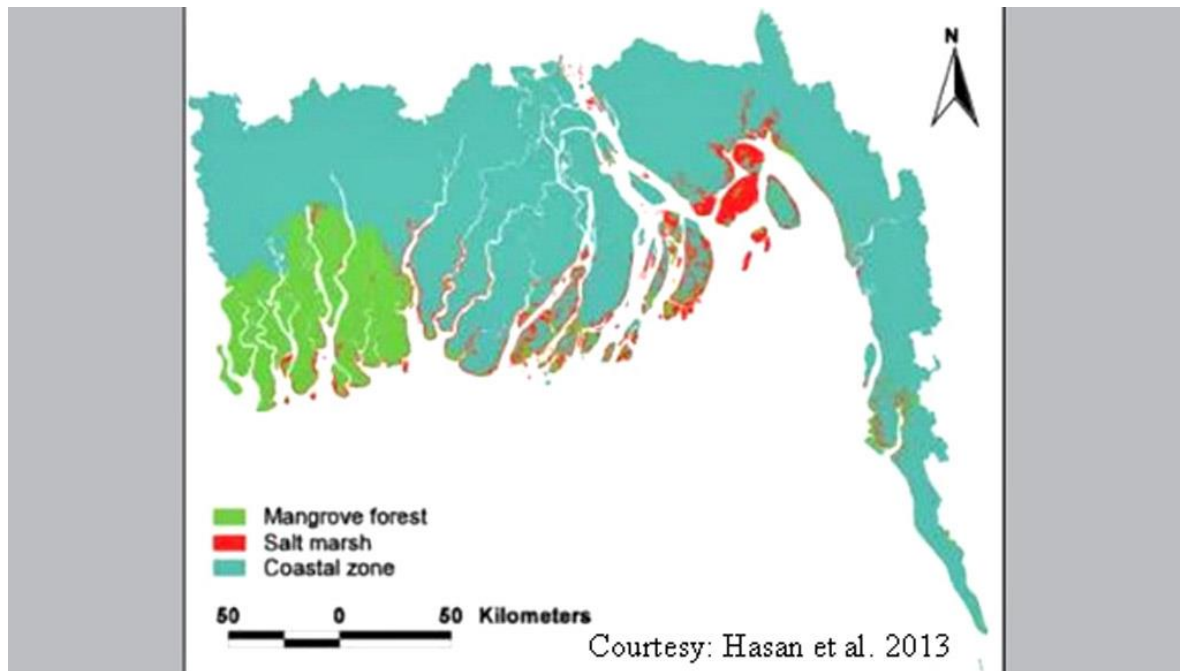


Prosperity through Climate Resilience



Bangladesh can contribute to the fight against climate change and create new economic opportunities for coastal communities by incorporating blue carbon into the global carbon market, writes Syed Misbah Uddin Ahmad

THE term 'Blue Carbon' refers to carbon that is absorbed by oceans and coastal ecosystems worldwide. Many of us have likely heard that humans emit atmospheric carbon, and these gases are negatively altering the global climate. But many of us might not be aware of carbon sequestration — or absorption — by the oceans and coastal ecosystems. Seagrasses, mangroves, and salt marshes along our coast capture and hold carbon, acting as a carbon sink. These coastal systems, though, cover tiny areas of the planet Earth, sequester this carbon at a much faster rate, and can continue to do so for millions of years. Most of the carbon taken up by these ecosystems is stored below ground where we can't see it, but it exists. When coastal ecosystems are damaged, more carbon is released back into the atmosphere than in non-coastal ecosystems. This, in turn, expedites climate change. Thus, preserving and improving coastal ecosystems is an intelligent strategy to slow global warming.

Bangladesh is a unique low-lying deltaic nation endowed with some of the world's most valuable blue-carbon ecosystems, including mangroves, salt marshes, and seagrass meadows. The Sundarbans mangrove forest covers an area of about 6,017 km² (2,323 sq. mi) and extends over five southern districts of Bangladesh.

Saltmarshes, or tidal marshes, cover an area of 111,585 ha. The river-estuarine ecosystems of 660,048 ha and the coastal waters of 886,523 ha, down to depths of <5 meters, can be considered as suitable habitats for seagrasses (Hasan et al. 2013). However, an up-to-date survey of the seagrass beds to quantify their extent and distribution is yet to be made in

Bangladesh. Despite viable prospects of blue carbon in the country, they remain underestimated, underutilised, undervalued, and increasingly vulnerable to both climate change and anthropogenic destruction.

While Bangladesh is acknowledged worldwide for its climate resilience efforts, the blue carbon ecosystems have not yet received their due importance in national and international carbon offset markets. Mangroves, seagrass beds, and salt marshes sequester carbon at rates much higher than terrestrial forests, and these systems store carbon for thousands of years, mostly underground.

To date, limited efforts have been made to quantify how much carbon is sequestered by these ecosystems, especially the Sundarbans, which means the country is missing out on opportunities to leverage these ecosystems for carbon credits. As international pressure grows for countries to meet their climate targets under the Paris Agreement, including blue carbon in Bangladesh's climate action plans could unlock significant financial incentives in carbon trading, attracting global investments for ecosystem restoration and protection.

Despite immense potential, Bangladesh's blue-carbon ecosystems are highly vulnerable to climate change and human-induced destruction. Rising sea levels, salinity intrusion, and increasing cyclonic activity threaten these coastal habitats, especially the Sundarbans, which act as a buffer for coastal communities.

On the other hand, anthropogenic activities such as deforestation, pollution, illegal logging, shrimp culture, and unsustainable development are accelerating the degradation of these ecosystems. When mangroves and other blue carbon systems are destroyed, not only do they lose their ability to capture carbon, but they also release stored carbon back into the atmosphere, exacerbating global warming.

One of the biggest challenges in integrating blue carbon into the global carbon market is the lack of proper methodologies for calculating the carbon sequestration potential of these ecosystems. Currently, most of Bangladesh's blue carbon reserves remain unquantified, limiting the country's ability to engage in carbon trading or attract climate finance.

The researchers in the field posit that to unlock the carbon offset potential of blue carbon resources, the government of Bangladesh, in collaboration with researchers, needs to address the following:

Comprehensive blue carbon assessment: In the near term, initiate nationwide research projects to accurately measure the carbon sequestration rates of mangroves, salt marshes, and seagrass. Remote sensing, on-ground sampling, and soil coring can also be used to assess carbon storage at different layers of sediment. Finally, establish carbon sequestration baselines to determine these ecosystems' current carbon stock and future sequestration potential.

Development of blue carbon monitoring protocols: In the short term, implement standardised monitoring protocols for blue carbon ecosystems. This will involve satellite-

based observation and periodic field assessments to ensure carbon stocks are accurately tracked over time. Bangladesh may collaborate with international bodies like Verra or the Gold Standard to certify these protocols, enabling it to issue carbon credits that can be traded in global markets.

Incorporation of blue carbon into nationally determined contributions: In the long term, the government needs to explicitly integrate blue carbon into Bangladesh's nationally determined contributions under the Paris Agreement, highlighting these ecosystems as key to climate mitigation and adaptation. The integration agenda is mainly to engage with international donors and investors to attract climate finance dedicated to restoring and protecting blue-carbon ecosystems. Furthermore, capacity Building and Research Investment initiative needs to be undertaken in allocating funds and training native researchers and coastal communities to conduct ongoing research about the ecological value of blue carbon. Carbon pricing and incentives could also be introduced as mechanisms to incentivise businesses and local governments to participate in blue carbon restoration projects. Importantly, by establishing a domestic carbon market, Bangladesh would further attract international investors while promoting sustainable development at home.

Conservation approaches requiring government and public commitment: While scientific research and economic incentives are critical, blue carbon conservation also demands the goodwill of the government and the people of Bangladesh. Protecting these ecosystems from degradation requires strong political will, local cooperation, and community engagement.

Strengthening legal protection: Strong regulation enforcement to prevent illegal activities like deforestation, pollution, and land conversion in mangrove and coastal areas. This could include more penalties for violators and incentives for communities actively engaging in ecosystem protection.

Community-led conservation: The involvement of local communities is crucial to the success of blue carbon conservation. Programs that promote community-based mangrove restoration, sustainable fishing practices, and eco-tourism can provide economic alternatives while ensuring the longevity of these ecosystems.

Public awareness campaigns: Launching nationwide campaigns to raise awareness about the importance of blue carbon and its role in climate change mitigation can foster more excellent public support for conservation efforts. Schools, colleges, universities, media, and NGOs must work formally and informally to educate the public about how protecting coastal ecosystems benefits the environment and the economy.

International collaboration: Bangladesh should continue to engage in international partnerships and platforms dedicated to blue carbon, such as the International Blue Carbon Initiative, to leverage international expertise and funding and stay at the forefront of global conservation efforts.

The prospects of blue carbon resources in Bangladesh are immense, but their potential is

yet to be fully realised. Accurate carbon offset calculations, government action, and the support of the Bangladeshi people are all essential in protecting and restoring these ecosystems. By incorporating blue carbon into the global carbon market, Bangladesh can contribute to the fight against climate change and create new economic opportunities for coastal communities. Now is the time for the government, researchers, and citizens to work together to protect the country's most valuable natural defence — its blue carbon reserves.

Writer: Commodore Syed Misbah Uddin Ahmad, (C), NUP, ndc, afwc, psc, BN (retd),
Director General, Bangladesh Institute of Maritime Research and Development
(BIMRAD).Email: misbah28686@gmail.com

The article was published in [New Age BD](#) newspaper on 28 September 2024