

Community-based Adaptation to Climate Change through Coastal Afforestation in Bangladesh



Project site in August, 2016. Photo courtesy of ICCCAD

Lessons Learned and Policy Recommendations

- Circumstances of individual participants needs to be taken into account in community-based adaptation (CbA) development and management.
- Appropriate and sedulous capacity-building gives communities individual confidence and enhanced resilience.
- Communication among stakeholders and dissemination of information about project achievements are effective for enhancing CbA activities in the long term.

Outline

● Background

Climate change poses significant risks for Bangladesh. Given its geographical location, the coastal region of Bangladesh is especially vulnerable to the impacts of climate change, including cyclones, tidal surges, tidal flooding, land erosion, and sea-level rise. It is expected that climate change will increase the frequency and intensity of climatic disasters in the coming years, putting the lives and livelihoods of coastal communities at greater risk. The livelihoods of people living in coastal areas depend heavily on four climate-sensitive sectors: agriculture, forestry, fisheries, and livestock. The impacts of climate change on these sectors will reduce the adaptive capacity of coastal communities. In Bangladesh, coastal afforestation is considered to increase the resilience and reduce the vulnerability of protective ecosystems and adjacent coastal communities. The government promotes coastal afforestation to contribute to global mitigation in the decades ahead.

The Community-based Adaptation to Climate Change through Coastal Afforestation in Bangladesh (CBACC-CF) project was undertaken based on the National Adaptation Plan of Action of Bangladesh. It is built on the conceptual framework that the vulnerability of coastal populations to

climate hazards is determined by their exposure, and is increased by environmental degradation and low adaptation capacity.

The Forest-Fish-Fruit (Triple F) model is an integral part of the CBACC-CF project, which is designed to make rational use of coastal land to produce forestry, fruit, and fish resources in order to diversify livelihoods, generate income and increase local resilience to climate change.^[1] A similar concept had been established in 2004 in a “Group based Resource Generation” model by Dr. Paramesh Nandy who worked for Bangladesh Forest Research Institute (BFRI) at the time. He made a proposal of the Triple-F model in collaboration with the Government of Bangladesh after joining UNDP.

● Geographical characteristics

The project sites, the most affected areas of the four coastal districts in Bangladesh, were chosen through extensive stakeholder consultations with government agencies and community members. The areas are as follows (See Figure 2-1-1):

Borguna Sadar Upazila (“Upazila” means sub-district) in Borguna District; Char fashion Upazila in Bhola District; Hatia Upazila in Noakhali District; Anwara Upazila in Chittagong District.

The districts share the following features:

The livelihoods of coastal communities are highly dependent on climate-sensitive sectors including agriculture, forestry, and fisheries, as well as livestock. Most of the coastal people, however, depend on single fishing activities and have very limited skills and knowledge of integrated farming. Capacity building is therefore needed to raise their resilience to climate risks.

Major environmental issues in the four project sites are cyclones, floods, soil and river erosion, salinization, and siltation.^[2]



Figure 2-1-1 Locations of the project sites

Objectives^{[1][3]}

Overall goal

The goal of the project is to promote climate-resilient development in the coastal areas of Bangladesh by reducing the vulnerability of these areas.

Sub-goals

Improve local and national awareness and understanding of the benefits of preparedness for climate change risks.

Increase the resilience of natural, social, and economic systems at a community level.

Institutional arrangements^[1]

The project was mainly funded by the Least Developed Country Fund (LDCF), the United Nations Development Program (UNDP), Swiss Agency for Development and Cooperation (SDC), and Embassy of the Netherlands (EKN). It is executed by the Government of Bangladesh's Ministry of Environment and Forest (MoEF).

The Project Board includes Department of Fisheries and other departments/ministries such as Agriculture, Fisheries, Livestock, Bangladesh Forest Research Institute, and Bangladesh Water Development Board and Ministry of Land. UNDP, The International Union for the Conservation of Nature (IUCN), NGOs, and other local implementers, were involved in the project as well. (See Figure 2-1-2)

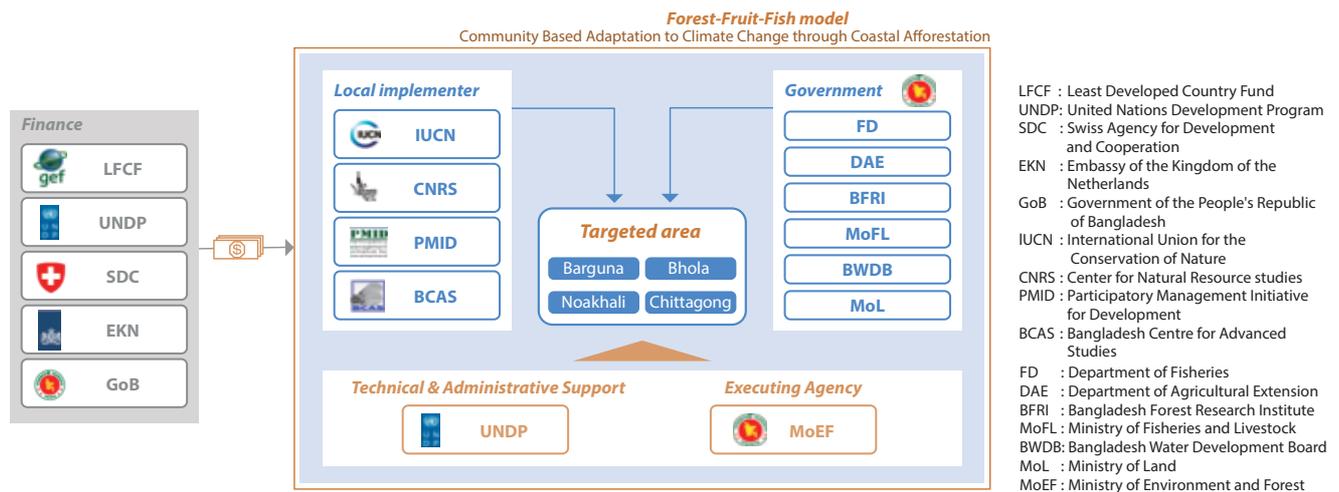


Figure 2-1-2 Institutional Arrangements

Effectiveness of the Forest-Fish-Fruit (Triple F) Model^{[1][3]}

The Triple F Model, a key component of the CBACC-CF project, uses barren coastal land to produce forest, fruit, and fish resources, in order to diversify livelihoods and enhance community resilience to climate change. Benefits of this model include:

- 1) Effective protection and preservation of ecosystems
- 2) Innovative and rational use of land (of great importance, especially for a highly land scarce country such as Bangladesh)

- 3) Increased protection of communities from the impacts of climate change (help secure food and income security (provides two to threefold added income))
- 4) Empowered landless communities to withstand the impacts of climate change by providing them with land ownership rights over government land

Activities

Vulnerability assessment with local communities^[2]

Participatory rural appraisals (PRAs) and vulnerability assessments were conducted to recognize and assess local adaptation needs. Prior to PRAs and vulnerability assessments, local people were unaware of the impacts of climate change on their communities due to the government's active promotion of afforestation, and lack of interest and motivation to participate in the program. They were also

doubtful about the potential benefits of the project.

To inform local people and beneficiaries about the impacts of climate change on their communities, currently available adaptation measures for coastal afforestation, existing livelihood options related to agriculture, fisheries, and forestry, and local preparedness systems for extreme events were documented with the active participation of local communities.

Capacity-building of local and government stakeholders

The capacity of government staff was strengthened through the development and implementation of several communication materials, three training modules, and eight technical training modules. Some district officials have visited the project sites.^[4]

The capacities of local communities were also strengthened. Training in mangrove nursery production and plantation, aquaculture, and livestock livelihoods were provided to about 12,000 people. In addition, more than 1,000 people received instruction on improved agricultural technologies.

A Local CoManagement Committee (CMC) was founded at each project site. CMC facilitates implementation of project activities, manages conflict resolution, and provides policy and legal support as needed by the project, thus serving as the local executing council of the project. The committee includes representatives of all implementing departments, elected local Union Parishad Chairman, and other members, including women members from beneficiaries.^[5]

Ditch-dike structure and Triple-F adaptation practices

Barren coastal lands, belonging to government, were transformed into an alternating ditch-and-dyke structure. In ditches, poor households farm fish and ducks, while the dykes support production of fruit, vegetables, and forest trees (See Figure 2-1-3). Local varieties are prioritized over others. Additionally, the project introduces ten mangrove species within almost 200 hectares of plantation^[5] to increase the density of trees per unit area. The ditches can also serve as fresh-water reservoirs.

Provide beneficiaries with increased income from Triple-F model

Sales and surplus vegetables from the Triple-F model increased family incomes by about BDT. 20,000/year. Short- to mid-term interventions through the introduction of duck cum fish technology bring additional income from selling fish and eggs. Besides, it is estimated that quick-growing and early yielding fruit varieties and forest trees, which will provide long-term timber and mid-term fuel wood from branch pruning, and food products bring further income.^[5]

In total, the beneficiaries have increased their incomes more than 330% compared to their baseline income.^[5]

Monitoring and Evaluation (M & E)

The project was monitored through various means, including meetings, workshops, and site visits.

The terminal evaluation assessed from project formulation, project implementation, including monitoring and evaluation (M&E), and relevance, effectiveness, and efficiency of outcomes. The evaluation team visited all project sites and interviewed about 200 participants including government and UNDP officials, the project management unit, and beneficiaries. Reports were written at the middle and end points of project implementation.^[6]

The results of the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums to be used when implementing similar future projects.

Spreading and scaling up Triple-F model

The CBACC-CF project was a pilot project and the structural arrangements including height of the dykes, depth of the ditches, etc. have already been updated in the scale up project to be implemented in 10 more coastal sites.

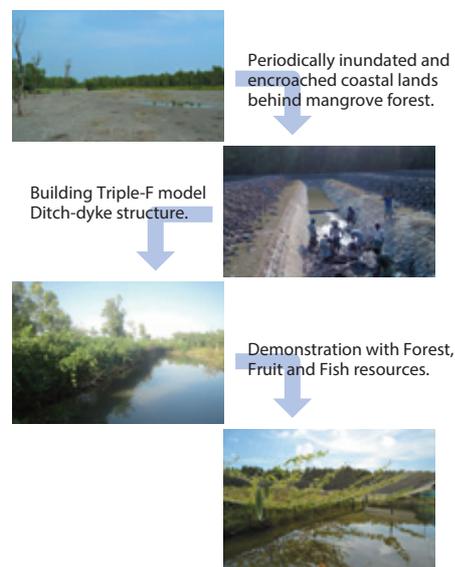
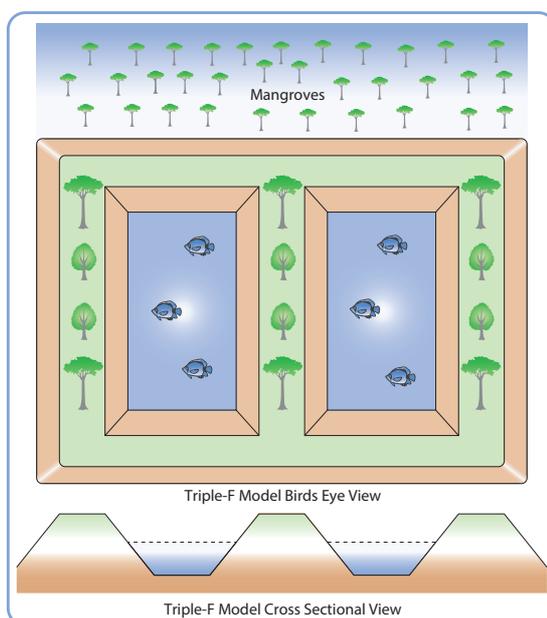


Photo courtesy of Dr. Paramesh Nandy

Figure 2-1-3 Ditch-dike structure for Triple-F model

Lessons Learned and Policy Recommendations

1 Circumstances of individual participants needs to be taken into account in CbA development and management.

This project brings benefit to participants by being employed through activities, and is strongly supported by landless beneficiaries who benefit greatly from the project. On the other hand, it does not appeal to beneficiaries who already have land and other income sources. Differences in the needs and demands of beneficiaries may affect their motivation towards activities. Therefore, transparency, fairness, and consistency should be taken into account in the process of selecting beneficiaries.

Women's active participation brings new insights and perspectives to the project. Approximately 42% of women^[5] in local communities play active roles in this project. Co-Management Committees (CMC), established in each activity area, stipulate that at least three women should be included among Committee members. It is desirable to support women's participation by shortening the distance between home and workplace and providing opportunities other than heavy labor through technical education.

2 Appropriate and sedulous capacity-building gives communities individual confidence and enhanced resilience.

Community-based projects depend on the degree to which participants understand the vulnerability and recognize the need to respond to climate change. In this project it was necessary to take more time to encourage participants to have an understanding of the need to prepare for the impacts of climate change. Appropriate vulnerability assessments and capacity-building of communities are essential, and project strategies should be developed based on the circumstances surrounding communities such as existing opportunities, level of climatic risks, and political and economic feasibility of adaptation options.

The Triple F Model was introduced to the community in this project. Participants have been encouraged to recognize the importance of limited natural resources and use them in more suitable ways through training and workshops. As a

result, they have become much more self-reliant, and have confidence in their independence.



Figure 2-1-4 Obtaining community resilience through activity

3 Communication among stakeholders and dissemination of information about project achievements are effective for enhancing CbA activities in the long term.

Because the scale of this project is relatively small, objectives and benefits of the project, as well as the risks of climate change, are only known by the communities involved and supporting entities. The project has been successful and brings benefits particularly to landless beneficiaries who have no source of income. Disseminating information to potential stakeholders needs to be promoted to sustain activities by obtaining more attention from supporters.

While constantly obtaining good recognition, issues such as disposal of products damaged by cyclones and heavy rains and need to improve dykes are pointed out at the same time. Bringing different aspects such as social viewpoints, logistics, and business will foster interdisciplinary collaboration for the sustainability of community economic independence. It is desirable to develop a framework to receive continuous advice from various stakeholders, in addition to the existing advisory members, even after completion of the project.

In this project, exchanging activities among participants is not active, and community centers have hardly been used after completion of the project. Sharing information among participants in the region will strengthen the cohesiveness of communities, and increase motivation of participants. It is necessary to create opportunities and platform to exchange information obtained from the project within and across communities.

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