

Community-led adaptation in Bangladesh

CASE STUDY

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Climate change adaptation strategies are urgently needed in Bangladesh but they must be community-led.

In terms of the impact of climate change, few places in the world will experience the range of effects and the severity of changes that will occur in Bangladesh. These global warming-induced changes will almost all have negative impacts on the population of Bangladesh, a country that already has around half of its citizens living below the poverty line. Forced migration threatens to be a major consequence.

Bangladesh is the world's third most vulnerable country to sea-level rise in terms of the number of people and in the top ten in terms of percentage

of population living in low-lying coastal zones.¹ Currently, almost 40 million people live in the coastal areas of Bangladesh. Loss of coastal land to the sea in this vulnerable zone – currently predicted to reach up to 3% by the 2030s, 6% in the 2050s and 13% by 2080 – is likely to generate a steady flow of displaced people.² However, there are a number of other more insidious problems associated with sea-level rise.

Firstly, a higher sea level means that the gradient of rivers will be reduced, resulting in slower drainage to the sea. This will be compounded

by higher rainfall in the Ganges-Megna-Brahmaputra river basins and greater Himalayan glacier melt in the monsoon, resulting in more devastating floods. In 1998 flooding submerged 68% of the country for ten weeks, temporarily displacing 30 million people.

Secondly, cyclones may get more frequent and are likely to be more powerful. A higher sea level means that storm surges that accompany cyclones will drive sea water even further inland. A cyclone in 1991 killed 138,000 and affected over 13 million, with a surge 7.2 metres high. Surges in future may surpass 10 metres in height, penetrating far inland in this country of which two-thirds is lower than five metres above sea level.

Thirdly, sea-level rise will increase salinity in surrounding coastal areas, dramatically reducing yields from food crops and jeopardising drinking water supplies.

Food shortages caused by loss of agricultural land in the coastal zone as well as by flooding and droughts elsewhere in the country may lead to large numbers not only of internally displaced people but of refugees as well. Bangladesh's Adivasi tribal minorities – such as the Garo and Santal in the north and west, and the Chakma and other tribes in the Chittagong Hill tracts – are particularly vulnerable; they have lost much of their ancestral land to encroachment by settlers from more overcrowded parts of Bangladesh and are already concentrated on drought-prone or hilly agricultural land.

Community-led adaptation

Climate change adaptation urgently needs to be developed and applied in Bangladesh. Adaptation strategies can include:

- doing nothing: the least ideal strategy, obviously, but a



River bank protection along the Brahmaputra River, Bangladesh. 2007

ISD/Leila Wead

common one, due to lack of adaptive capacity

- sharing losses: whereby those affected do not bear the full cost of the effects of climate change; this may include insurance schemes as well as international aid
- modifying threats: includes, for example, changing agricultural cropping patterns or building a breakwater on an island to safeguard industries
- preventing effects: usually requires pre-planning and investments such as the building of large embankments to protect areas from flooding
- changing use: a different use of resources such as growing shrimps in newly submerged areas
- changing location: moving homes or businesses to safer areas
- restoration: restoring an area damaged by the effects of climate change to its previous condition (though of course leaving it open to similar damage in the future)

Whatever strategy is adopted, however, it should start with and be led by the local community wherever possible for it is local village people who are often the real experts on climate change. Rather than implementing highly technical, expensive and outsider-led interventions that are often untried in field conditions, priority should be given to using and modifying traditional coping mechanisms developed in the communities in Bangladesh and around the world.

In saline areas this may involve using ancient local technologies such as the huge locally fired clay pots that harvest and store rainwater from roofs, the selection of saline-tolerant rice varieties that have traditionally been cultivated by the sea, or belts of salt-tolerant trees such as mangroves planted along coastal areas to prevent saline intrusion. In seasonally flooded areas, local people from the south-west of Bangladesh have developed ingenious floating rafts with a bamboo base, upon which water hyacinth is piled and then covered by other aquatic plants or coconut husk

to form a seed bed ready for planting. These floating gardens (*baira*), which are cultivated in the rainy season and float above monsoon floods, are now becoming popular in many other areas in the south of Bangladesh.

At other times adaptation requires some infrastructure development, which may be as straightforward as raising tubewells on concrete platforms in order that a clean source of water is available above

use of both local and foreign good practice throughout vulnerable areas.

Conclusion

Climate change will affect all areas of development work; mitigation and adaptation policies therefore need to be integrated into all existing projects and programmes. Climate change puts populations, particularly in low-lying poor countries like Bangladesh, at huge risk of becoming displaced. Increased attention and



'Baira' – floating vegetable nursery, Bangladesh.

floodwaters. Concrete cyclone shelters on stilts along the coast have already saved thousands of lives – and are often used as schools and offices outside emergency periods. (Such adaptation measures may also require outside technical engineering input.)

Meanwhile, dry-land agricultural techniques that have been used for centuries in highly drought-prone areas in other parts of the world are also now proving useful as climate change adaptations in increasingly rainfall-deficient areas in the north-west of Bangladesh. These techniques include the use of intercropping and other agroforestry techniques, bunds and low walls in fields to help capture scarce rainfall, compost to retain soil moisture, drought-resilient plants and roadside tree plantations to shelter land from wind. The challenge is to spread the

funding to support adaptation initiatives that enable communities to sustain their livelihoods despite increasingly hostile environmental conditions will enable families to remain on their land.

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For more examples and photos of local adaptation techniques, see website of the 2nd International Workshop on Community Based Adaptation to Climate Change, held in Dhaka, Bangladesh, February 2007: www.iisd.ca/yimb/sdban

1. www.tiemocyberclimate.org/portal/bulletin.htm
2. www.ids.ac.uk/climatechange/orchid
3. His report summarising published literature on the effect of climate change on Bangladesh and possible adaptation techniques is available at <http://english.nca.no/article/view/5765>