



BANGLADESH CASE STUDY

NOVEMBER 2011

COMMUNITY BASED ADAPTATION TO CLIMATE CHANGE THROUGH COASTAL AFFORESTATION IN BANGLADESH (CBACC- CF PROJECT)

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| Country | Bangladesh [http://www.adaptationlearning.net/country-profiles/bd] |
| Region | Southern Asia |
| Key Result Area | Adaptation |
| Thematic Sector | Natural Resource Management Coastal Zone Management Disaster Risk Reduction <i>Keywords: community-based adaptation, coastal afforestation, coastal populations, climate resilience</i> |
| Project Activity Dates | Start: March 2009 End: April 2013 |
| Key Stakeholders | Local communities of four upazilas in the coastal districts of Barguna and Patuakhali (Western Region), Bhola (Central Region), Noakhali (Central Region), and Chittagong (Eastern Region) of Bangladesh. |

ABSTRACT

In Bangladesh, many communities are situated close to the shoreline and are reliant on agriculture and fishing for their livelihoods. Rising sea levels and changes in the frequency and intensity of tropical cyclones are raising the incidences and severity of flooding, salt water intrusion and erosion, not to mention loss of livelihoods, shelter and life. Given these circumstances, the Government of Bangladesh is implementing a project to reduce the vulnerability of communities in five coastal districts most susceptible to the effects of climate change. In partnership with the Government of Bangladesh, the United Nations Development Programme (UNDP) is working to enhance the resilience of coastal communities as well as introduce new options for income generation. The project has adopted a successful community-based adaptation intervention known as the 'Forest, Fish, and Fruit' (FFF) model. By planting protective and productive vegetation, with an elevated mound and ditch structure interspersed with fish nursery ponds, the FFF model not only provides additional sources of income, but has also established a 'green shield' surrounding some of Bangladesh's most vulnerable communities. 14,350 households in the target districts have been able to use this model to manage and protect their natural capital in a changing climate. Funded by the Global Environment Facility's Least Developed Countries Fund (GEF-LDCF), this project is establishing protective ecosystems and increasing local government and community resilience and capacity to systematically identify and address risks in changing weather patterns and other climate-related issues.

BRIEF DESCRIPTION OF ISSUES

Background

The National Adaptation Programme of Action (NAPA) and the Initial National Communication (INC) established that a weak economy and widespread poverty in Bangladesh has contributed to low adaptive capacity to withstand the adverse impacts of climate change. The vulnerability context of climate change for coastal areas of Bangladesh is related to gradual changes in the physical environment and climate change-related extreme weather events. The gradual change phenomena in the physical system include changes in salinity concentration in surface water and soil, coastal inundation, and drainage congestion. Changes in intensity and the frequency of tropical cyclones and storm surges will occur, as will changes in tidal height. Compared to inland areas, physical vulnerability is high for coastal areas, which are more exposed to different vulnerability factors. Adaptation of coastal communities therefore requires effective policies, capacity development, and specific interventions that directly tackle the risks posed by climate change, including variability.

Agriculture, fisheries, forestry and forestry products, and livestock are the primary sources of rural livelihoods of the coastal communities. All these sectors are vulnerable both to gradual change phenomena and extreme weather events related to climate change. Coastal and marine fishing communities are also vulnerable to the changing intensity of cyclones with coastal settlements exposed to the sea being severely vulnerable to cyclones and storm surges. A well-maintained coastal greenbelt with adequate buffer zones can reduce vulnerability and protect settlements. At the same time, forestry products provide substantial livelihood support and meet a portion of domestic needs. Community participation to manage coastal afforestation and a long-term agreement between the Forest Department and Ministry of Land are necessary to maintain the coastal greenbelt and effective buffer zones. The introduction of alternative livelihood options creates new potential for sustainable income sources and is also necessary to relieve some of the pressure on demand for forestry resources in the coastal area.

Problem

Coastal communities are extremely vulnerable to anticipated climate induced threats. Given the general lack of institutional capacity to systematically identify and address climate-driven changes in risk patterns, the Government of Bangladesh is implementing a project to reduce the vulnerability of coastal communities to climate change-induced risks in five coastal districts (Barguna, Patuakhali, Bhola, Noakhali, and Chittagong). The project is based on: 1) Enhancing the resilience of coastal communities and protective ecosystems through community-led adaptation interventions, focusing on coastal afforestation and livelihood diversification; 2) Enhancing national, sub-national, and local capacities of government authorities and planners to understand climate risk dynamics in coastal areas and implement appropriate risk reduction measures; 3) Reviewing and revising coastal management practices and policies to increase community resilience to climate change impacts and; 4) Developing a functional system for the collection, distribution and internalization of climate-related knowledge.

BRIEF DESCRIPTION OF PROJECT

Solution: Adaptation Approach, Components and Description

The overall objective of the Community Based Adaptation to Climate Change through Coastal Afforestation in Bangladesh (CBACC-CF) project is to reduce vulnerability of coastal communities to the impacts of climate change-induced risks in the following four Coastal Forest Districts (CFD): Raipur of Anwara Upazila of Chittagong; Sukhchar of Hatia Upazila of Noakhali; Char Kukri-Mukri of Char Fassion Upazila of Bhola; and Naltuna of Barguna Sadar Upazila of Patuakhali.

The CBACC-CF project highlights the need for sustainable livelihood alternatives and implementation of responsive policies to increase the adaptive capacity of highly vulnerable coastal communities through the incorporation of recurrent income generation options. The project encourages and promotes knowledge-sharing between the four main project components to leverage opportunities for learning and to enable successful community-based adaptation approaches to be replicated in other vulnerable coastal regions, both within and outside of Bangladesh.

The project has implemented community-based climate risk reduction measures in targeted areas that are especially vulnerable to climate change. In particular, the project will ensure that buffer zone measures promoted by ongoing projects take anticipated climate change risks into account. The project has also facilitated diversification of livelihoods and alternative income opportunities in order to increase the resilience of communities affected by resource deprivation. The FFF model has proven to be a successful initiative in this area. Another key output of the project is the development of secure sources of potable water for communities vulnerable to saline intrusion as a result of frequent climate-induced flooding. Innovative mechanisms such as rainwater harvesting, micro surface and ground water treatment facilities have been piloted and demonstrated for up-scaling over time. The project also maintains a strong focus on increasing national and community capacity to better integrate measures for identifying and addressing climate change risk into development planning processes. Training policymakers at the national level to integrate climate risks into coastal zone planning will serve to ensure that priorities outlined in the National Communications to the UNFCCC and in the NAPA can be appropriately implemented. Further, integrating methods of adaptation to climate change risks into legislation related to coastal zoning regulations and facilitating alignment of existing coastal management programmes will build community resilience. The project aims to improve the flow of information between climate monitoring, forecasting and the provision of early warning services for coastal areas.

| Successful Practice | |
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| Key Successes | The 'Forest, Fish, and Fruit' model is a successful community-based adaptation option for coastal communities in Bangladesh. |
| What Factors Supported Success | By planting protective and productive vegetation, with an elevated mound and ditch structure and interspersed fish nursery ponds, the FFF model has established a 'green shield' surrounding some of Bangladesh's most vulnerable communities. |
| Relevant Information | 14,350 households in 4 vulnerable districts are able to use the FFF model and complementary adaptation measures, such as improved varieties of agricultural crops and livestock, to manage and protect their natural capital in a changing climate. |

PROJECT CHALLENGES AND SOLUTIONS

Major Challenges

The risk of climate change-induced damage to human and economic development in coastal areas of Bangladesh is mounting. The combined effects of rising sea-levels and subsidence, changes in upstream river discharge, increased frequency and intensity of tropical cyclones, and erosion of coastal embankments pose a serious threat to the natural resource base and livelihood opportunities of coastal communities. The existing disaster management framework in Bangladesh is largely organized to deal with the recurrent and rapid onset of extreme events, whereas coastal zones in Bangladesh are also confronted with a range of "creeping" climate risks that must also be addressed, such as increasing salinity trends in coastal freshwater resources, growing drainage congestions, dynamic changes in coastal morphology and a decline in the functioning of protective ecosystems. The CBACC-CF aims to equip both government and local communities to identify and address risks through increasing knowledge, capacity and resilience.

LESSONS LEARNED

Results and Learning

Progress to date

The loss of land and resources due to the effects of climate change limits livelihoods and income generating opportunities for poor coastal communities. The 'Forest, Fish, and Fruit' model has proven to be a successful community-based adaptation option for creating sustainable livelihoods for coastal communities in Bangladesh. By planting protective and productive vegetation, with an elevated mound and ditch structure and interspersed fish nursery ponds, the FFF model has established a 'green shield' surrounding some of Bangladesh's most vulnerable communities. This model maximizes livelihood security by accommodating 8-10 families per hectare to generate a sustainable livelihood and additional income – a pioneer achievement in rational land use. On average, the FFF model provides USD\$1,000 annually per beneficiary in additional income to routine livelihood activities. The model incorporates early, mid-term and long-term resource generation options through adaptation measures such as farming and management of improved varieties of agricultural crops and livestock.

This year salt-tolerant high yielding varieties of rice were introduced in two project sites and have shown promise for cultivation during the winter season when farmers are traditionally unable to produce. This initiative has been highly effective in motivating local farmers to participate in innovative adaptation measures. This has also been achieved with other crops through the use of improved seed varieties, including soybean. Out of 14,350 households across the four target districts, 10,461 households are actively involved in climate risk reduction and training measures that are aimed at increasing their adaptive capacity.

Key lessons learned

Community based adaptation is a new and innovative approach for addressing issues of climate change in coastal areas of Bangladesh. It has proven difficult to achieve genuine and inclusive community engagement in the programme, particularly in very poor and remote areas. Issues of social inequality within poor communities often hinder participation by those in the lower levels of society. Addressing social barriers to engage all groups within a society is a very slow process which requires education and advocacy. Gender inequality is one such barrier that this programme has aimed to overcome. Initiatives for encouraging balanced gender participation within the CBACC-CF have resulted in women constituting 42% of active beneficiaries. The success of this project is also dependent on the positive participation of different government departments throughout the project lifecycle. The cooperation of government agencies is essential for the timely and efficient implementation of any project. The project manager is instrumental in facilitating this relationship. A third lesson to note regarding site-specific intervention is that the frequency and height of tidal inundation abnormally increased during the new moon and full moon periods of this past year, threatening the FFF livelihood initiatives and the natural resource base. The height of the tides surpassed expectation and, as such, the height of the mounds was not sufficient. Additional measures for adaptation were undertaken in two sites to ensure the sustainability of the FFF initiatives that had been implemented.

Mainstreaming Components

The CBACC-CF project is directly aligned with Bangladesh's national priorities for development. Climate change and related extreme events are recognized as major impediments to growth in recently developed policy documents such as the Coastal Zone Policy. This project will contribute towards mainstreaming climate risks into similar policies in the future. The National Water Policy has recognized that it is necessary to reduce the knowledge gap for addressing climate change impacts in the water sector. Bangladesh's Poverty Reduction Strategy Paper (PRSP) recognizes the direct links between poverty and risks of natural disasters: *"Given the risk and vulnerability to natural hazards that are likely to continue as a serious threat to national development efforts, macro level policies for disaster risk reduction, mitigation and management must be adopted in view of alleviating disaster-induced poverty"*. It has also proposed a comprehensive and anticipatory approach *"... to reduce vulnerability to natural, environmental and human induced hazards through community empowerment and integration of sustainable risk management initiatives in all development programs and projects"*.

National capacity is enhanced through institutionalization and mainstreaming of sustainable environmental management. In terms of political and institutional sustainability, the project has strong government support at the central, district, and local levels. Various stakeholders from the government and civil society were involved in the NAPA process, and several of those agencies are keen on carrying forward the implementation of the top identified priorities. The long-term viability of the project will depend greatly on institutional coordination, which will be achieved through capacity-building initiatives at all levels. The CBACC-CF aims to mainstream initiatives for climate change and climate-resilient development and maintains a focus on effecting long-term, sustainable change.

Sustainability

The recurrent income generation from continuous flow of resources will increase the adaptive capacity of the coastal communities and such recurrent livelihood support might sustain the Fish, Fruit and Forest (FFF) model in any anticipated conditions induced by climate change. Additional measures necessary to ensure the sustainability of the proposed interventions, including those that focus on management and technical capacity, will continue to be identified and incorporated into the project design. The project design has been informed by an in-depth root-cause analysis which was guided by the principles of the UNDP Adaptation Policy Frameworks (APF). This approach will ensure that the implementation of the NAPA priority profile is not undertaken in isolation but contributes to ongoing activities by government and other donors who are actively working towards coastal development. Institutional linkages will continue to be strengthened through cross-functional working and communication, and community-based adaptation measures will include innovative mechanisms for sustainable livelihoods, which in turn will enhance the sustainability of project outcomes. The capacity-building components of the project will empower stakeholders at all levels - from community members, to district authorities, to policymakers - with a greater understanding of climate change risks, adaptation options, and enhanced adaptive capacity.

Replicability

The project will further generate adaptation benefits by facilitating the integration of climate risk into existing poverty reduction and rural development strategies, especially as they pertain to coastal regions. Once the viability of the applied adaptation interventions is proven and national and local adaptive capacity has increased, there will be further opportunities for up-scaling and replication in other coastal sites exposed to climate-induced hazards. Learning and knowledge-sharing is promoted through project activities, including contributions to the Adaptation Learning Mechanism so that government ministries and other organizations are able to access and leverage the knowledge and resources developed through the CBACC-CF. National and international dialogue forums will continue to provide opportunities for identifying similarly vulnerable areas within and outside of Bangladesh where a similar approach may be suitable for use.

Funding

GEF Project Grant LDCF (CEO Endorsement): US\$3,300,000

Co-financing Total (CEO Endorsement): US\$7,100,000

Project Cost (CEO Endorsement): US\$10,500,000

Time Frame

2008-2013

Profile Created: February 2010

Profile Updated: November 2011

References: 2011 APR/PIR, PIF Document (Revised), PPG Document, Endorsement Letter from Government, Project Appraisal Document (for CEO Endorsement), Request for CEO Endorsement, Project Identification Form – 3 April 2007, and <http://www.gefonline.org/projectDetailsSQL.cfm?projID=3287>.

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For more information:

UNDP-ALM Project: <http://www.adaptationlearning.net/community-based-adaptation-climate-change-through-coastal-afforestationafforestation>