Supplementary Appendix
Climate Change: Project Adaptation Action (PAA) Report

Part 1: Climate Change Adaptation

<table>
<tr><th colspan="4">BASIC PROJECT INFORMATION</th></tr>
<tr><td colspan="2">Project Title: Dhaka Environmentally Sustainable Water Supply Project</td><td colspan="2">Sector: Water supply and other municipal infrastructure and services</td></tr>
<tr><td colspan="2">Location: Dhaka</td><td colspan="2">Estimated ADB Financing: $250 million</td></tr>
<tr><td colspan="2">Brief Description: (Max 200 words)</td><td colspan="2">Implementation Period: 2014-2019</td></tr>
<tr><td colspan="4">The project will provide more reliable and improved security of water supply in Dhaka by developing a new surface water supply scheme for supply augmentation, which includes the development of a water intake at Meghna River, a raw water transmission pipeline, a water treatment plant (WTP) at Gandharbpur with capacity of 500 million liters per day (MLD), a treated water transmission pipeline to the existing water supply network, and distribution reinforcements. The project will also include distribution network improvements to reduce nonrevenue water (NRW); and will improve the quality of water supply services, including support to low-income communities. The Dhaka Water Supply and Sewerage Authority (DWASA) is the executing and implementing agency of the project. The project will reduce dependence on depleting groundwater as source of water supply in Dhaka.</td></tr>
<tr><td colspan="4">Climate Change Classification: Adaptation</td></tr>
<tr><th colspan="4">SUMMARY of CLIMATE RISK SCREENING</th></tr>
<tr><td colspan="4">A. <u>Projected changes (based on ECHAM 5 under A1B, A2, and B1 scenarios)</u></td></tr>
<tr><td>Temperature (^{o}C)

3-4 ^{o}C increase in maximum temperature by 2050s</td><td>Precipitation (mm)

No clear indication in 2030s but likely annual increase by 10-15% in 2050s, particularly during monsoon season</td><td>Sea Level Rise (masl):

Sea level rise by 9-62 cm by 2080</td><td>Others:</td></tr>
<tr><td colspan="4">B. <u>Climate Risks</u></td></tr>
<tr><td>1. Flood</td><td colspan="3">Description of the risk:
Higher risk of floods in Dhaka due to more intense rainfall, exacerbated by land subsidence
Increase in Meghna River flow in rainy season</td></tr>
<tr><td colspan="4">C. <u>Recommendations</u></td></tr>
<tr><td colspan="2">Activities:
1. The project facilities need to be located in flood-free areas
2. Water abstraction from Meghna River should not affect downstream flow even during dry season.</td><td colspan="2">Requirements for TOR:
1. Assessing the level of landfilling required to make the area flood-free
2. Assessing river flow change in the future</td></tr>
<tr><td colspan="4">Risk Classification: Low Risk</td></tr>
<tr><th colspan="4">DUE DILIGENCE</th></tr>
<tr><td colspan="4">Activities:
1. Dhaka’s groundwater table is falling by 2-3 meters per year. This may be a factor causing land subsidence which is reported to be more than 10 mm per year. Land subsidence will exacerbate urban</td></tr>
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floods. The project will develop a new surface water supply system for supply augmentation, leading to reduction in about 150 MLD of groundwater abstraction. This will help alleviate flood impacts in Dhaka.
2. Meghna River discharges in 2030s and 2050s are assessed. No clear signal is indicated in the river discharge near the water intake site during the rainy season of May-September in 2030s, while 5-10% increase in discharge is projected during rainy season in 2050s. Rainfall during dry season is more uncertain and manmade impacts such as upstream water use will create more profound impacts on the river flow. River flow is abundant even during the dry season as the total planned future abstraction of 2,000 MLD is about 0.6% of the lean flow (Q-95) of Meghna River.

PROJECT DESIGN CHANGE OR ADAPTATION RESPONSE

1. Detailed design will review the location of key facilities (intake, WTP etc) to ensure that the facilities have sufficient freeboard from the future 1-in-100 year flood event. Contingencies are provided to accommodate this.
2. Water quality monitoring will be continued to detect long-term changes in salinity levels, although salinity is currently not an issue at the proposed intake location.