A New Approach to Climate Adaptation on Bangladesh's Coast

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At international climate conferences, Bangladesh is frequently cited as one of the world's most climate-vulnerable countries. The country accounts for far less than one per cent of global carbon emissions, yet its southern coastal region bears the direct impact of rising sea levels, cyclones and salinity intrusion.

Alongside its case as a victim of climate change, Bangladesh must also confront an urgent question: how much decision-making power and control over funding are local communities given in planning and implementing adaptation measures? For generations, coastal communities have coped with adversity through floating gardens, salt-tolerant rice varieties, crab farming and volunteer networks under the Cyclone Preparedness Programme. Yet government initiatives often place greater emphasis on large infrastructure projects, embankments and externally funded schemes. Unless local knowledge and community initiatives are brought to the centre of adaptation efforts, these efforts are unlikely to succeed in the long run.

According to the Internal Displacement Monitoring Centre (IDMC), Bangladesh recorded around 2.4 million disaster-related displacement movements in 2024, up from approximately 1.8 million in 2023. The country ranks fifth globally in disaster-related displacement, and the number has risen for four consecutive years. Between 2008 and 2024, the total number of displacement movements exceeded 21 million.

Cyclone Remal, which struck in May 2024, affected around 4.6 million people across coastal districts, including Khulna, Satkhira, Bagerhat, Barguna, Patuakhali and Bhola. Nearly 175,000 houses were partially or completely damaged. The Cyclone Preparedness Programme helped substantially reduce fatalities. Yet many people who lost their homes, ponds and farmland were unable to return to their previous lives.

According to the World Bank's 2021 Groundswell report, the number of internal climate migrants in Bangladesh could reach 19.9 million by 2050 under a pessimistic scenario. Bangladesh could account for nearly half of South Asia's projected internal climate migrants. However, inclusive development and lower emissions could significantly reduce this number.

The migration route is already familiar. People leave coastal villages for nearby sub-district and district towns, then move to Khulna or to the slums of Dhaka and Chattogram. Many of the poorest, however, cannot afford to move and remain trapped in hazardous conditions. Although the government adopted a National Strategy on Internal Displacement Management in 2021, effective implementation remains a major challenge.

Soil salinity is one of the principal causes of the agricultural crisis along the coast. According to surveys by the Soil Resource Development Institute (SRDI), salt-affected land covered approximately 833,000 hectares in 1973. By 2009, the figure had risen to 1.056 million hectares, an increase of around 26 per cent. Soil salinity also nearly doubled over this period in areas such as

Shyamnagar, Dumuria and Sarankhola. This remains the latest comprehensive national survey. The absence of an updated survey for more than 15 years is itself a significant weakness in policymaking.

Around 29 per cent of Bangladesh's population lives in coastal areas, which contain more than 30 per cent of the country's cultivable land. Research by the World Bank and partner institutions projects that river salinity could increase by an average of 26 per cent by 2050 and by more than 55 per cent in the worst-affected areas. The consequences will extend beyond agricultural production to access to safe drinking water and public health. Women will also bear a greater burden as they travel longer distances to collect water.

Climate change is not the only cause of rising salinity. Since the 1980s, saltwater has deliberately been introduced into large areas of farmland for export-oriented brackish-water shrimp farming. Researchers have identified this practice as one of the principal drivers of increasing salinity. Reduced upstream river flows and waterlogging within coastal polders have compounded the problem. Climate adaptation must therefore take direct account of land use, agricultural practices and industrial policy.

Solutions are also emerging at the local level. Salt-tolerant rice varieties developed by the Bangladesh Rice Research Institute (BRRI) and the Bangladesh Institute of Nuclear Agriculture (BINA), vegetable cultivation on the embankments of shrimp enclosures, crab and eel farming, pond-sand filters and rainwater harvesting are helping farmers adapt. Yet many such initiatives end when project funding runs out. Sustaining and expanding them will require permanent local budget allocations and a stronger agricultural extension system.

Bangladesh's National Adaptation Plan (NAP) for 2023–2050 estimates that around $230 billion will be needed by 2050, averaging more than $8 billion annually. Yet only about $3.3 billion was mobilised in the 2023–24 financial year. The amount falls well short of the requirement, and much of the funding is debt-dependent. Although infrastructure accounts for a substantial share of the plan's allocations, less than seven per cent is earmarked for capacity development and institutional strengthening.

The destination of climate finance matters as much as its volume. According to an analysis by the International Institute for Environment and Development (IIED), less than 10 per cent of global climate finance reaches the local level. In Bangladesh, locally led adaptation initiatives also receive limited funding, often confined to emergency relief.

The history of coastal embankments offers an important lesson. Built in the 1960s, the polders initially protected agricultural land but subsequently contributed to river siltation and prolonged waterlogging. Bhavadaha is one example. The idea of tidal river management (TRM), which emerged from the initiatives of local farmers to address these problems, was later incorporated into government policy. Similarly, the network of nearly 78,000 volunteers under the Cyclone Preparedness Programme has played a vital role in reducing disaster-related deaths.

These experiences underline the need to give union parishads and municipalities the authority to allocate funds and set priorities on the basis of local climate-risk maps. The performance-based climate grant model tested at the union level under the United Nations Capital Development Fund's (UNCDF) Local Climate Adaptive Living Facility (LoCAL) programme could be institutionalised within the national budget framework.

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At the same time, small and medium-sized coastal towns must be developed as viable places to live and work, reducing the pressure of migration on Dhaka and Chattogram. The late Professor Saleemul Huq and his institution, the International Centre for Climate Change and Development (ICCCAD), played an important role in advancing the idea of climate-resilient, migrant-friendly towns. They identified more than a dozen towns near ports and export processing zones that could potentially accommodate several hundred thousand migrants each.

Mongla offers one example of this potential, with employment generated by its port and export processing zone, alongside infrastructure for embankments, drainage and safe drinking water. From 2023 to July 2025, pilot Local Climate Adaptation Plans were implemented in the municipalities of Mongla, Kuakata, Patuakhali and Borhanuddin, with vulnerable residents themselves identifying priorities.

To translate these initiatives into policy, municipal master plans must incorporate climate-risk maps and provide for affordable housing, land allocation, safe drinking water, schools and healthcare. New arrivals must also be registered so that they are not excluded from social protection programmes.

Meanwhile, investment in ports and power plants in Mongla, Payra and Matarbari, as well as industrial zones such as Rampal near the Sundarbans, is creating employment. But these developments are also expanding settlements and economic activity in low-lying, cyclone-prone areas. Damage to mangroves and wetlands would further weaken natural defences. Coastal industrial zones must therefore adopt mandatory construction standards resilient to storm surges, provide safe housing for workers, and enforce area-specific regulations governing shrimp farming and land use.

The future of Bangladesh's coast will depend on how seriously the state takes the knowledge and initiatives of local communities. Decision-making powers, funding and reliable data must reach them. Coastal towns must also be developed in ways that allow people to remain safely in their home regions or build new lives elsewhere if they choose. The tides will keep rising. The question is whether Bangladesh will prepare for them in time or leave the slums of major cities such as Dhaka and Chattogram to bear the ultimate cost of displacement.