Report and Recommendation of the President to the Board of Directors

Project Number: 49329-007
September 2020

Proposed Loans
People’s Republic of Bangladesh: Khulna Sewerage System Development Project

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Asian Development Bank
CURRENCY EQUIVALENTS
(as of 19 August 2020)

Currency unit – taka (Tk)
Tk1.00 = $0.0118
$1.00 = Tk84.7887

ABBREVIATIONS

ADB – Asian Development Bank
EMP – environmental management plan
FSM – fecal sludge management
GAP – gender action plan
GIS – geographic information system
IEE – initial environmental examination
KCC – Khulna City Corporation
km – kilometer
km$^2$ – square kilometer
KWASA – Khulna Water Supply and Sewerage Authority
LIC – low-income community
m$^3$ – cubic meter
O&M – operation and maintenance
PAM – project administration manual
PMU – project management unit
PPP – public–private partnership
SCADA – supervisory control and data acquisition
SDG – Sustainable Development Goal
STP – sewage treatment plant

NOTES

(i) The fiscal year (FY) of the Government of Bangladesh and its agencies ends on 30 June. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2020 ends on 30 June 2020.

(ii) In this report, “$” refers to United States dollars.
<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
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</thead>
<tbody>
<tr>
<td>Vice-President</td>
<td>Shixin Chen, Operations 1</td>
</tr>
<tr>
<td>Director General</td>
<td>Kenichi Yokoyama, South Asia Department (SARD)</td>
</tr>
<tr>
<td>Director</td>
<td>Norio Saito, Urban Development and Water Division (SAUW), SARD</td>
</tr>
<tr>
<td>Team leaders</td>
<td>Jaemin Nam, Urban Development Specialist, SAUW, SARD</td>
</tr>
<tr>
<td></td>
<td>Md. Shahidul Alam, Senior Project Officer (Urban Infrastructure),</td>
</tr>
<tr>
<td></td>
<td>Bangladesh Resident Mission (BRM), SARD</td>
</tr>
<tr>
<td>Team members</td>
<td>Mikael R. Andersson, Financial Management Specialist, Portfolio,</td>
</tr>
<tr>
<td></td>
<td>Results and Quality Control Unit, Office of the Director General,</td>
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<tr>
<td></td>
<td>SARD</td>
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<tr>
<td></td>
<td>Saswati G. Belliappa, Safeguards Specialist, SAUW, SARD</td>
</tr>
<tr>
<td></td>
<td>Urmee Bhattacharjee, Associate Project Analyst, BRM, SARD</td>
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<td></td>
<td>Joana E. Custoias, Counsel, Office of the General Counsel</td>
</tr>
<tr>
<td></td>
<td>Dharmesh Dawda, Procurement Specialist, Procurement, Procurement</td>
</tr>
<tr>
<td></td>
<td>Division 1, Portfolio and Financial Management Department</td>
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<tr>
<td></td>
<td>Luca Di Mario, Urban Development Specialist, SAUW, SARD</td>
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<tr>
<td></td>
<td>Nasheeba Selim, Senior Social Development Officer (Gender), BRM,</td>
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<td>Elvie Jane Tirano, Senior Operations Assistant, SAUW, SARD</td>
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<tr>
<td></td>
<td>Sheryl Yanez, Associate Project Analyst, SAUW, SARD</td>
</tr>
<tr>
<td>Peer reviewer</td>
<td>Sara Fatima Azfar, Senior Partnerships Specialist, Strategic Partnerships Division, Strategy, Policy and Partnerships Department</td>
</tr>
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</table>

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CONTENTS

PROJECT AT A GLANCE

MAP

I. THE PROPOSAL 1
II. THE PROJECT 1
   A. Rationale 1
   B. Project Description 4
   C. Value Added by ADB 5
   D. Summary Cost Estimates and Financing Plan 5
   E. Implementation Arrangements 6

III. DUE DILIGENCE 7
   A. Technical 7
   B. Economic and Financial Viability 8
   C. Sustainability 8
   D. Governance 9
   E. Poverty, Social, and Gender 9
   F. Safeguards 10
   G. Summary of Risk Assessment and Risk Management Plan 11

IV. ASSURANCES AND CONDITIONS 12

V. RECOMMENDATION 12

APPENDIXES

1. Design and Monitoring Framework 13
2. List of Linked Documents 16
## PROJECT AT A GLANCE

### 1. Basic Data

<table>
<thead>
<tr>
<th>Project Number</th>
<th>49329-007</th>
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<tr>
<td>Project Name</td>
<td>Khulna Sewerage System Development</td>
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<td>Country</td>
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<td>Borrower</td>
<td>Government of Bangladesh</td>
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<td>Country Economic Indicators</td>
<td><a href="https://www.adb.org/Documents/LinkedDocs/?id=49329-007-CEI">Link</a></td>
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### 2. Sector

<table>
<thead>
<tr>
<th>Subsector(s)</th>
<th>ADB Financing ($ million)</th>
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<tr>
<td>Water and other urban infrastructure and services</td>
<td>20.00 140.00</td>
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<tr>
<td>Total</td>
<td>160.00</td>
</tr>
</tbody>
</table>

### 3. Operational Priorities

- Addressing remaining poverty and reducing inequalities
- Accelerating progress in gender equality
- Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability
- Making cities more livable
- Strengthening governance and institutional capacity

### 4. Risk Categorization:

- Low

### 5. Safeguard Categorization

<table>
<thead>
<tr>
<th>Environment</th>
<th>Involuntary Resettlement</th>
<th>Indigenous Peoples</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>B</td>
<td>C</td>
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### 6. Financing

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<td><strong>Total</strong></td>
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</table>

- **Currency of ADB Financing:** US Dollar
Boundaries are not necessarily authoritative.
I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on proposed loans to the People’s Republic of Bangladesh for the Khulna Sewerage System Development Project.¹

2. The project aims to establish a sustainable and inclusive sewerage system in Khulna, the third largest city in Bangladesh, to contribute to ensuring that the basic needs of the people are met amid rapid urbanization and growth under the Perspective Plan of Bangladesh 2010–2021: Making Vision 2021 a Reality.² The project will support the establishment of an organized sewerage system, strengthen institutional capacity in delivering sewage management services, and increase public awareness on safe sanitation services in accordance with national development programs.³

II. THE PROJECT

A. Rationale

3. **Bangladesh’s urbanization.** Rapid urbanization featured prominently in Bangladesh during 2009–2018, exacerbating challenges in a country that has one of the highest population densities in the world.⁴ Annual urban population growth averaged 3.17% during 2015–2018, significantly higher than the national average of 1.37%. In 2018, about 61 million people, or 37% of the total population of 164 million, lived in urban areas.⁵ Rapid urbanization spurs economic productivity through agglomeration advantages, but places severe strain on the environment and on basic urban services. Only the capital city Dhaka has a piped sewer network, which serves 18% of its residents.⁶ Vast quantities of untreated sewage are discharged into rivers, canals, and groundwater, posing threats to the environment and to public health.⁷

4. **Sewerage problems in Khulna.** Khulna has a population of about 1.5 million and a population density of 6,877 people per square kilometer (km²), well above the national average of 1,240 people per km². The city is expected to see increased commercial and industrial activity upon completion of the Padma Multipurpose Bridge, which will provide improved connectivity with Dhaka.⁸ Khulna’s residents experience persistent urban service limitations, particularly in sewage management. There is no centralized sewerage system in Khulna and no sewerage tariffs. Most households depend on on-site sanitation systems such as pit latrines or septic tanks, and the city lacks a systematic service approach for collection, treatment, and disposal of fecal sludge from

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⁷ Development partners including the World Bank and the Islamic Development Bank are supporting sewerage improvement in Bangladesh. Sector Assessment (Summary): Water and Other Urban Infrastructure and Services (accessible from the list of linked documents in Appendix 2).
⁸ This multipurpose road–rail bridge across the Padma River, which is expected to be completed in 2021, will link the southwest part of the country to the northern and eastern regions. When completed, it will be the longest bridge in Bangladesh, with a main bridge length of 6.15 km.
on-site systems—known as fecal sludge management (FSM). As a result, sewage and fecal sludge enter groundwater or surface drains, causing clogging and serious environmental problems, including contamination of rivers near Khulna. About 0.5 million people living in low-income communities (LICs) are most vulnerable to the impacts of poor sanitation services. Moreover, the lack of access to sewage places particular burden on women, given that they are primarily responsible for household sanitation. Two institutions provide sanitation services in Khulna: (i) the Khulna City Corporation (KCC), which is responsible for FSM; and (ii) the Khulna Water Supply and Sewerage Authority (KWASA), which is in charge of developing, constructing, and operating the sewerage system. KWASA does not have any sewerage system to manage at present, hence, coordination between KWASA and KCC is not in place.

5. **Sewerage problems exacerbated by climate change and increasing disaster risk.** Bangladesh is highly vulnerable to natural hydrometeorological hazards. Monsoon flooding, tropical cyclones, and droughts are the most common natural disasters, and are becoming more frequent and intense because of climate change. Khulna is located on the coastal belt of Bangladesh and is part of the Ganges–Brahmaputra Delta, which is known for its vulnerability to rising seas and floods. Most areas of Khulna are prone to fluvial and coastal flooding, and the water quality in nearby rivers is affected by salinity intrusion, posing high disaster risks and health hazards to residents. Urban infrastructure and services urgently need to be improved to adapt to these threats. A sustainable sewerage system will be critical to (i) mitigate water quality deterioration, and (ii) decongest the existing drainage system from uncontained septic tank discharge.

6. **ADB’s engagement in Khulna’s water supply and sewerage systems.** The Asian Development Bank (ADB) supported KWASA to prepare its two 5-year business plans—one in 2011 and one in 2016. The business plans focused on (i) switching the water source from groundwater to surface water, (ii) introducing sewerage systems, and (iii) expanding water supply systems. Launched in 2011 and completed in 2019, the Khulna Water Supply Project supported the switch from groundwater to surface water based on the recommendations of KWASA’s business plans. The project increased Khulna’s water supply to 113 liters per capita per day, with 875,000 beneficiaries, through the establishment of 65 district metering areas and construction of a water treatment plant with a capacity of 110,000 cubic meters per day. The improved water supply has led to more sewage being generated in Khulna, requiring urgent intervention in sewerage. Supported by ADB technical assistance, KWASA in 2016 prepared a Wastewater Management Master Plan to establish a sustainable and comprehensive sewerage system in Khulna by 2035. The master plan suggested (i) division of the entire Khulna city into 10 sewage districts and (ii) development of the city’s sewerage system in three phases by 2035. The project will include seven sewerage districts wholly or partially under phases 1 and 2 of the master plan.

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9 Of Khulna’s population, 64% use septic tanks (average volume: 16.6 cubic meters), and the remaining 36% use pit latrines (average volume: 2.0 m³). Most septic tanks are not connected to soak pits and discharge directly into open drains. The one operational FSM system, in the northern part of Khulna, covers only 2% of the city’s population.


11 KWASA was established in 2008 as an independent organization responsible for water supply and sewage management in Khulna city, under the Water Supply and Sewerage Act 1996.


14 A 1,200 km drainage system is operational in Khulna, but it is often clogged by sewage.


given technical, socioeconomic, and financial constraints. Further institutional support is required
to strengthen KWASA’s capacity for managing the sewerage system including operation and
maintenance (O&M), and to explore possible reuse of wastewater.

7. **Alignment with ADB and country priorities.** The project aligns with ADB’s country
partnership strategy for Bangladesh, 2016–2020, which aims to ease infrastructure constraints in
urban development. It will contribute to the following ADB Strategy 2030 operational priorities
(OPs): (i) making cities more livable (OP4) and tackling climate change, building climate and
disaster resilience, and enhancing environmental sustainability (OP3) by improving Khulna’s
sanitation through climate-resilient sewerage infrastructure; (ii) strengthening governance and
institutional capacity (OP6) by improving KWASA’s capacity to deliver sewage management
services; (iii) accelerating progress in gender equality (OP2) by targeting women in trainings and
awareness raising; and (iv) addressing remaining poverty and reducing inequalities (OP1) by
providing employment to poor and vulnerable groups during construction and O&M.

8. **Project relevance amid pandemic.** The coronavirus disease (COVID-19) pandemic has
had a devastating health, social, and economic impact on Bangladesh. The economic downturn
has seriously affected people’s livelihoods, especially for the poor and vulnerable. ADB estimated
that job losses could be as high as 3.7 million in the future, and that 85.1% of the informal
workforce lost their livelihoods as a result of lockdowns. High population density, rapid
urbanization, a high proportion of the urban population living in slums, and unsanitary conditions
in cities make the country highly vulnerable to infectious disease outbreaks. The project is highly
relevant to addressing COVID-19 and future pandemics, as it will establish a climate-resilient
sewerage system, which is essential for safe sanitation and hygiene. Implementation of
behavior change communication on sanitation will be prioritized for immediate improvement of
hygienic conditions in Khulna. The project will contribute to creating employment during the
construction and O&M phases, especially for the poor and vulnerable who may have lost jobs
because of COVID-19 impacts.

9. **Lessons.** The project will be ADB’s first sewerage intervention in Bangladesh. ADB will
bring extensive experience and lessons from implementing infrastructure development,
institutional capacity building, and reforms in Dhaka, other South Asian countries, and
elsewhere. The key lessons from sewerage system development projects (footnote 24) and the
completed Khulna Water Supply Project (footnote 15) indicate that (i) up-front capacity
development on ADB’s policies and procedures accelerates project start-up, (ii) close
coordination with relevant government departments and local municipalities facilitates the
approval process, and (iii) integrating water supply or sewerage systems with available
interventions results in improved health benefits.

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19 As of 19 August 2020, there were 285,091 confirmed cases, 165,738 recovered cases, and 3,781 deaths caused by
21 Surveillance of COVID-19 in sewage and sludge may complement public health data and be able to detect spikes of
cases in advance of health authorities. Such surveillance may be adopted subject to further research in this field.
B. Project Description

10. The project is aligned with the following impact: basic needs of the people ensured in a sustainable manner without damaging the environment (footnote 2). The project will have the following outcome: project areas in Khulna city gained access to sustainable sewerage services.  

11. **Output 1: Climate-resilient centralized and organized sewerage system for Khulna city established.** The project will support the development of a new sewerage system which will benefit 880,000 people (150,000 households) living in commercial and densely populated residential areas in Khulna by 2028. The project will establish a centralized sewerage system consisting of a 269-kilometer sewer network, eight pumping stations, two sewage treatment plants (STPs) (52,000 m$^3$ per day and 28,000 m$^3$ per day), and about 27,000 property-level sewer connections.  

A fecal sludge treatment plant with the capacity to treat 160 m$^3$ per day will be included in one of the STPs for co-treatment, to provide fecal sludge treatment service for about 30,000 of these households in central and southern parts of the city where a piped sewer network is not feasible.  

ADB will finance the O&M of the sewer network and pumping stations (for 2 years from commissioning date), and the STPs (for 3 years from commissioning date) by qualified contractors to ensure professional operation in the initial years, and transfer O&M skills to KWASA. The project will have an immediate positive impact on the city’s environment, enhance its climate and disaster resilience by increasing sewage treatment capacity, provide sanitation solutions for residents in LIGs, and open the door to future partnerships with the private sector.  

12. **Output 2: Institutional capacity of the Khulna Water Supply and Sewerage Authority in sewerage service delivery, and community awareness on safe sanitation improved.** The physical investments will be complemented by targeted institutional reforms, capacity building, and sustainability enhancement, which will build on ongoing reforms of KWASA (footnote 3). To ensure sustained delivery of sewage management services, the loan consultants will implement a skills development program for the sewerage system using a facility-specific O&M manual, strengthen asset management by installing a supervisory control and data acquisition (SCADA) system, formulate a sewerage tariff policy to ensure that O&M costs are adequately financed by user charges, and strengthen the project management capacity of KWASA to monitor contractor performance and safeguard standards.  

To address future needs for water supply and sewage management services, the project will support the preparation of potential projects and identify opportunities for public–private partnerships (PPPs). To improve citywide sanitation and hygiene, the project will support the development of a sustainable and inclusive sanitation plan, and KCC and KWASA will jointly conduct public-awareness campaigns on the benefits of sewerage services.  

The project will also support enhancing women’s decision-making capacity and

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25 The design and monitoring framework is in Appendix 1.
26 The sewer network under the project will be separate from the drainage system and will be connected to existing internal connections (master traps) that link households to property septic tanks. Septic tanks, the primary existing sanitation option in the project area, will be permanently decommissioned. Before providing service connection, KWASA, supported by loan consultants, will prepare guidelines on decommissioning septic tanks.
27 KCC will collect and transport fecal sludge from property septic tanks to the treatment plant. The Bill & Melinda Gates Foundation is currently providing technical support to KCC to improve the city's on-site sanitation service delivery.
28 Inadequate tariffs for cost recovery combined with large up-front investment costs have prevented private investment in sewerage in Bangladesh.
29 Project management capacity development programs for KWASA will be financed by ADB. 2019. **Regional: Developing South Asian Livable Cities Facility.** Manila.
30 KWASA will engage consultants to prepare future projects to expand water supply and sewerage services.
31 Public awareness campaigns will address issues on untreated sewage clogging the drainage system and low public awareness of sanitation.
reducing gender inequality through the implementation of the gender action plan (GAP), focusing on women’s participation in the planning and implementation of the sewerage system.\textsuperscript{32}

C. Value Added by ADB

13. The project will introduce innovative technologies, mitigate the effects of and strengthen resilience to climate change, support citywide inclusive sanitation, and provide holistic support to Khulna through the following:

(i) **Technology and innovation.** STPs will operate on a SCADA system with online analyzers for automatic data logging. The sewer network will be geographic information system (GIS)-mapped with a computerized hydraulic model and will be integrated with the existing GIS for KWASA’s water assets.

(ii) **Climate mitigation and resilience.** The project will support the use of energy-efficient pumps and equipment and corrosion-resistant pipes with a low carbon footprint. Selection of construction materials will consider salinity levels in project areas.

(iii) **Citywide inclusive sanitation.** The project will support the establishment of a centralized sewerage system and fecal sludge treatment plant. It will develop an inclusive sanitation plan to be jointly prepared by KCC and KWASA. As KCC is strengthening collection and transportation of fecal sludge in areas with no sewer network, the project will lead to citywide sanitation improvement.

(iv) **Holistic support from ADB.** This project aligns with KWASA’s 5-year business plan (para 6) and follows through the successfully completed Khulna Water Supply Project by strengthening KWASA’s capacity to operate and manage a sewerage system.

D. Summary Cost Estimates and Financing Plan

14. The project is estimated to cost $275 million (Table 1). Detailed cost estimates by expenditure category and by financier are included in the project administration manual (PAM).\textsuperscript{33}

\begin{table}
\centering
\begin{tabular}{l|c}
\hline
Item & Amount\textsuperscript{a} \\
\hline
A. Base Cost\textsuperscript{b} & \\
1. Climate-resilient centralized and organized sewerage system established & 239.1 \\
2. Institutional capacity of KWASA in sewerage services, and community awareness on sanitation improved & 8.0 \\
& Subtotal (A) & 247.1 \\
B. Contingencies\textsuperscript{c} & 23.5 \\
C. Financing Charges During Implementation\textsuperscript{d} & 4.4 \\
& Total (A+B+C) & 275.0 \\
\hline
\end{tabular}
\caption{Summary Cost Estimates}
\end{table}

\textsuperscript{KWASA = Khulna Water Supply and Sewerage Authority.}

\textsuperscript{a} Includes taxes and duties of $85.1 million to be financed from government resources by cash contribution.

\textsuperscript{b} In mid-2020 prices as of 1 June 2020; exchange rate of $1 = Tk84.9 is used.

\textsuperscript{c} Physical contingencies computed at 2.0% for base costs. Price contingencies computed at 1.5%–1.6% on foreign exchange costs and 5.5%–5.6% on local currency costs; includes provision for exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

\textsuperscript{d} Includes interest and commitment charges. Interest during construction for the ordinary capital resources (OCR) loan has been computed at the 5-year United States dollar fixed swap rate plus a spread of 0.5% and a maturity premium

\textsuperscript{32} Gender Action Plan (accessible from the list of linked documents in Appendix 2).

\textsuperscript{33} Project Administration Manual (accessible from the list of linked documents in Appendix 2).
of 0.1%. Commitment charges for the OCR loan are 0.15% per year to be charged on the undisbursed loan amount.
Interest during construction for the concessional OCR loan has been computed at 2.0% per annum.
Source: Asian Development Bank estimates.

15. The government has requested (i) a regular loan of $50 million, and (ii) a concessional loan of $110 million, both from ADB’s ordinary capital resources, to help finance the project. The regular loan will have a 25-year term, including a grace period of 5 years; an annual interest rate determined in accordance with ADB’s London interbank offered rate (LIBOR)-based lending facility; a commitment charge of 0.15% per year; and such other terms and conditions set forth in the draft loan and project agreements. Based on the straight-line method, the average maturity is 15.25 years, and the maturity premium payable to ADB is 0.10% per year. The concessional loan will have a 25-year term, including a grace period of 5 years; an interest rate of 2.00% per year during the grace period and thereafter; and such other terms and conditions set forth in the draft loan and project agreements.

16. The summary financing plan is in Table 2. ADB will finance the expenditures in relation to civil works and initial years of O&M, equipment and goods, consultants, interest during implementation, and contingencies. The government will provide $115 million equivalent to cover (i) taxes and duties; (ii) incremental recurrent costs; (iii) commitment charges; and (iv) part of the civil works and O&M, equipment and goods, and contingencies. The government will provide the ADB loans and counterpart funds to KWASA as a mix of loan and grant.

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<tr>
<th>Source</th>
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<th>Share of Total (%)</th>
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<tr>
<td>Ordinary capital resources (regular loan)</td>
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<td>Ordinary capital resources (concessional loan)</td>
<td>110.0</td>
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<td>Government of Bangladesh</td>
<td>115.0</td>
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<td><strong>Total</strong></td>
<td><strong>275.0</strong></td>
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17. Climate mitigation is estimated to cost $20.0 million, and climate adaptation is estimated to cost $25.4 million, including 10% of physical and price contingencies and 14.5% of taxes. ADB will finance 57.5% of mitigation costs and 60.6% of adaptation costs.

E. Implementation Arrangements

18. A project management unit (PMU) will be established in KWASA and will be supported by loan consultants on (i) project management and supervision; and (ii) institutional development, awareness, and design.

19. The implementation arrangements are summarized in Table 3 and described in detail in the PAM (footnote 33). The COVID-19 pandemic is not expected to affect implementation arrangements and cost estimates because (i) the works under the project are labor intensive, requiring a significant number of unskilled and semiskilled labor, which are available in Khulna;  

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34 The maturity premium is based on loan terms and the government’s choice of repayment option and dates.
35 Mitigation measures include use of energy-efficient equipment, solar power generator to run the STPs, and trenchless technology for installation of sewer pipes. Adaptation measures comprise household sewer connections and STPs, awareness generation and capacity-building activities, GIS data mapping and interception, and diversion and treatment of wastewater discharge.
36 Climate Change Assessment (accessible from the list of linked documents in Appendix 2).
(ii) the main construction materials are available within the country, limiting dependency on global supply chains; and (iii) the 7-year implementation period and cost estimates provide adequate cushion for potential delays.

### Table 3: Implementation Arrangements

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<th>Aspects</th>
<th>Arrangements</th>
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<td>Management</td>
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<td>(i) Oversight body</td>
<td>Interministerial project steering committee</td>
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<tr>
<td>(ii) Sponsoring ministry</td>
<td>LGD</td>
</tr>
<tr>
<td>(iii) Executing agency</td>
<td>KWASA</td>
</tr>
<tr>
<td>(iv) Key implementing agency</td>
<td>KWASA</td>
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<tr>
<td>(v) Implementation unit</td>
<td>Project management unit, 29 staff</td>
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<tr>
<td>Procurement</td>
<td>Open competitive bidding (internationally advertised)</td>
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<td>4 contracts $195.94 million</td>
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<td>3 contracts $1.25 million</td>
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<td>Request for quotations</td>
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<td>1 contract $0.02 million</td>
</tr>
<tr>
<td>Consulting services</td>
<td>PMSC–QCBS (90:10)</td>
</tr>
<tr>
<td></td>
<td>569 person-months $8.50 million</td>
</tr>
<tr>
<td></td>
<td>IADC–QCBS (90:10)</td>
</tr>
<tr>
<td></td>
<td>456 person-months $7.38 million</td>
</tr>
<tr>
<td>Retroactive financing and/or</td>
<td>Advance contracting will be used to recruit consultants and procure works.</td>
</tr>
<tr>
<td>advance contracting</td>
<td>Retroactive financing of up to 20% of the loan amount will apply for the</td>
</tr>
<tr>
<td></td>
<td>above contracts and the establishment and operation of the project</td>
</tr>
<tr>
<td></td>
<td>management unit incurred before loan effectiveness but not earlier than</td>
</tr>
<tr>
<td></td>
<td>12 months before its signing.</td>
</tr>
<tr>
<td>Disbursement</td>
<td>The loan proceeds will be disbursed following ADB’s Loan Disbursement</td>
</tr>
<tr>
<td></td>
<td>Handbook (2017, as amended from time to time) and detailed arrangements</td>
</tr>
<tr>
<td></td>
<td>agreed between the government and ADB.</td>
</tr>
</tbody>
</table>


### III. DUE DILIGENCE

#### A. Technical

20. The technical due diligence included a comprehensive review of the project’s feasibility studies, detailed and/or outline engineering designs, cost estimates, and site investigations. The project will support innovative and high-level technologies, including (i) installation of household sewerage connections within property boundaries; (ii) provision of pre-cast segmented manhole construction to improve the output quality and reduce installation time; (iii) establishment of a SCADA system and development of a comprehensive GIS database to improve monitoring and facilitate O&M; (iv) simple but effective means of sewage treatment to absorb fluctuating sewage loads, and of semiautomated operations to improve functionality of STPs taking into account local
capacity for implementation and O&M; and (v) installation of a solar power generation system to substantially cover power costs. The incorporation of FSM into the system will increase the coverage of sanitation services to areas where sewer connections are not feasible or planned. All chosen technologies were confirmed after life cycle and least-cost analysis.

B. Economic and Financial Viability

21. **Economic analysis.** The economic rationale for the government’s intervention is sound, as the project will provide more resilient and sustainable urban basic services focusing on sewerage system in Khulna. The economic internal rate of return of the project is estimated at 13.7%, which is higher than the economic opportunity cost of capital estimated at 9.0%, indicating significant economic returns. The results of the sensitivity analysis revealed that the overall results remain satisfactory for all scenarios except for the one combining all downside risks. The project’s economic viability is expected to further increase if unquantifiable benefits such as environmental improvements are included in the analysis.\(^37\)

22. **Financial analysis.** A financial analysis was conducted for the project in accordance with ADB guidelines.\(^38\) Sewerage tariffs are not collected in Khulna because there are no operational sewerage systems, but the government and KWASA have committed to introducing sewerage tariffs at the level of water tariffs, with provisions to gradually increase them before O&M of STPs commences.\(^39\) The analysis found that revenues generated through the proposed tariffs will be sufficient to cover O&M costs in full, but insufficient to cover debt service and interest. Overall, the project is not expected to be financially viable, which categorizes the financial risk of the project as *substantial*. A cash-flow analysis of KWASA was conducted to assess its capacity to absorb debt service and interest from its own revenues. KWASA can enhance its revenue base by (i) setting up desludging charges to treat fecal sludge, (ii) reusing treated wastewater from STPs for commercial and agricultural purposes, (iii) improving tariff collection efficiency, and (iv) obtaining additional financial support from the government. ADB will provide continued policy advice and capacity development under the project to help KWASA enhance its financial strength.\(^40\)

C. Sustainability

23. The project’s benefits will be sustained over the long term through a combination of project interventions. To ensure operational sustainability, the project will include (i) 2–3 years of O&M for sewage conveyance and treatment facilities by experienced and qualified contractors to ensure professional operations in the initial years, and transfer of skills to KWASA; (ii) development of a facility-specific O&M manual for sewerage system by contractors to ensure efficient O&M beyond the contractor’s O&M period; (iii) installation of a solar power generation system to partially run the STPs to reduce O&M costs; and (iv) identification of an appropriate PPP modality for future water supply and sewerage services in Khulna. Financial sustainability will be enhanced by (i) connecting the sewer network to commercial and densely populated areas to ensure high billing and collection efficiency; (ii) providing free sewer connections to poor and vulnerable households to increase the number of customers by ensuring that connection fees are

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\(^{37}\) Economic Analysis (accessible from the list of linked documents in Appendix 2).


\(^{39}\) KWASA is entitled to set sewerage tariffs at the level of water tariffs based on the Water Supply and Sewerage Authority Act (1996).

\(^{40}\) Financial Analysis (accessible from the list of linked documents in Appendix 2).
not an obstacle; (iii) public education and awareness programs to educate consumers and community leaders on the importance of sewerage services; and (iv) a government guarantee to cover O&M cost shortfalls through tariff increases or other means.

D. Governance

24. Financial management. A financial management assessment was conducted for KWASA, in accordance with ADB’s Guidelines. The assessed pre-mitigation financial management risk is substantial mainly because (i) the PMU has not yet been established, (ii) there is no designated internal audit officer at KWASA, and (iii) the entity financial statements are not audited annually. These risks will be mitigated by KWASA through (i) assigning a full-time accounts officer to the PMU, (ii) providing the PMU with continuous training on ADB’s financial management requirements, (iii) improving the quality of project financial reports, (iv) assigning an officer as a focal to develop an internal audit function, and (v) ensuring that its entity financial statements are audited annually by an independent auditor. Furthermore, loan consultants will strengthen KWASA’s financial management capacity and systems.

25. Procurement. Procurement of goods and works and recruitment of consultants will adhere to the ADB Procurement Policy (2017, as amended from time to time) and the Procurement Regulations for ADB Borrowers (2017, as amended from time to time). Two years of O&M for the sewer network and pumping stations and 3 years of O&M for STPs by contractors were selected as offering the best fit for this project. This arrangement will enable private sector participation in addressing KWASA’s capacity gap for sustainable O&M of the sewerage system, and for transferring skills to KWASA. Larger packages were formed to attract more experienced contractors to provide works and international best practices for O&M. The above arrangements will maximize value for money.

26. Anticorruption. ADB’s Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and KWASA. The specific policy requirements and supplementary measures are described in the PAM (footnote 33).

27. Integrity due diligence. Integrity due diligence on KWASA was conducted. No significant integrity risks were identified.

E. Poverty, Social, and Gender

28. The summary poverty reduction and social strategy describes measures to address social impacts and enhance the distribution of project benefits. The project will directly support Sustainable Development Goal (SDG) 6 (access to clean water and sanitation for all) and SDG 5 (gender equality), and will indirectly support SDG 1 (reducing poverty). Economic shocks resulting from the COVID-19 pandemic are likely to deepen poverty for those who are already poor and vulnerable. Pro-poor designs under the project include (i) providing free sewer connections to LICs, (ii) improving sanitation services in slums by establishing a fecal sludge treatment plant, and (iii) conducting awareness campaigns on sanitation and hygiene for LICs. Additionally, the poor will benefit from short-term employment opportunities in the construction of the sewer network and STPs.

KWASA will identify the poor and vulnerable groups to be connected to sewer network free-of-charge during the construction period based on the latest data.


Summary Poverty Reduction and Social Strategy (accessible from the list of linked documents in Appendix 2).
29. **Gender.** The project is categorized *effective gender mainstreaming.* KWASA has developed a GAP and corresponding GAP implementation budget (footnote 32). Based on lessons from the Khulna Water Supply Project, the project will adopt good practices that directly benefit destitute women through employment generation and skills development. For instance, the project will use construction techniques that enable women to comprise at least 20% of unskilled and semiskilled workers. The project will enhance women’s decision-making capacity and reduce gender inequality by ensuring 30% female participation in consultations on project benefits, construction, sewer connections, and land acquisition and resettlement. The same level of female participation will be ensured in awareness-raising programs on water, sanitation, and sewerage management. The PMU will monitor the implementation of the GAP and prepare quarterly progress reports.

F. **Safeguards**

30. In compliance with ADB’s Safeguard Policy Statement (2009), the project’s safeguard categories are as follows.\(^{44}\)

31. **Environment (category B).** KWASA has prepared an initial environmental examination (IEE) report for the project in accordance with ADB’s Safeguard Policy Statement requirements and the applicable laws of the government. The project is composed of two packages for the sewer network and one package for two STPs, which will comprise an integrated sewage collection, conveyance, and treatment system for Khulna. Three environmental management plans (EMPs), corresponding to the three packages, were also prepared and included in the IEE. Based on the IEE, no significant adverse impacts are envisioned under the project. The potential impacts are site-specific, few are irreversible, and most can be readily mitigated and minimized using proven mitigation measures consistent with internationally recognized best practices. Stakeholders were involved through meaningful consultations and their views were incorporated into the IEE and project designs. The meaningful consultation process will continue during project implementation. The IEE and EMPs will be (i) updated based on detailed engineering designs, (ii) included as part of the bid and contract documents, and (iii) disclosed on the ADB and project websites. No contract will be awarded until ADB approves the updated or final IEE and EMPs. Prior to execution of civil works, contractors will prepare site-specific EMPs, which will be approved by KWASA. All statutory clearances and no-objections must be obtained prior to the start of construction activities. The project includes a program to strengthen the capacity of KWASA. Loan consultants will enhance KWASA’s capacity to manage environmental impacts that arise during project implementation. Grievances will be handled following the project grievance redress mechanism, as stated in the PAM. During project implementation KWASA will also prepare semiannual environmental monitoring reports for ADB to review and disclose on the ADB and project websites.

32. **Involuntary resettlement (category B).** KWASA has prepared a draft resettlement plan in line with ADB’s Safeguard Policy Statement requirements and the applicable laws of the government, based on which it is assessed that the project would cause the following impacts: (i) physical displacement of 24 affected households (108 family members) because of loss of residential structures; (ii) economic displacement of 8 households (36 family members); (iii) loss of private land (35.53 acres) for 210 landowners (945 persons), 95% of whom (200 landowners, 900 family members) are projected to lose less than 10% of their total landholdings, while the remaining 5% (10 landowners, 45 family members) are projected to lose more than 10% of their

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\(^{44}\) ADB. [Safeguard Categories](#).
landholdings, but which will not be their primary livelihood source; and (iv) temporary economic impacts during construction. The measures in the draft resettlement plan and monitoring arrangements are adequate for mitigating the identified risks. The resettlement plan will form part of the contract documents, will be updated based on detailed measurement and surveys, and will be submitted to ADB for review prior to contract award. The draft and the updated resettlement plans will be disclosed to affected people, and on the ADB and project websites. KWASA demonstrated during the Khulna Water Supply Project that it has the capacity to manage social safeguards. For that project, KWASA implemented a category A resettlement plan and met ADB’s Safeguard Policy Statement requirements. Drawing on lessons from that project, this project has initiated early land acquisition. Institutional arrangements for social safeguards at the PMU will be in place, and a property valuation advisory committee and grievance redress committee will be constituted prior to award of the first contract to ensure timely implementation of the resettlement plan. Loan consultants will support KWASA in enhancing its capacity to manage involuntary resettlement impacts. KWASA will prepare and disclose semiannual social monitoring reports during project implementation.

33. **Indigenous peoples (category C).** No indigenous peoples impact, involving direct or indirect impacts to the dignity, human rights, livelihood systems, or territories or natural or cultural resources that are used, owned, occupied, or claimed by indigenous peoples as their ancestral domain or asset, is anticipated. Census data of 2011 published by the Bangladesh Bureau of Statistics does not report the presence of any small ethnic minorities in Khulna city area. No population or population group in the project impact zone qualifies as indigenous peoples as per ADB’s Safeguard Policy Statement. None of the affected persons surveyed belongs to small ethnic communities. No component with any adverse impact on small ethnic communities will be included in the project.

G. **Summary of Risk Assessment and Risk Management Plan**

34. Significant risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.

<table>
<thead>
<tr>
<th>Risks</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>KWASA’s lack of experience in managing sewerage systems results in inadequate O&amp;M of assets</td>
<td>Civil works contracts will include 2–3 years of O&amp;M for sewer network and STPs to ensure professional operation in the initial years, and to transfer O&amp;M skills to KWASA. A facility-specific O&amp;M manual will also be developed by contractors to ensure efficient O&amp;M beyond the contractor’s O&amp;M period. Loan consultants will also strengthen capacity of KWASA to handle O&amp;M of sewerage system.</td>
</tr>
<tr>
<td>Ineffective collection and transport of fecal sludge by KCC lead to lower operational efficiency of fecal sludge treatment plant</td>
<td>KCC, as a member of the project steering committee, will confirm its support for the project through a written commitment, focusing on fully utilizing a fecal sludge treatment plant and relevant approvals on implementation. External development partners will support KCC and, if required, ADB will explore additional support using technical assistance resources.</td>
</tr>
<tr>
<td>Delays in land acquisition and resettlement hamper timely project implementation</td>
<td>The government approved land acquisition for the project as a separate project in 2018. Progress is at an advanced stage for the two STPs. The government and KWASA are committed to timely transfer of funds to the deputy commissioner’s account to compensate owners for land required for the project. KWASA will ensure that the resettlement plan is updated before the first contract is awarded. ADB will provide an independent monitor to mitigate this risk.</td>
</tr>
</tbody>
</table>

45 Compensation against land and resettlement impacts has yet to be paid and no physical or economic displacement has taken place at project sites. The property valuation advisory committee will propose any top-up payment required over and above the cash compensation under the law to ensure compensation at replacement cost.

46 Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).
Delayed approval of adequate sewerage tariff causes lower financial and operational sustainability

Loan consultants will support KWASA in projecting O&M costs and formulating a sewerage tariff structure to ensure project sustainability. The introduction of a sewerage tariff before commencement of operation is covenanted. The government will ensure that KWASA has sufficient funds to meet its debt service obligations and cover O&M costs through tariff adjustments and/or other means.

KWASA’s insufficient financial management capacity results in noncompliance with ADB’s financial requirements and disbursement delays

KWASA is committed to improving its financial management capacity through (i) assigning an officer to develop an internal audit function, (ii) training the project management unit on ADB’s financial management requirements, (iii) ensuring that an independent auditor audits entity financial statements annually, and (iv) engaging a financial management expert to strengthen financial management systems under the project.

ADB = Asian Development Bank, KCC = Khulna City Corporation, KWASA = Khulna Water Supply and Sewerage Authority, O&M = operation and maintenance, STP = sewage treatment plant.

KCC will collect and transport fecal sludge from property septic tanks to the treatment plant, which will be located inside one of the of STPs, for co-treatment of fecal sludge. The Bill & Melinda Gates Foundation is providing technical support to KCC to improve the city’s on-site sanitation service delivery.


IV. ASSURANCES AND CONDITIONS

35. The government and KWASA have assured ADB that implementation of the project shall conform to all applicable ADB requirements, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, financial management, and disbursement as described in detail in the PAM and loan documents.

36. The government and KWASA have agreed with ADB on certain covenants for the project, which are set forth in the draft loan agreements and project agreement.

37. As conditions to loan effectiveness, the government has to submit to ADB a draft subsidiary loan agreement, in form and substance acceptable to ADB.

V. RECOMMENDATION

38. 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

(i) the loan of $50,000,000 to the People’s Republic of Bangladesh for the Khulna Sewerage System Development Project, from ADB’s ordinary capital resources, in regular terms, with interest to be determined in accordance with ADB’s London interbank offered rate (LIBOR)-based lending facility; for a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board; and

(ii) the loan of $110,000,000 to the People’s Republic of Bangladesh for the Khulna Sewerage System Development Project, from ADB’s ordinary capital resources, in concessional terms, with an interest charge at the rate of 2.0% per year during the grace period and thereafter; for a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Masatsugu Asakawa
President

7 September 2020
## DESIGN AND MONITORING FRAMEWORK

### Impact the Project is Aligned with

Basic needs of the people ensured in a sustainable manner without damaging the environment (Perspective Plan of Bangladesh 2010–2021: Making Vision 2021 a Reality)

<table>
<thead>
<tr>
<th>Results Chain</th>
<th>Performance Indicators with Targets and Baselines</th>
<th>Data Sources and Reporting Mechanisms</th>
<th>Risks</th>
</tr>
</thead>
</table>
| **Outcome**   | **Project areas in Khulna city gained access to sustainable sewerage services** | By 2028:  
  a. Service coverage of sewage collection and treatment through the centralized sewerage system reached 50% of households (about 120,000 households) in the urban area of Khulna city (2019 baseline: Not applicable) (OPs 3.2, 4.1)  
  b. Service coverage of fecal sludge treatment in fecal sludge treatment plant increased to 15% of households (about 30,000 households) in the urban area of Khulna city (2019 baseline: 2% or about 4,000 households) (OPs 3.2, 4.1)  
  c. 100% of KWASA’s O&M costs financed by user charges (2019 baseline: 0) (OP 4.2) | a.–c. KWASA annual reports and customers database | Lower-than-projected financial resources limit KCC’s capacity to collect and transport fecal sludge, resulting in lower operational efficiency of fecal sludge treatment plant. |

| **Outputs**   | **1. Climate-resilient centralized and organized sewerage system for Khulna city established** | By 2027:  
  1a. Two STPs with combined capacity of 80,000 m³/day, partly run by 1.3-megawatt solar power system, with climate-resilient and gender-responsive features and compliant with national effluent standards commissioned (2019 baseline: 0) (OPs 3.2.5, 4.1.2, 6.2.1)  
  1b. 269-kilometer sewer network with climate-resilient features constructed and connected to 27,000 properties, including free sewer connections to 100% of poor and vulnerable households (2019 baseline: 0) (OPs 4.1, 3.2.5, 4.1.2)  
  1c. Five sewage pumping stations and three manhole pumping stations commissioned (2019 baseline: 0) (OP 4.1.2)  
  1d. Fecal sludge treatment plant with 160 m³/day capacity commissioned (2019 baseline: 0) (OP 4.1.2) | 1a.–d. Quarterly project progress reports, and KWASA project completion report | Extreme weather conditions could delay completion of civil works. |

  | **2. Institutional capacity of KWASA in sewerage service delivery, and community awareness on safe sanitation improved** | By 2027:  
  2a. Training and skills development programs on sewerage system and project management for KWASA developed (2019 baseline: 0)  
  2b. Facility-specific O&M manual with gender-responsive features developed by contractors and adopted by KWASA (2019 baseline: Not applicable) | 2a.–d, f.–g. Quarterly project progress reports, KWASA project completion report, and |
<table>
<thead>
<tr>
<th>Results Chain</th>
<th>Performance Indicators with Targets and Baselines</th>
<th>Data Sources and Reporting Mechanisms</th>
<th>Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2c. SCADA system for sewerage system commissioned (2019 baseline: Not applicable) (OP 4.1.2)</td>
<td>copy of plans/manual developed</td>
<td></td>
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<tr>
<td></td>
<td>2d. Sanitation plan with sex-disaggregated targets completed and submitted to KWASA and KCC for adoption (2019 baseline: Not applicable) (OP 4.3.2)</td>
<td></td>
<td>2e. Notification of approved tariff policy</td>
</tr>
<tr>
<td></td>
<td>2e. New sewerage tariff formulated and adopted by KWASA Board (2019 baseline: Not applicable) (OPs 4.2, 4.2.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2f. At least 2 project proposals using PPP modality (1 for water supply and 1 for sewerage services for Khulna) prepared and submitted to KWASA (2019 baseline: 0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2g. Detailed engineering designs and bidding documents for future investment projects completed and submitted to KWASA (2019 baseline: 0)</td>
<td>2h.–i. Pre- and post-training assessment (through data collected from questionnaire)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2h. At least 70% KWASA staff (including all female staff) reported knowledge of O&amp;M of sewerage system and safeguards implementation, including occupational health and safety issues (2019 baseline:0) (OP 2.3.2)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>2i. At least 70% of residents (including at least 30% women) in 7 sewerage districts reported knowledge of the benefits of safe sanitation services (2019 baseline:0) (OP 2 2.3.2)</td>
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<td></td>
</tr>
</tbody>
</table>

**Activities with Milestones**

1. **Climate-resilient centralized and organized sewerage system for Khulna city established**
   1.1 Preparation of detailed project reports and safeguard documents (ongoing until December 2020)
   1.2 Procurement process for civil works contracts and contract awards (April 2020–September 2021)
   1.3 Construction of STPs and sewer networks (April 2021–December 2024)
   1.4 O&M of STPs (January 2025–December 2027)
   1.5 Monitoring of service delivery parameters (January 2025–December 2027)

2. **Institutional capacity of KWASA in sewerage service delivery, and community awareness on safe sanitation improved**
   2.1 Implementation of project management capacity development programs for KWASA (April 2021–March 2023)
   2.2 Development of the training plan on public health, environmental management, sanitation, and sewage management for KWASA (July 2021–June 2022)
   2.3 Conducting training programs for KWASA staff, including all female staff (July 2022–June 2023)
   2.4 Development of facility-specific O&M manual for sewerage system (July 2023–December 2024)
   2.5 Development of new sewerage tariff (July 2023–June 2024)
   2.6 Development and operation of SCADA system for sewerage system (January 2024–December 2027)
## Activities with Milestones

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.7 Development of sustainable and inclusive sanitation plan</td>
<td>January 2024–December 2024</td>
</tr>
<tr>
<td>2.8 Conducting sanitation and hygiene-awareness campaign</td>
<td>January 2025–December 2027</td>
</tr>
<tr>
<td>2.9 Preparation of detailed designs and bid documents for ensuing projects</td>
<td>January 2025–June 2026</td>
</tr>
<tr>
<td>2.10 Development of PPP modality for water supply and sewerage services in Khulna</td>
<td>July 2025–June 2026</td>
</tr>
</tbody>
</table>

### Project Management Activities

- Project management unit established and strengthened (Q4 2020)
- Project steering committee and formed (Q4 2020)
- Project management and supervision consultants mobilized (Q1 2021)
- Institutional development, awareness-creation, and design consultants mobilized (Q3 2023)
- Project progress report prepared and submitted (Q1 2021 and onwards)

### Inputs

**Asian Development Bank**
- Ordinary capital resources: $50 million loan
- Concessional ordinary capital resources: $110 million loan

**Government**: $115 million

### Assumptions for Partner Financing

Not applicable

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**KCC = Khulna City Corporation, KWASA = Khulna Water Supply and Sewerage Authority, m³ = cubic meter, O&M = operation and maintenance, OP = operational priority, PPP = public-private partnership, Q = quarter, SCADA = supervisory control and data acquisition, STP = sewage treatment plant.**


**b** STPs will absorb fluctuation of pollutant loading and generate good quality sludge that can be used as manure. Operating STPs using solar-powered generator will reduce dependence on fossil-fuel-generated electricity.

**c** Gender-responsive features include provisions for separate toilets and designated rest areas for women workers.

**d** Trenchless installation of gravity sewer pipe will address climate mitigation by reducing vehicular traffic disruption.

**e** Each property in the project area has an average of five to six households, most of which use septic tanks located on ground floor of each property. Existing internal connections at each property connect households with septic tanks. The sewer network developed under the project will be connected to existing internal connections.

**f** Sewer network will be connected to all poor and vulnerable households, if and where feasible.

**g** Gender-responsive features include provisions for disabled persons, pregnant women, and transgender in public and community toilets, provision of menstrual hygiene management, and separate unit and entry for men and women.

### Contribution to Strategy 2030 Operational Priorities

<table>
<thead>
<tr>
<th>OP 2.3.2 Measures on gender equality supported in implementation (number). Target: 2 (trainings for KWASA female staff, and for women in project area)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP 3.2 People with strengthened climate and disaster resilience (number). Target: 150,000 households (equivalent to 0.88 million people)</td>
</tr>
<tr>
<td>OP 3.2.5 New and existing infrastructure assets made climate- and disaster-resilient (number). Target: 1 sewerage system</td>
</tr>
<tr>
<td>OP 4.1 People benefitting from improved services in urban areas (number). Target: 150,000 households (equivalent to 0.88 million people)</td>
</tr>
<tr>
<td>OP 4.1.2 Urban infrastructure assets established or improved (number). Target: 1 sewerage system</td>
</tr>
<tr>
<td>OP 4.2 Entities with improved urban planning and financial sustainability (number). Target: 1 (KWASA)</td>
</tr>
<tr>
<td>OP 4.2.2 Measures to improve financial sustainability supported in implementation (number). Target: 1 sewerage system</td>
</tr>
<tr>
<td>OP 4.3.2 Urban climate and disaster resilience capacity development initiatives implemented (number). Target: 1 (sanitation plan)</td>
</tr>
<tr>
<td>OP 6.2.1 Service delivery standards adopted and/or supported in implementation by government and/or private entities (number). Target: Compliance of 2 STPs with national effluent standards</td>
</tr>
</tbody>
</table>

In addition to the OP indicators tagged in the DMF, this operation will contribute results for:

**OP 1.2 Jobs generated (number). Target: TBD (jobs generated during construction phase to be determined during mobilization)**

LIST OF LINKED DOCUMENTS
http://www.adb.org/Documents/RRPs/?id=49329-007-3

1. Loan Agreement: Ordinary Operations (Concessional)
2. Loan Agreement: Ordinary Operations
3. Project Agreement
4. Sector Assessment (Summary): Water and Other Urban Infrastructure and Services
5. Project Administration Manual
6. Financial Analysis
7. Economic Analysis
8. Country Economic Indicators
9. Summary Poverty Reduction and Social Strategy
10. Risk Assessment and Risk Management Plan
11. Climate Change Assessment
12. Gender Action Plan
13. Initial Environmental Examination
14. Resettlement Plan

Supplementary Documents
15. Financial Management Assessment
16. Project Procurement Risk Assessment
17. Climate Risk and Vulnerability Assessment