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

Part 1: Climate Change Adaptation

BASIC PROJECT INFORMATION						
Project Title: Dhaka Environmentally Sustainable Water Supply Project			Sector: Water su infrastructure and s	pply and ervices	other	municipal
Location: Dhaka			Estimated ADB Financing: \$250 million			
Brief Description: (Max 200 words)			Implementation Period: 2014-2019			
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.						
A Drojected changes (based on ECHAME under A1D, A2, and D1 securation)						
A. <u>Projected changes (based on ECHAM 5 under A1B, A2, and B1 scenarios)</u>						
3-4 °C increase in maximum temperature by 2050s	No clear indication in 2030s but likely annual increase by 10- 15% in 2050s, particularly during monsoon season	Sea cm	level rise by 9-62 by 2080			
B. <u>Climate Risks</u>						
1. Flood	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					
C. <u>Recommendations</u>						
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.		Re 1. / the 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			
Risk Classification: Low Risk						
DUE DILIGENCE						
Location: Dhaka Brief Description: (Max 2 The project will provide surface water supply scl Meghna River, a raw w capacity of 500 million supply network, and improvements to reduce including support to low is the executing and imp groundwater as source of Climate Change Classifi A. Projected changes (Temperature (°C) 3-4 °C increase in maximum temperature by 2050s B. Climate Risks 1. Flood C. Recommendations Activities: 1. Flood C. Recommendations Activities: 1. The project facilities reflood-free areas 2. Water abstraction from not affect downstream fl season. Risk Classification: Low	200 words) more reliable and improve heme for supply augmenta vater transmission pipelin liters per day (MLD), a t distribution reinforcement e nonrevenue water (NRV -income communities. The plementing agency of the of water supply in Dhaka. cation: Adaptation SUMMARY of CLI (based on ECHAM 5 unde Precipitation (mm) No clear indication in 2030s but likely annual increase by 10- 15% in 2050s, particularly during monsoon season Description of the risk: Higher risk of floods in D subsidence Increase in Meghna River heed to be located in m Meghna River should ow even during dry Risk	ed se ation, areate ts. T V); an e Dha proje MAT <i>r A1E</i> Sea Sea cm Dhaka er flow Re 1. <i>i</i> the 2. <i>i</i>	Estimated ADB Finar Implementation Perio curity of water supply which includes the de water treatment plant ed water transmission the project will also nd will improve the quark water Supply and ect. The project will record E RISK SCREENING 3 , <i>A2</i> , and <i>B1 scenario</i> C Level Rise (masl): Level Rise by 9-62 by 2080 a due to more intense r w in rainy season quirements for TOR: Assessing the level of e area flood-free Assessing river flow ch	ainfall, exa	million 19 y develo of a wat Gandha istributio istributio dence o cerbated equired t e future	pping a new ter intake at arbpur with isting water on network ly services, y (DWASA) on depleting d by land to make

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

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.