Coastal Livelihoods Adaptation Project (CLAP)

Climate-Resilient Development in Barisal

The southern coastal division of Barisal is located on the front line of Bangladesh's struggle with climate change. It was one of the districts most severely devastated by Cyclone Sidr in 2007 and was hit again by Cyclone Aila in 2009. The storm surge and strong winds of both cyclones destroyed the homes, crops, livestock, and tools of the families in the affected upazilas, as well as approach roads, schools, markets, and community centres.

A severe tropical cyclone hits Bangladesh, on average, every three years, generally in the months just before and after the monsoon. Cyclones are accompanied by high winds of over 150 km per hour and are always associated with storm surges of up to seven metres high because the Bay of Bengal narrows towards the north, where Bangladesh is located.

Because of the storm surges, Bangladesh suffers more cyclonic causalities than any other country in the world, about 53% of the global total. Around 500,000 people died in 1970 alone, and 140,000 in 1991. More than five million people live in the high risk areas along the coast.

Bangladesh has responded to these threats by developing a world-renowned community based early warning system. Around 3000 cyclone shelters on stilts that allow storm surge to flow underneath have been built throughout the coastal zones; they can shelter over seven million people. 1.5 million people took shelter before Cyclone Sidr hit the coast in 2007, and the death toll was far lower than in previous cyclones of this magnitude: 3,500 people died.

However, with rising sea surface temperatures due to climate change, which in turn is predicted to increase the frequency and intensity of tropical cyclones, Bangladesh's ability to copy with devastating climatic events may be severely tested. Cyclonic activity in the Bay of Bengal has in fact become more frequent in recent years, causing, among other things, rough seas that make it difficult for fishermen to put to sea. And perhaps even more ominously, Cyclone Aila, in 2009, for the first time breached the embankment in many places, allowing the incursion of saline water far inland.

Incursion of saline water a major threat

The gradual incursion of saline water has long been a major threat to livelihoods and crop production in many coastal districts of Bangladesh. The Government of Bangladesh estimates that about 53% of the entire coastal area is now affected by salinity. This happens when breached embankments allow water to flow into previously protected land, but also because high tides are pushing further and further inland because of increasing siltation, faulty management of sluice gates, and the gradually increasing rise in the sea level.

The Bay of Bengal is rising, apparently between 5 and 7.5 mm a year, according to the limited data available. Taking 2005 as a base year, it is expected to rise by 5-6 cm by 2020, 23-27 cm by 2050, and 48-62 cm by 2080. Inundated areas might increase by up to 3% in the 2030s and by 6% in the 2050s, depending of course on how other weather variables behave and on water management policies.

The division of Barisal has been struggling with encroaching saline water and the lack of fresh water for many years already. During the monsoon season, the heavy rainfall provides abundant freshwater and also swells the surface flow along the rivers, thus keeping saline water from the sea in check. However, during the rest of the year, salt water from the Bay of Bengal washes back upstream into the rivers and channels, making the water unfit for human consumption and for irrigation. The salinity creeps into the dry, clay soil of the fields, diminishing crop yields or making it impossible to produce any crops altogether. The salt water also contaminates the groundwater in many areas.

Houses under water after cyclone Mahasen (2013)

Women building approach road
Soil salinity and the lack of fresh water during the dry seasons are thus major constraints for crop production in the coastal districts. In fact, farmers in the coastal districts typically produce only one crop per year. They transplant aman rice to the flooded fields during monsoon season and then harvest it in November/December; the fields are left uncultivated during the rest of the year.

To complicate matters even further, the pattern of rainfall in the coastal regions—like that throughout the country—is becoming increasingly erratic and further undermining the possibility of more than one crop a year. The recent data appears to indicate that more rain is falling in the southern districts, during the monsoon and post-monsoon seasons, while there is less rain in the pre-monsoon season.8

Climate change is thus becoming an increasing threat to human and economic development in coastal areas of Bangladesh. Increased frequency and intensity of tropical cyclones, the erosion of coastal embankments, sea-level rise, increased sedimentation, encroaching salinity and erratic rainfall patterns are all undermining the livelihoods of coastal communities.

From disaster relief to climate resilience

Because these climate-related threats are largely creeping risks and Bangladesh’s highly successful disaster management systems were designed to deal with rapid onset extreme events, the Government of Bangladesh has now ushered in a paradigm shift from disaster relief to climate resilience.

The Master Plan for Agricultural Development in the Southern Region of Bangladesh, developed by the Bangladesh Ministry of Agriculture, provides a roadmap for integrated agricultural development in the coastal districts of Bangladesh aimed at sustainable food security, poverty reduction and climate-resilient livelihood restoration and rehabilitation for the poor.

Among other things, the Plan particularly focuses on increasing agricultural productivity; improving water management and rejuvenating productivity of degraded lands; developing climate resilient infrastructure; improving surface water irrigation systems; shrimp and fisheries; and poultry and dairy.

The project, Adaptation to Climate Change and Rehabilitation of Livelihoods in Selected Districts of South Bangladesh, which is supported by the Bangladesh Ministry of Agriculture and German development cooperation through the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, is therefore rebuilding the livelihoods destroyed by Cyclones Sidr and Aila in a manner that reduces the impact of future disasters and facilitates medium- and long-term adaptation to climate change. The project will run from October 2011 to December 2016.

The project is focused on vulnerable households in selected communities in the districts of Barguna, Patuakhali, and Bhola (Barisal Division) and is providing support in four areas outlined in the Master Plan for Agricultural Development in the Southern Region of Bangladesh: 1) promotion of climate-resilient agricultural production systems; 2) livelihood development through non-farm income generating measures; 3) community-based disaster risk reduction and climate change adaptation; and 4) introduction of disaster prevention and disaster risk management in schools.

At the field level, the activities are carried out by several partner organizations: Resource Development Foundation (RDF), Wave Foundation, Integrated Community and Industrial Development (NCIDIN), Gonoshasta Kendra (GK), and the Association for Disaster Mitigation and Development (ADMD), with capacity development support from the Bangladesh Red Crescent Society (BDRCS), the International Union for Conservation of Nature (IUCN), TARONGO, ADM and, Appreciative Consultancy Services International Ltd. (ACS International).

2 Second National Communication (SNC) of the Government of Bangladesh to the UNFCCC, p. 54.
4 Ibid.
5 Second National Communication (SNC) of the Government of Bangladesh to the UNFCCC, p. 54.
6 Ibid. p. 121.
7 Ibid., p. 123-124.
8 Second National Communication (SNC) of the Government of Bangladesh to the UNFCCC, p. 119-120.

Contact
Dr. Purnima Doris Chattopadhayay-Dutt
Email: purnima.chattopadhayay-duutt@giz.de