (Supplementary Appendix K), and will continue to be applied in the Project. Formation of community groups will be facilitated by NGOs and where appropriate CBOs to mobilize communities for participation in the Project. Extensive workshops, door-to-door information and awareness campaigns through various media mechanisms, and community meetings will be organized to raise the awareness and educate the communities on issues, such as tariff reforms, minimizing wasted water, meter reading and billing systems, and the establishment of a consumer satisfaction and grievance mechanism. Where appropriate, operations and maintenance responsibilities, including tariff collection, will be delegated to community-based organizations.

D. Gender Development

Strategy to maximize beneficial impacts on women:

To maximize DWSSDP impacts on women, a gender action plan was developed focusing on the different experiences of men and women regarding water. The gender differences (especially in unserved and poor areas of Dhaka) related to carrying and using water has been identified through quantitative and qualitative studies. The lack of access to piped water supply affects women more than men. In the pilot area, women are water managers who take major responsibility in supplying water to their families. The pilot intervention showed women to be aware and keen to contribute to DWSSDP (e.g., in operations and maintenance). When forming community groups, the inclusion of women will be ensured. Involving women in mobilizing communities is also part of DWSSDP design. Women will be involved in assisting the community group in identifying the vulnerable, particularly single-earner households headed by women. Mobilization and organization of women at the formulation and implementation stages will help sustain their involvement. Women also will be involved in locating the sites for construction of community and domestic water points, reading water meters, and other water-related issues. Monitoring and evaluation systems will support the generation of gender-disaggregated information to enable the tracking of DWSSDP's gender impacts.

Has an output been prepared? ☒ Yes ☐ No

A gender action plan that ensures that gender issues are addressed, women benefit equally from the Program, and interventions avoid gender bias has been developed. NGOs will be involved in identifying vulnerable households, particularly single-earner households headed by women. Special attention will be given to capacity building of DWASA staff on gender sensitization, particularly when working with women in community groups, and involving them in community water point management and monitoring activities.

E. Social Safeguards and Other Social Risks

Item	Significant/ Not Significant/ None	Strategy to Address Issues	Plan Required
Resettlement	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	DWSSDP is designed to minimize land acquisition and resettlement impacts. A resettlement framework (RF) has been prepared to guide the implementation of DWSSDP, and a short resettlement plan (RP) has been prepared for a sample subzone.	<input type="checkbox"/> Full <input checked="" type="checkbox"/> Short RP and RF <input type="checkbox"/> None
Affordability	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	The potential negative impact of water tariff increases on the poor is considered acceptable at 4% of household income, and given that they currently pay a higher proportion than average of their incomes on water. The tariff structure will have block-tariff elements with a lifeline block tariff subsidized for low-income households.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Labor	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	No jobs will be lost. The construction and operation of the DWSSDP will generate jobs for local people. The Project will ensure (i) children are employed, (ii) appropriate facilities are provided for workers and their families at construction campsites, and (iii) men and women are paid the same for work of equal value.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Indigenous Peoples	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	No impacts on indigenous peoples have been identified.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Other Risks and/or Vulnerabilities	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	No other risks or vulnerabilities have been identified.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

SUMMARY RESETTLEMENT FRAMEWORK

A. Introduction

1. The Dhaka Water Supply Sector Development Program (DWSSDP) is needed to improve the management and operation of the municipal water supply service of Dhaka city and increase its capacity to serve the future population. Infrastructure improvements will be conducted within four zones and 20 hydraulic subzones, and will be designed in 2008 and constructed in 2009–2013. Work will include repairing the existing network and extending the supply into new areas, and rehabilitating network facilities. DWSSDP also will build the capacity of the Dhaka Water Supply and Sewerage Authority (DWASA) and raise public awareness.

2. DWSSDP development includes design actions to minimize land acquisition and resettlement by (i) continuing the practice in Dhaka of burying new water pipes in roads and road rights-of-way to avoid acquiring land, (ii) using trench-less technology where possible in relining pipes and installing new pipes to limit the excavation of trenches and reduce disturbance of residents and business, and (iii) locating new facilities (overhead reservoirs and chlorination units) on vacant government land where possible.

3. Anticipated impacts are limited to (i) loss of income by shops and other businesses if trenches and excavated soil make access difficult for customers, (ii) loss of income by hawkers if they have to move from their normal locations, and (iii) loss of land if some private land has to be acquired for some new overhead reservoirs. Losses of income are expected only on minor roads, because work is allowed only on major roads at night when most businesses are closed to reduce traffic congestion.⁵ The overall impacts are to be minimized further through careful selection of sites and alignment during detailed design. A short resettlement plan was prepared for a sample subzone (Supplementary Appendix e).

B. Resettlement Framework and Policy

4. This summary provides highlights of the resettlement framework in Supplementary Appendix D. The framework outlines the objectives, policy principles, and procedures through which DWASA will provide affected persons with compensation and other assistance to mitigate impacts. The framework is based on the national law The Acquisition and Requisition of Immovable Property Ordinance, 1992; the resettlement policy framework of the Executing Agency (EA); and the *Involuntary Resettlement Policy* (1995) of the Asian Development Bank (ADB). The framework compares these documents and addresses gaps.

5. DWSSDP will be based on the following general involuntary resettlement principles: (i) action will be taken during development and design to avoid land acquisition, relocation, and other resettlement effects where possible; (ii) where these effects cannot be avoided, sufficient compensation will be provided to affected persons to restore their quality of life and livelihoods to at least pre-project levels; (iii) the law of Bangladesh applies where relevant, but where no applicable law is available or there is a gap between ADB policy, the resettlement framework will be followed; (iv) compensation amounts will be based on current replacement value of assets or the amount of income lost, as appropriate; (v) additional assistance will be provided to

⁵ The extent of these impacts was estimated by transect walks along 18 kilometers of minor roads, which represent 6.7% of the roads likely to be affected. Results indicate that, although impacts are relatively minor, DWSSDP can affect many people and premises because of the size of Dhaka.

vulnerable⁶ affected persons to help improve their economic and social status; (vi) the absence of formal title to land is not a bar to obtaining resettlement assistance; (vii) compensation and other assistance will be provided before the loss is incurred; (viii) damage to common property resources, such as mosques, schools, and hospitals, will be avoided, and temporary structures will be provided to maintain access; (ix) important cultural and religious sites, and landmarks of historical or environmental value (such as buildings and large trees) will be left intact, and conserved and protected; and (x) the cutoff date for compensation entitlement is the date of the detailed measurement survey (DMS) to identify entitled persons and record their losses—compensation will not be paid for any development made on affected land after this date. The resettlement framework further details principles for (i) permanent impacts, (ii) temporary impacts, and (iii) institutional arrangements. The entitlement matrix for DWSSDP, based on the these principles, is in Table A14.1.

C. Procedure for Resettlement Plan Preparation and Institutional Arrangements

6. The infrastructure work will be tendered in construction packages relating to 20 hydraulic subzones, and contractors may be awarded work in one or more subzones. DWASA will set up a project management unit (PMU) to manage DWSSDP centrally. The six DWASA administrative (MODS) zones, through project coordination units, will manage local implementation and engage civil society. Resettlement issues will be coordinated by a resettlement specialist appointed to the PMU, who will prepare resettlement plans for each hydraulic subzone, following the procedures established by the resettlement framework. The specialists will also coordinate allocations of compensation and other entitlements, which will be distributed by personnel from a local nongovernment organization (NGO) appointed to assist the MODS. Most resettlement activities will be conducted by the resettlement specialists or by the NGO working with the MODS. Supervision and approval will be by the PMU project director centrally and zone-level coordination committees, set up as independent local monitoring agencies. Further details on roles and responsibilities for resettlement plan activities are in Table A14.2.

7. The PMU will appoint design and management consultants to design the infrastructure, manage tendering of contractors, and supervise the construction process. The resettlement framework principles will be followed in preparing designs and construction contracts, meaning action will be taken to avoid resettlement impacts where possible. The resettlement plans also will follow these policies, and resettlement impacts that do occur will be addressed as in the entitlement matrix. This should ensure that the DWSSDP does not disadvantage anyone, especially the vulnerable, and that the quality of life of affected persons is improved where possible.

D. Consultation, Disclosure, and Grievance Redress

8. Stakeholders were involved in preparing the resettlement framework and sample resettlement plan through face-to-face interviews on site (448 participants), five workshops (131 participants) to discuss the draft DWSSDP (including draft framework), and a pilot public meeting (30 participants) in one of the hydraulic areas. Disclosure was achieved by presenting material at the meetings and distributing a summary documents in Bangla at meetings and with newspapers. DWASA will employ an experienced NGO to expand this process during the implementation stage via media campaigns, public meetings, stakeholder workshops, and

⁶ Vulnerable groups are those without legal title to land or other assets, households headed by single-earner females, the elderly or disabled, indigenous peoples, and households with incomes below the poverty line.

discussions with affected persons on resettlement impacts and entitlements. Draft and final resettlement plans will be disclosed on DWASA and ADB websites, and hard copies will be made available at zone offices.

Table A14.1: Entitlement Matrix

Type of Loss	Application	Entitled Person	Compensation Policy ^a	Implementation Issues and Responsibility
Loss of land	Vacant land acquired for the project that is not leased, occupied, or used for any purpose	Landowner(s) with legal title	<ul style="list-style-type: none"> • Cash compensation equivalent to the replacement cost of land.^b • Costs that would be incurred in purchasing new land (stamp duty, registration fee, and transfer cost). 	<ul style="list-style-type: none"> • DWASA will purchase land by the “willing buyer, willing seller” principle where possible, conducting negotiations and signing agreements openly in public. • Negotiations would be monitored by a committee set up by the project to represent affected persons (zone-level coordination committee). • If a parcel of land cannot be obtained by this method, an alternative site will be sought. • If no suitable alternative exists, land will be acquired by the established procedures of the Acquisition and Requisition of Immovable Property Ordinance, 1982. • DWASA will commission an independent survey to establish the market value of the land. • If the sale price negotiated by DWASA or established by the DC is less than the replacement value, according to the survey, the project will pay a top-up amount equivalent to the shortfall.
Temporary loss of livelihood	Business activity disrupted by construction work	Owner of business, shopkeeper (owner or tenant), or hawker	<ul style="list-style-type: none"> • Provision of information to affected persons 60 days before works. • Cash compensation, calculated as the amount of income lost during the period of disruption. • <i>Compensation will be paid regardless of whether the business closes during the construction period.</i> 	<ul style="list-style-type: none"> • The normal income of businesses and hawkers will be determined by a detailed measurement survey (DMS) commissioned by DWASA. • The period of disruption will be assumed to be 5 days, based on experience from the 4th Dhaka Water Supply Project (World Bank, 1999–2002), where this was the average period of construction at network sites.
Temporary loss of access	Access to houses, shops, and common property resources impeded by trenches	Residents, shop customers	<ul style="list-style-type: none"> • Provision of information to affected persons 60 days before works. • <i>Temporary access structures will be provided to allow pedestrians and vehicles to cross trenches safely.</i> • Structures will also be provided to maintain access to common property resources. 	<ul style="list-style-type: none"> • Construction contracts will require contractors to provide planks and metal sheets where necessary to allow access across trenches by pedestrians and vehicles respectively. • The design and supervision consultants employed by DWASA to supervise construction will ensure that contractors have sufficient planks and metal sheets available before any trench construction begins.
Impacts on vulnerable affected persons	Special provisions (in addition to any other compensation for loss of land or income)	Vulnerable affected persons ³	<p>Support for alternative livelihoods:</p> <ul style="list-style-type: none"> • Employed preferentially in workforces created by this project (construction and operations and 	<ul style="list-style-type: none"> • Construction contracts will require contractors to employ specific numbers of vulnerable affected persons in their construction workforces. • DWASA will adopt targets of the numbers of vulnerable affected persons to be

Type of Loss	Application	Entitled Person	Compensation Policy ^a	Implementation Issues and Responsibility
			maintenance) if suitable. Assured involvement in project activities: <ul style="list-style-type: none"> • Assured of representation on project-related consultative committees and other communication and planning forums. 	employed long term in operations and maintenance workforces for DWSSDP. <ul style="list-style-type: none"> • Representation from vulnerable affected persons will be a requirement of all committees and consultation forums for DWSSDP.
Unidentified losses	Any loss not already covered by this matrix	Affected persons	<ul style="list-style-type: none"> • Dealt with as appropriate during DWSSDP implementation according to ADB policy. 	<ul style="list-style-type: none"> • Action to address any issues will be proposed by the project management unit resettlement specialist. • Proposed action will follow ADB policy and adopt a similar approach as outlined in Appendix 14, if applicable.

ADB = Asian Development Bank, DMS = detailed measurement survey, DWASA = Dhaka Water supply and Sewerage Authority, DWSSDP = Dhaka Water Supply Sector Development Program.

^a All measures comply with DWASA policy as established by the resettlement policy framework, except those shown in italics. These measures are required to comply with ADB's *Involuntary Resettlement Policy* (1995), particularly the requirement that affected persons are at least as well off as they would have been in the absence of DWSSDP.

^b A top-up amount will be added to bring the total price to the replacement value, as calculated by an independent survey.

Source: DWASA. 2007. Resettlement Framework. Dhaka.

9. The existing DWASA grievance redress mechanism will be used for the DWSSDP. This involves resolution of complaints, if possible by discussion between the PMU, affected person, zone-level coordination committee plus construction contractor, if necessary. If a case cannot be resolved, it is presented to a grievance resolution committee, chaired by the PMU project director, with two other members, one a respected local figure and the other from a local NGO or community-based organization (CBO). The grievance resolution committee meets as often as necessary and has 14 days to reach a decision, after which an affected person may present his case again once on appeal.

E. Monitoring and Evaluation

10. The DWASA environment cell will conduct internal monitoring of resettlement following normal practice established in the DWASA resettlement plan framework (RPF). The Program will provide the environment cell with training and the support of the PMU resettlement specialist to enable them to fulfill this role. Aspects monitored will include: management, budget and program; delivery of affected person entitlements; consultation and grievance; and benefits and impacts. Consultant or an NGO also will be engaged as an independent monitoring agency to report to the EA and ADB throughout the DWSSDP on provision of entitlements and their effects, as well as the adequacy of resettlement policies, staff, structures, and the overall process. This will include compliance monitoring and social impact evaluations.

F. Resettlement Budget

11. The PMU will prepare detailed budget estimates for involuntary resettlement for each resettlement plan. It will be included in the overall subzone cost estimate. The budget will include (i) detailed costs of land acquisition (if any), compensation, and assistance; (ii) source of funding; (iii) arrangements for approval; and (iv) the flow of funds and contingency arrangements. Overall costs are estimated at Tk154 million. The EA provide all land acquisition,

compensation, and assistance costs incurred by the grievance redress committee. DWSSDP will support the costs of consulting services, support staff, training, CBO and/or NGO staff, required surveys, monitoring, and communication and other expenses.

Table A14.2: Institutional Roles and Responsibilities

Activity	Action	Approval
Institutional Strengthening		
Consultancy support to PMU-RS	PMU	PMU-PD
Training and support to DWASA EC	PMU	PMU-PD
NGO support to PCUs	PMU	PMU-PD
Preparation of Resettlement Plans		
Design of DMS ^a questionnaire	PMU-RS	PMU-PD
Implementation of DMS, screening of vulnerable households	NGO	PMU-RS
Calculation of average values for entitlements	PMU-RS	PMU-PD, ZLCC
Preparation of Draft RPs	PMU-RS	PMU-PD, ADB
Public consultation on RPs and entitlements	NGO	PMU-RS, ZLCC
Incorporation of comments, preparation of final RPs	PMU-RS	PMU-PD
Public disclosure of RPs	NGO	ZLCC, ADB
Implementation of Resettlement Plans		
Appointment of IMA	PMU	PMU-PD
Internal and external monitoring	DWASA EC, IMA	PMU-PD, ZLCC, ADB
Allocation of RP budgets	DWASA Finance Dept	PMU-PD
Preparation of lists of entitled persons and entitlements	PMU-RS	PMU-PD
Preparation of CEFs for each affected person	PMU-RS	PMU-PD
Discussion and agreement of CEFs with each affected	NGO	PMU-RS
Retention of agreed and endorsed CEFs	AP, MODS, PMU	PMU-RS
Application for release of compensation funds	NGO	PMU-RS
Release of funds	DWASA Finance Dept	PMU-PD
Provision of checks to affected persons	NGO	PMU-RS, ZLCC
Provision of other entitlements	PMU-RS	IMA, EC, ZLCC
Dealing with complaints and grievances	MODS, GRC	PMU-RS, ZLCC
Communication of outcome of GRC cases	GRC	PMU-RS, ZLCC
Surveys to determine level of affected person satisfaction	NGO, IMA	DWASA EC

ADB = Asian Development Bank, DMS = detailed measurement survey, CEF = compensation and entitlement form, DWASA = Dhaka Water and Sewerage Authority, DWASA EC = DWASA environment cell, GRC = grievance redress cell, IMA = independent monitoring agency, MODS = management, operations, distribution, and services, NGO = nongovernment organization, PCU = project coordination unit, PMU = project management unit, PMU-PD = PMU project director, PMU-RS = PMU resettlement specialist, RP = resettlement plan, ZLCC = zone-level coordination committee.

^a Detailed measurement survey carried out during detailed design to record and quantify resettlement impacts and entitled persons.

Source: DWASA. 2007. Resettlement Framework. Dhaka

SUMMARY INITIAL ENVIRONMENTAL EXAMINATION

A. Introduction and Description of the Program

1. The Dhaka Water Supply Sector Development Program (DWSSDP) is needed to improve the management and operation of the municipal water supply service of Dhaka City and increase its capacity to serve the future population. Infrastructure improvements will be conducted within four zone and 20 hydraulic subzones, and will be designed in 2008 and constructed in 2009–2013. Work will include repair of the existing network and extending the supply into new areas, and rehabilitation of network facilities. DWSSDP also will build the capacity of the Dhaka Water Supply and Sewerage Authority (DWASA) and raise public awareness. An initial environmental examination (IEE) was prepared to assess the impacts of project loan activities (Supplementary Appendix F). The impacts of program loan activities were reviewed through an assessment of the policy matrix (Supplementary Appendix G). The IEE was based on field surveys, secondary information, and discussions with stakeholders. The salient points from the IEEs are summarized in the following.

B. Forecasting Environmental Impacts and Mitigation Measures

2. DWSSDP is designed to maximize environmental and public health benefits. The IEE conducted for DWSSDP shows that net environmental benefits are positive and large. The main beneficiaries of the improved network are Dhaka city residents, who will be provided with a constant and pressurized supply of higher-water quality, which serves a large proportion of the population. This will improve quality of life and raise standards of individual and public health, as improvements in hygiene reduce diseases from poor sanitation. It also will result in social benefits from reduced time spent on water collection, increased time for productive and income-generating activities, and reduced expenditures on health care due to waterborne diseases.

3. During program development, measures were included in program design to mitigate potential negative environmental impacts. These included (i) adopting trench-less technology to the extent possible to reduce excavation and disturbance of residents and businesses; (ii) continuing the practice of burying water distribution pipelines within roads and locating new facilities on vacant government-owned land to avoid land acquisition; and (iii) prohibiting the use of asbestos cement pipes to avoid potential health risks from inhalation of asbestos fibers. The remaining negative impacts relate to construction, and operations and maintenance whose potential impacts on the physical environment and people will be mitigated by a range of identified measures. These include (i) reducing waste disposal by finding beneficial uses for waste soil and stone, (ii) reducing dust by covering soil and sand when stored on site or carried on trucks, and (iii) planning work to minimize disruption on traffic and communities. Potential negative impacts and mitigation measures are summarized in Table A15.

Table A15: Potential Adverse Environmental Impacts and Mitigation Measures

Potential Negative Impact	Mitigation Activities and Method
Construction: Network Improvements	
Excavation of pipeline trenches will produce large amounts of waste soil and stone	Find beneficial uses for waste soil in construction, land raising and infilling of excavated areas Deliver suitable material to sites agreed by DWASA/DCC
Waste soil (and sand for trench infilling) could create dust	Remove waste soil for disposal as soon as it is excavated Plan work to only bring sand to site when needed Cover or spray soil to reduce dust in windy weather Cover soil and sand with tarpaulins when carried on trucks
Roadside trees may be damaged or removed	Only remove trees if it cannot be avoided Plant and maintain two trees for every one removed
Shops and other businesses may lose	Leave spaces for access between mounds of soil

Potential Negative Impact	Mitigation Activities and Method
income if customers' access is impeded by trenches, soil, etc.	Provide walkways and metal sheets to maintain access across trenches for people and vehicles where required
	Increase workforce in these areas to finish work quickly
	Consult businesspeople: inform them of work in advance
	Compensate businesses for lost income ^a
Excavation could damage existing infrastructure	Check location of infrastructure and avoid these sites
Traffic will be disrupted by trenches, soil, vehicles and machinery, and some roads may need to be closed	Plan work with DCC and Dhaka Police to avoid disruption
	If work requires road closure, conduct when traffic is light
	Ensure police provide road diversions when needed
	Ensure warning signs are used and traffic is policed if any work is conducted in roads when used by traffic
Traffic, people and activities could be disrupted by trucks carrying waste soil or delivering sand or other materials	Plan routes to avoid narrow streets and congested roads
	Plan waste transportation to avoid peak traffic periods
Residents may experience noise, dust, impeded access; and sleep may be disturbed by work conducted at night	As above: remove waste quickly, cover/spray stockpiles, import sand only when needed, cover soil/sand on trucks
	As above: increase workforce to finish work quickly
	As above: use bridges to allow access (people/vehicles)
	Use modern vehicles/machinery and maintain as specified
	Use directional, shaded, down-facing lighting at night
Socially and culturally important buildings and their users may be disturbed by noise, dust and impeded access	As above: remove waste quickly, cover/spray stockpiles, import sand only when needed, cover soil/sand on trucks
	As above: increase workforce to finish work quickly
	As above: use bridges to allow access (people/vehicles)
	As above: use and maintain modern vehicles/machinery
	Consult relevant authorities, custodians of buildings, local people to address issues and avoid work at sensitive times
People will be inconvenienced and their health may be at risk if water supply system is shut down for long periods	Plan work carefully to keep shutdown to minimum
	Provide alternative potable water to affected residents
	Inform communities of any shutdown well in advance
Workers and the public are at risk from accidents on site	Prepare and implement a site Health and Safety Plan that includes measures to:
	- Exclude the public from all construction sites
	- Ensure that workers use personal protective equipment
	- Provide Health and Safety Training for all personnel
	- Follow documented procedures for all site activities
	- Keep accident reports and records
There are approximately 20 km of AC pipes in the existing water supply system; asbestos can be carcinogenic if inhaled as dust particles	Ensure that designs involve no removal or disturbance of AC pipes
	Develop and apply protocol to protect workers and public if AC pipes are encountered. This should include:
	- training all personnel in dangers of asbestos and how to recognize AC pipes in situ
	- immediate reporting to management if AC pipe is found
	- immediate removal of all persons to a safe distance
	- use of appropriate breathing apparatus and protective suits by workers delegated to deal with AC material
Economic benefits if local people are employed in Contractor's workforce	- safe removal and long-term disposal of AC material
	Contractor should employ workers from local community and include 10% vulnerable APs
Construction: Facilities and Structures	
It may be necessary to acquire some private land for some of the new Ors	Avoid land acquisition by locating all new ORs on government land if possible ^a
	Only acquire private land if there is no alternative ^a
	Only acquire private land that is not used or occupied ^a
	Buy land from willing sellers wherever possible ^a
	Purchase land as described in resettlement framework ^a
	Conduct independent survey of market value and pay top up amount if necessary ^a
	Pay associated additional costs for purchase of new land (tax, fees) ^a

Potential Negative Impact	Mitigation Activities and Method
Residents may be disturbed by noise and dust	Engage residents in consultations as stakeholders; inform of work in advance and benefits of completed scheme As above: use modern, maintained vehicles and machinery
Socially and culturally important buildings may also be affected by noise and dust	As above: include custodians of important buildings and facilities as stakeholders and address their concerns
Workers and the public are at risk from accidents on site	As above: prepare and implement Health and Safety Plan
Economic benefits for people employed in workforce	As above: employ workforce from affected communities and include 10% vulnerable APs
Operation and Maintenance	
Shops and other businesses may lose small amounts of income if customer access is impeded by network repair	As before: inform shopkeepers of work in advance As before: provide walkways and bridges for vehicles As before: request police to divert traffic if necessary
Residents and locations of social/cultural importance may be disturbed by noise, dust and impeded access for short time during network repairs	Inform residents & building custodians of work in advance As before: provide walkways/bridges for people/vehicles As before: use modern, maintained vehicles and machinery As before: use down-facing shaded lighting at night
Health and safety of workers and the public could be at risk from repair work and AC pipes of old water supply system	Prepare and operate Health and Safety Plan with same measures as used in construction phase Apply previously-developed protocol to protect all persons if AC pipes are encountered
Local people will benefit if employed by project	Workers employed to maintain chlorination facilities and OR should be residents of neighboring communities
Chlorination does not remove all bacteria and pathogens so could be some health risk from water consumption	Conduct public education campaign to inform people of the need to continue boiling water before consumption

AC = asbestos cement, AP = affected person, DWASA = Dhaka Water and Sewerage Authority, OR = overhead reservoir.

^a Part of the resettlement framework.

Source: DWASA. 2007. Initial Environmental Examination. Dhaka.

C. Institutional Requirements and Environmental Monitoring Plan

4. As the Executing Agency (EA), DWASA is responsible for the management and technical supervision of DWSSDP, and will carry out mitigation assigned to them as part of their management function. DWASA is also the Implementing Agency (IA) responsible for supervising infrastructure construction and conducting the non-infrastructure elements, and will establish a project management unit (PMU) for this purpose. The PMU will be supported by design and management consultants, who will design the infrastructure, manage tendering of contractors, and supervise construction. Their contract will require the consultants to include mitigation measures in designs where appropriate, and to specify other measures in construction contracts.

5. The four DWASA administrative (MODS) zones, through project coordination units, will coordinate activities at the local level and engage civil society. The EA will appoint construction contractors to build the infrastructure in one or more of the 20 hydraulic areas. Each construction contractors will be supervised by the Design and Managing Consultants. When the infrastructure is completed, operation will remain the responsibility of DWASA, which will employ local operations and maintenance contractors to conduct maintenance and repairs as required.

6. An interministerial project steering committee will provide DWASA with central policy guidance and coordination. Zone-level coordination committees will monitor implementation at the local level and will report to the project steering committee.

7. Environmental issues will be coordinated by an environment specialist in the PMU, who will prepare environmental assessment documents (Initial environmental examination [IEEs] or environmental impact assessment [EIAs]) consistent with the environmental assessment and

review framework for work in each hydraulic zone, as required by Asian Development Bank (ADB) policy, and will assist DWASA in obtaining environmental clearance for the program, as required by national law. An environmental monitoring specialist will implement the environmental monitoring plan. This will involve observations and surveys throughout construction to ensure that mitigation measures are provided, and to protect the environment as intended. The PMU also will appoint consultants to monitor the long-term impacts of the infrastructure, which involves data collection during construction (to show existing conditions) and in each of the first 5 years of operation.

D. Public Consultation and Disclosure

8. Stakeholders¹ were involved in developing the IEE through (i) face-to-face interviews on site (448 participants) in July–August 2006, (ii) five workshops (131 participants) on the draft final report in October 2006, and (iii) a pilot public meeting (30 participants) in one of the hydraulic areas in April 2007. Information also was disclosed to the wider public by circulating a Bangla language pamphlet with newspapers. Views expressed were incorporated into the IEE, as well as the planning and development DWSSDP. The IEE will be made available at public locations in Dhaka and will be disclosed to a wider audience through the ADB and DWASA websites. Consultation will be continued and expanded during DWSSDP implementation, when DWASA will appoint a nationally recognized nongovernment organization to handle this key element to ensure that stakeholders participate fully in DWSSDP execution.

E. Findings, Recommendations, and Conclusion

9. The IEE recommends the implementation of (i) all mitigation, compensation, and enhancements proposed in the IEE and resettlement planning documents; and (ii) the environmental monitoring plan described in the IEE and the monitoring proposed in resettlement planning documents. The IEE shows that if recommendations outlined in the appendix are implemented in full, the location, design, construction, and operation of DWSSDP will not produce any significant negative environmental impacts.

10. During the detailed design stage, IEEs will be required to identify and mitigate the impacts of work in each hydraulic subzone, and an environmental impact assessment will be required to comply with national law. The environment specialist in the PMU will prepare these, and the cost has been included in budgets for environmental management measures. The analysis described in the IEE does not contain any uncertainties, and no additional work is required at this stage of DWSSDP development.

¹ Primary stakeholders include: residents, shopkeepers, and businesspeople who live and work near the construction sites; custodians and users of socially and culturally important buildings in these areas; and owners of any land that might be acquired to provide sites for new overhead reservoirs. Secondary stakeholders are: DWASA; other relevant government institutions; NGOs and community-based organizations working in affected communities; other community representatives (prominent citizens, religious leaders, women's groups); the beneficiary community in general; and ADB.