



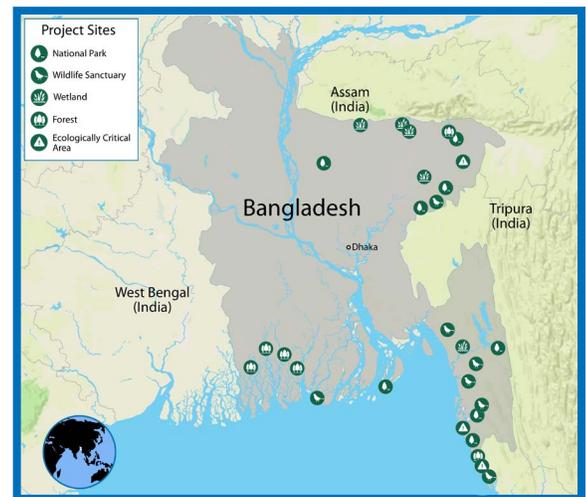
Conserving Ecosystems to Support Climate Resilience in Bangladesh

An Ecosystem-based Adaptation Approach

PHOTO: JOHANNES GOJDAI

Project at a Glance

Bangladesh is highly vulnerable to climate stressors such as sea level rise, floods, droughts and other extreme weather events. A recent study of climate change impacts on rural, agricultural communities in southwestern coastal Bangladesh found that extreme weather events like floods, cyclones and tidal surges are increasing in frequency and intensity. Community members reported that the increased frequency of these events didn't leave them enough time to recover and restore their livelihoods between events (Huq et al. 2015). USAID's Climate-Resilient Ecosystems and Livelihoods (CREL) project in Bangladesh focused on conserving biodiversity and strengthening ecosystems in four rural, biologically significant regions to help communities adapt to climate change.



Project Donors: United States Agency for International Development (USAID) and a consortium of international and Bangladeshi non-governmental organizations

Implementing Partners: Winrock International, Bangladesh Center for Advanced Studies, Community Development Centre, Center for Natural Resource Studies, Nature Conservation Management, Tetra Tech/ARD and the WorldFish Center

Period of Performance: 2012-2018

Funding: \$36 million from USAID (Biodiversity: \$13.2 million, Global Climate Change Adaptation: \$10.2 million, Global Climate Change Sustainable Landscapes: \$7.1 million and Other: \$5.5 million); \$2.9 million from a consortium of international and Bangladeshi non-governmental organizations

Ecosystem Services: Maintenance of forest and wetland ecosystem services that support livelihoods and food security, particularly physical buffering during extreme

weather events and the provision of fish, fuelwood and non-timber forest products

Project Focal Areas: Four regions of Bangladesh: the northeast wetlands and forests, the Sundarbans mangrove forests, the southeast forests and coastal wetlands, and the central region of Modhupur National Park

Climate Stressors: Sea level rise, floods, drought and other extreme weather events

Direct Project Beneficiaries: ~50,000 households, or approximately 250,000 people

What's the Situation?

Rural communities in Bangladesh are highly reliant on natural systems to support their livelihoods and meet their basic food security needs. About half of the country's workforce is engaged in the agriculture, fisheries and forestry sectors. Millions of rural households are dependent on forest and wetland ecosystems for income generation and food security.

Agriculture in Bangladesh is particularly vulnerable to climate stressors such as floods and other extreme weather events like cyclones, which can damage crops and fishponds, leading to a decline in yields. Coastal Bangladesh is highly productive in terms of agriculture and is among the most vulnerable areas of the country to climate stressors. For example, Cyclones Sidr (2007) and Aila (2009) resulted in seawater intrusion that submerged freshwater fishponds and agricultural fields (Huq et al. 2015). Additionally, Cyclone Sidr caused significant damage to the Sundarbans mangrove forests and led to the collapse of forest-dependent livelihoods in the region and mass emigration.

Poor natural resource management further compounds climate risks in Bangladesh. Protected areas represent less than two percent of the country's land mass. Agricultural expansion and unsustainable harvesting of fish and forest products like fuelwood have led to biodiversity loss and environmental degradation. A mix of human population pressures and open access to natural resources in some areas has resulted in little or no incentive for sustainable management. The combined impact of climate stressors and poor natural resource management compromises the ecosystem services that are key to food security and livelihoods for local communities.

The Climate-Resilient Ecosystems and Livelihoods (CREL) project helped local communities across 30 protected area sites reduce climate risks to livelihoods and food security through improved management and conservation of forest and wetland ecosystems. CREL incorporated **ecosystem based-adaptation (EbA) approaches within a broader adaptation strategy** that also included non-EbA approaches. EbA interventions focused on strengthening forest and wetland ecosystems through government-community collaborative management (co-management) so they could maintain general agro-ecosystem productivity despite sea level rise, floods and other extreme weather events. Additional EbA approaches included agroforestry, the conservation of natural buffers adjacent to farming plots and improvements in the management of wild fisheries that serve as safety nets during times of crop failure. The latter included practices such as the establishment of fish sanctuaries and limits on the use of harmful fishing gear.

CREL complemented these activities with efforts to strengthen legal and policy frameworks that support government-community co-management of natural resources and improve related coordination among government agencies. Specifically, CREL worked with the Government of Bangladesh (GoB) to formally adopt policies related to protected areas, wetlands and ecologically critical areas that are essential for sustainable co-management. CREL also employed former GoB officials to draw on their expertise and guide the project in its interactions with government agencies. Finally, CREL focused on building the capacity of the co-management organizations implementing its field-based activities to improve their planning, budgeting and accounting processes and become financially sustainable.

Key Ecosystem-based Adaptation Activities

- **Support community-led efforts to manage and restore local wetland ecosystems by planting mangroves and swamp trees, assisting natural regeneration, protecting swamp forests, creating fish sanctuaries and promoting sustainable fishing practices.**
- **Reduce pressure on forests by planting native trees and plants that provide a sustainable source of fuelwood and non-timber forest products, such as fruits and natural medicines.**
- **Improve forest protection and restoration by working with the Forest Department to assist natural regeneration, decrease illicit logging and prevent forest fires.**
- **Assist rural farming communities in adopting EbA-related agriculture techniques, such as the preservation of natural buffers adjacent to farming plots, integrated pest management and agroforestry.**

Key Project Results and Impacts

965

Villages developed climate change adaptation and mitigation plans that included EbA approaches

390

Hectares of freshwater wetlands restored

556

Hectares of degraded forest restored using assisted natural regeneration methods

200

Hectares of coastal wetlands restored

17,000

Households benefited from increases in fish catches



PHOTO: JOHANNES GOI/DAI

Why Ecosystem-based Adaptation?

The CREL project embedded EbA within a broader climate change adaptation strategy as a complement to other adaptation approaches. The EbA approaches were critically important to strengthening the resilience of food production—and hence local livelihoods—to climate stressors, such as sea level rise, cyclones and floods. CREL project staff built on prior experience from three USAID projects that supported natural resource management and nature-based interventions: Management of Aquatic Ecosystems through Community Husbandry (MACH), the Nishorgo Support Project and the Integrated Protected

Area Co-Management (IPAC) project. The CREL Request for Applications specifically cited evidence from the MACH project that illustrated the substantial benefits relative to costs from wetlands conservation and rehabilitation of wild fisheries versus wetlands conversion for aquaculture. While MACH was not focused on climate change adaptation, CREL project staff highlighted how healthy wild fisheries contribute to climate resilience since wild fisheries' productivity is often maintained during high flood years when crop farming and aquaculture typically experience decreased productivity (personal communication).

Strategies to Support and Sustain Ecosystem-based Adaptation

Implement EbA approaches that complement non-EbA approaches to maximize impact:

CREL project staff recognized the complementarity of EbA and non-EbA approaches. The project helped farmers adopt EbA approaches, such as conserving natural buffers adjacent to farming plots and agroforestry, as well as non-EbA approaches like the sowing of high yield and drought- and saline-resistant seed strains, increasing access to financial services and working with tourism operators to promote ecotourism as a way to diversify livelihoods.



PHOTO: JOHANNES GOI/DAI

Provide training for government officials on linkages between climate resilience and natural resource management to increase their buy-in:

While CREL focused on working with communities to improve co-management of local ecosystems, the project also provided training to government officials on the role of sustainable wetland and forest management in strengthening climate resilience. For example, the project supported training for 26 officers from the Department of Fisheries through visits to field sites and meetings with community members to better understand co-management activities.

Diversify revenue sources to support co-management organizations:

CREL supported the sustainability of EbA approaches by helping communities diversify sources of revenue for co-management organizations, such as protected area entry/gate fees, resource harvesting fees (e.g., non-timber forest products) and ecotourism profits.

Support the adoption of national policies that are key to sustainable co-management of natural resources:

Despite some delays early in the project, CREL made significant progress in working with the GoB to adopt policies

that support sustainable co-management. Among those adopted are the Ecologically Critical Area Management Rules 2016 and the Protected Area Management Rules 2017 that set forth the legal basis for the management and co-management of ecologically critical areas and forest protected areas, respectively. In addition, two other important policies—The Guidelines for Wetland Co-Management and The Guidelines for Establishment and Management of Permanent Wetland Sanctuaries—are under consideration for approval by the GoB. These Guidelines are aimed at improving the governance of wetlands and institutionalizing the dynamic participation of local communities and other stakeholders in managing these important biodiverse areas.

Sources

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Above:

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About This Series

This case study is part of a series of products highlighting the potential role of biodiversity conservation and ecosystem-based adaptation in addressing climate vulnerability. This series is produced by USAID's Biodiversity Results and Integrated Development Gains Enhanced (BRIDGE) project and can be found here: <https://rmpportal.net/biodiversityconservation-gateway/resources/projects/bridge>

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