



BANGLADESH

CLIMATE VULNERABILITY PROFILE



US Foreign Assistance: ¹ (thousands USD)	Requested FY 2012	Requested FY 2013
Estimated total:	200,076	199,489
Adaptation:	5,000	4,000
Feed the Future:	70,000	50,000
Water:	2,000	4,500
Priority Adaptation Country in 2011:	YES	
Key Climate Stressors:	Heat, Flooding, Sea level rise, Extreme events	

INTRODUCTION

Bangladesh, located in South Asia, has a population of approximately 150 million people. It contains the second largest river basin in the world, including the confluence of three major rivers (the Ganges, Brahmaputra, and Meghna) and their associated tributaries. The country consists mostly of low and flat land; only about 10 percent of the country lies over 1 meter above mean sea level (MSL), and one-third of the land is under tidal excursions. The northeast and southeast portions of the country are hilly. The Bangladesh economy is predominantly based on agriculture, forestry, and fishing. In recent years, the economy has diversified to include manufacturing, which currently generates nearly 75 percent of the country's export earnings. However, agricultural and fisheries activities still support a large proportion of the population and make up approximately 20 percent of the country's Gross Domestic Product (GDP). The country's child and infant mortality rates and gender parity in schooling have improved in recent years. However, the country still experiences persistent poverty, with higher rates in the western and more rural and inland areas. Some challenges include the lack of reliable infrastructure, access to capital, and governance structures (e.g., land tenure systems).

PROJECTED WEATHER AND CLIMATE CHANGES

Bangladesh has a humid, warm, and tropical climate, primarily influenced by its monsoon season. The monsoon season is marked with heavy torrential rain that contributes most of the year's rainfall. Due to the country's low-lying land, nearly 70 percent of the country is flooded during heavy monsoons.

TEMPERATURE: Bangladesh's mean temperatures are projected to increase about 1.4°C by 2050 and 2.4°C by 2100 from the 1960 baseline. This warming is expected to be more pronounced in the winter months (December-February).

PRECIPITATION: Climate models are inconclusive for changes in precipitation in Bangladesh. Some models project wetter conditions in Bangladesh, while others project drier conditions in the future. The critical factor will be to understand what happens during Bangladesh's monsoon seasons, as the majority of the country's rainfall is experienced during that time.

SEA LEVEL RISE: Sea level rise projections for Bangladesh's coast range between 9 and 100 cm by 2100. Due to the relatively low elevation of the country's land, this projected sea level rise and storm surge will pose significant challenges for Bangladesh.

EXTREME EVENTS: Bangladesh is extremely vulnerable to wind- and water-related disasters such as cyclones. By 2100, the power of tropical storms is projected to significantly increase in the North Indian Ocean, affecting Bangladesh.

KEY CLIMATE IMPACTS AND VULNERABILITIES

Bangladesh, due to its unique geographic, socio-economic, and physical characteristics, is extremely vulnerable to the impacts of climate change. Bangladesh's water and agricultural resources (and thus economic activities) and coastal infrastructure are particularly vulnerable. Saltwater intrusion threatens Bangladeshi freshwater resources; changing temperatures, precipitation, and sea level rise could reduce agricultural productivity; and sea level rise, storm surge, and extreme events could damage or destroy coastal infrastructure.

KEY USAID PROGRAM VULNERABILITIES

Bangladesh receives support from USAID for programs related to food security, economic development, peace and security, water, and malaria.

FOOD SECURITY: Bangladesh is a priority country under the Feed the Future Initiative (FTF). As such, USAID aims to increase the production of more affordable and nutritious staple foods through increased on-farm productivity, increased investment in market systems, enhanced food security policy and planning capacity, and enhanced agricultural innovation.

AGRICULTURE: Production of wheat, rice and other agricultural products in Bangladesh will be vulnerable to increasing water-related extreme events.

A priority of USAID's response is to diversify the diet available to Bangladeshis. Some of the programs focus on technology transfer and research trials for enhancing production of cereals, fish, legumes, and vegetables, or the use of transgenic crops (e.g., potatoes and eggplant). The success of these new crops could be influenced by changes in climate. Research and trial efforts should take into consideration how future climate could change the results and communicate those findings. Further, climate changes could impact which locations are best suited for producing these alternative sources of food and nutrition.

USAID is also building the capacity of the Government of Bangladesh (GoB) in relation to developing policy, research agendas, coordination between different agencies, and encouraging civil society participation in developing food security and agricultural policies. While the GoB has been proactive in planning for climate change and adaptation, FTF will need to

¹ US foreign assistance includes both USAID and Department of State program funding, but in most cases the bulk of this funding is implemented through USAID. In order to have comparable figures in these categories, all country profiles use figures from the Congressional Budget Justification (CBJ) (see <http://transition.usaid.gov/performance/cbj/1185016.pdf> and <http://transition.usaid.gov/performance/cbj/1158269.pdf>). Between the time of the budget request and the 653(a) report to Congress, these figures can change significantly.

ensure that its policy and research agenda and stakeholder engagement efforts reinforce the GoB's efforts to proactively adapt.

ECONOMIC GROWTH: While agriculture employs about 60 percent of the population, it only contributes about 27 percent to the country's GDP. USAID is supporting the expansion of job opportunities and facilitating business expansion. For example, USAID is encouraging entry into shrimp farming and processing for export, increasing access to credit, and identifying opportunities for new labor-intensive products and services. Climate changes could impact such programming. For example, climate changes could impact the sustainability of shrimp farming in the future or impact the longevity and resilience of new infrastructure construction. All programs should be designed to be resilient in the face of projected climate changes.

DEMOCRACY AND GOVERNANCE: USAID is also working to help Bangladesh improve its governance structure. However, mounting pressures from environmental challenges, including climate change and a rapidly growing population, may create a need for greater resources, capacity, and efforts related to democracy and governance.

HEALTH: Approximately 40 percent of children and 30 percent of mothers in Bangladesh suffer from moderate to severe malnutrition. Improving maternal and child health and reducing malnutrition rates are some of USAID's priorities in its health programming. To improve nutrition, the Global Health Initiative (GHI) will work collaboratively with FTF to catalyze nutrition activities within new and existing programs. Climate change could pose risks to these efforts. For example, agricultural production in a given year may decline due to flooding or drought, with resulting impacts on the GHI and nutrition status of mothers and children. An integrated and holistic approach to addressing climate risks will ultimately increase the resilience of the population and program.

BIODIVERSITY AND NATURAL RESOURCE MANAGEMENT:

About 77 percent of Bangladeshis depend on natural resources for their livelihoods. Degradation of natural capital and biodiversity has a serious and direct impact on food security, nutrition, and income for the poor. Climate change-caused degradation could further stress these important resources. Further, natural coastal forests have been a key source of protection during extreme events. Climate change impacts will make these forests even more critical, as sea levels rise and extreme weather events become more frequent. USAID has played a critical role in protecting and restoring Bangladesh's natural resources in a participatory "co-management" manner. However, climate change-caused shifts in habitats due to changing temperature and precipitation patterns, saltwater intrusion, and inundation may impact these protection and restoration efforts. Programs will need to consider future climate conditions.

DISASTER MANAGEMENT: USAID supports disaster management in Bangladesh. Bangladesh is frequently affected by natural disasters, particularly cyclones, tornadoes, and floods. Increasingly, the country is also affected by river erosion, mud slides, and drought. Due to the relatively high population density throughout the country, much of the population of Bangladesh is vulnerable to these extreme events. Bangladeshis living close to or below the poverty line are often the most vulnerable. USAID has worked with the GoB, local governments, and communities to establish an effective emergency warning and response system. Climate change is likely to worsen natural disasters, making them more frequent and intense and potentially necessitating additional support from USAID and other donors.

ACTIONS UNDERWAY

USAID adaptation activities underway in Bangladesh have focused on natural resource and disaster risk management, as well as building capacity and raising awareness within communities, local governments, and the national government. Several efforts have acknowledged the interconnectedness of implemented programs and have started to integrate climate vulnerabilities, risk assessments, and adaptation actions into their programming. For example, the Integrated Protected Area Co-management (IPAC) program directly addresses the need for climate considerations in natural resource management and protection, and will address a series of short-, medium-, and long-term adaptation issues. Bangladesh is an adaptation priority country for USAID, which has provided

bilateral government funding for adaptation initiatives related to disaster risk management and ecosystem conservation, and is beginning to address food security and climate linkages through FTF. The USAID disaster management response has taken into account the impacts of climate change and has started to adapt accordingly. For example, in reducing the vulnerability of the poor, USAID has worked with the GoB and local governments and communities to establish an effective emergency warning and response system, which will help Bangladeshis respond more effectively to climate-related extreme events.

RESOURCES

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