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Adaptation to climate change: a case study on Bangladesh

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Background: Due to its geography, topography, high population density and low resource base, Bangladesh is the most climate vulnerable country in the whole world. Almost a third of its population, nearly 50 million people, lives in areas which are highly vulnerable to natural disasters such as floods, droughts, cyclones and tidal surges. Accordingly to the 4th IPCC Report, climate change is likely to make all these hazards more severe and frequent in the future. In other words, climate change can wipe out years of painstakingly achieved economic gains in a short period and threaten Bangladesh's aspirations to become a middle-income country in the next 20-25 years. **Objectives:** This paper will present a snapshot of how Bangladesh is trying to tackle climate change through state and non-state actor sponsored initiatives. It will also highlight the key constraints that Bangladesh is likely to face and provide suggestions on how to possibly overcome these barriers.

Methodology: This paper is based on review of literature, field visits and interview with key informants. It draws generously from existing documentations and reports available from various government and non-government agencies and research institutes. Bangladesh's state level preparedness is assessed in the context of its investments in disaster management since early 1960s. Community level adaptations are assessed based on a review of experiences to date with reference to sustainable livelihoods framework. **Summary of the results:** Over the last 35 years, the Government of Bangladesh, with the support of development partners, has invested over \$10 billion to make the country more resilient against climate induced natural disasters. There are about 10,000 km of embankments, 3500 km of drainage channels, 4,000 regulators and around 2100 cyclone shelters in Bangladesh to provide protection against flood, water logging, salt water intrusion and cyclone. In addition, major roads and railway tracks have been raised above flood levels and most new real estates are also built above historic flood levels. Scientists have made significant progress in developing climate resilient crop varieties and farming systems. The challenge facing the country now is to protect these investments against climate change and ensure that future investments are made climate-proof. Bangladesh's brand new Climate Change Strategy and Action Plan (CCSAP) proposes a range of adaptation activities: institutional (early warning systems, river management, land use zoning); physical (cyclone shelters, embankments, drainage structures); agricultural (crop & livestock diversity, drought and flood resistant varieties); environmental (mangrove belts, diverting freshwater flow, social forestry along embankments/roads); and, livelihoods (income diversity, rural-urban linkages, market linkage). However, the government must overcome two key challenges: ensure high-level institutional coordination among various ministries, departments and agencies, and, secure adequate funds to implant the proposed Action Plan. The government and key development partners are now setting up a multi-donor trust fund for climate change to take this process forward. In addition to the state sponsored interventions, a range of adaptive measures have been developed by the vulnerable communities, often with help from NGOs and extension services of the Government. For example, growing vegetables on floating platforms and ring-beds, raising plinths of cluster villages (including backyard gardens, tube-wells and latrines), growing salt-tolerant and climate resilient crops, switching to shrimp culture (including organic shrimp) and crab fattening, rearing duck instead of chickens in flood prone areas are all great examples of indigenous adaptations. Of course, community level adaptations are very location specific and not all can be scaled up all over the country. NGOs often employ a livelihoods framework to analyze the risks faced by households in a vulnerable community and then explore mitigation options that reduce the risks and strengthen household and community assets. Successful community-level adaptation often requires three key steps: adopt a gradual process of adaptation; build on disaster preparedness; and, develop resilience. The third step is particularly important - experience shows that one of the best defenses against shock is to diversify the livelihood – to increase the diversity of crops and livestock on a farm or more generally to have a wider set of sources of income, often from off-farm sources.

Conclusions: Bangladesh is one of the countries at most risk from climate change. However, its government and people have shown remarkable foresight and resilience over the years as regards managing climatic hazards. Time has come to adopt a comprehensive and coordinated set of actions as proposed in the Climate Change Strategy and Action Plan. However, there are significant institutional and financial challenges to

overcome. Besides, this target cannot be achieved the Government alone – communities, NGOs and development partners must join hand. Lessons from past experiences, consistent political support, responsive institutions, and timely availability of funds will help steer future activities in the right direction.