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সুদূর জাহাজ
Bangladesh



IP A A L

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Climate Change: Building a Resilient Bangladesh

Pledges & Targets

Under present condition estimated warming to be increased 2.6°C by 2100



Optimistic Scenario

Under optimistic situation estimated warming to be increased 1.8°C by 2100



Policies & Action

Under current policies estimated warming to be increased 2.7°C by 2100



2030 Targets Only

According to 2030 targets estimated warming to be increased 2.4°C by 2100



COP26

A publication of
PATRONISED BY BANGLADESH NAVY

BIMRAD

Bangladesh Institute of Maritime Research and Development



Volume 04, Issue 03, December 2021

PAAL

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Editorial

Climate Change: Building a Resilient Bangladesh

The long waited COP26 global climate summit was in focus throughout the November. This UN-backed forum for tackling climate change took place in Glasgow from 31 Oct to 12 Nov 2021. Almost 200 countries participated in this summit. Due to immense public awareness and media coverage, the public expectations were at a new height which was unseen previously. Politicians and the media coined the phrase "humanity's best last chance" to address climate change ahead of this summit. Now the question comes, what do we have achieved so far to save our only planet?

Many opined that COP26 did not manage to deliver on the world's expectations at large, but some progress was made to keep the promise of 1.5°C global warming threshold alive, rather than keeping it below 2°C. However, the final draft of the COP26 agreement 'The Glasgow Climate Pact' has been finalized. It focused on the key areas of emission cuts, reduced dependency on fossil fuels, climate finance and adaptation, loss and damage, carbon markets and the Paris Agreement's 1.5°C target etc. Although substantial progress was made on several fronts, national climate and financing commitments still fell far short of what is needed to come to grips with the climate challenge.

In the context of the present time, the theme of this issue of PAAL is kept "Climate Change: Building a Resilient Bangladesh". As the COP26 just ended with high aspirations of the world leaders to accelerate action for saving our only planet, it is very pertinent to judge our own footing and status. Being one of the most vulnerable countries and a lesser emitter, Bangladesh has taken many actions plans to tackle climate change, including implementing Bangladesh's 'Mujib Prosperity Plan'. This PAAL issue contains several articles and opinions which discuss contemporary subjects such as food security, marine ecosystem, biodiversity, marine agriculture etc in the face of climate change in Bangladesh. This publication is enriched through an interview of a scholar, which gives a unique insight into COP26.

The cover story tells how Bangladesh is moving ahead to achieve climate resilience to sustain her development and ensure the security of the people. One informative article has highlighted oceans significance for addressing climate change and the integration of the ocean with the UNFCCC process. A pair of articles focusing on scuba diving and large pelagic fishes in the Bay of Bengal have been included, making us aware of the vast potential of marine ecotourism and marine fisheries in our country and learning about the prevailing challenges. Maritime issues like shipping and port are also included in this issue. An article related to geostrategic and geopolitics development within the Indo-Pacific has also been included. Other regular features such as Marine News, BIMRAD Feats and Coastal Window have highlighted the most concurrent unique events.

We are confident that this issue of PAAL would fulfil our objectives to impart new knowledge to our readers. The ensuing awareness, science, technological shakeups, policies and strategic issues on climate change will help us avail new opportunities for building a better climate resilient Bangladesh.

Thanking you
Editorial Board



**“ We hope to have 40% of our energy from renewable sources by 2041.
We are going to implement the Mujib Prosperity Plan - a journey
from climate vulnerability to resilience to climate prosperity.”**

- Hon'ble Prime Minister Sheikh Hasina

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Building a Climate Resilient Bangladesh Based on Knowledge Driven Initiatives

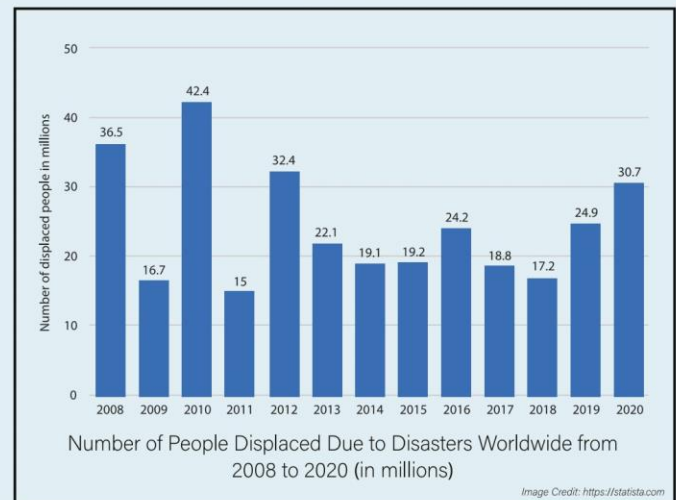
Captain M Minarul Hoque, (H), BCGM, psc, BN



Introduction

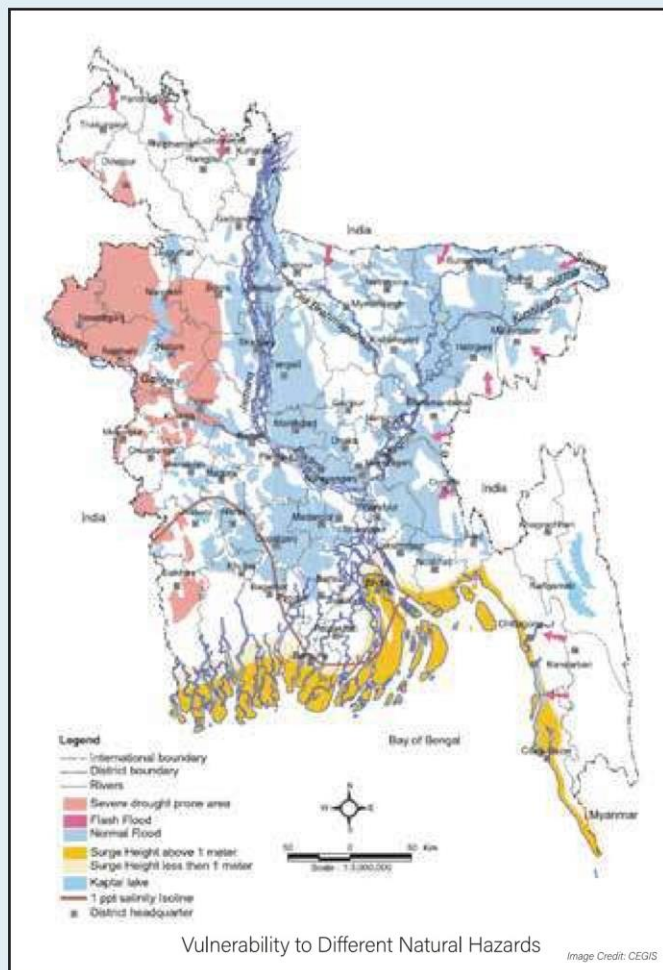
Climate change is the most talked about topic worldwide right at this moment. The world is much aware of the heinous effect of climate change. We often say that it destroys biodiversity, livelihoods, infrastructure and communities, forcing people to move from their homes, towns and even countries. But what we don't say is that we are the root cause for this misfortune and has jeopardized our only planet. In 2020 alone, extreme weather-related disasters displaced around 30.7 million people. Last few years, the world has seen several environmental catastrophes which forecast a furious future awaits ahead. A recent joint British-American study found that the intensity of cyclones, hurricanes and typhoons will increase in the next century due to global warming. Extreme hot weather is being experienced in many countries of the world. Eastern Canada, The Caucasus region, Southern California, Sydney and Algeria have faced record high temperatures. Wildfires in California, Greece, Turkey and other places are the kinds of dystopian weather events, often happening simultaneously due to climate change. Bangladesh is on the frontline of these impacts. Bangladesh is recognized worldwide as one of the most vulnerable countries to the impacts of global warming and climate change. This is due to its unique geographic location, the dominance of floodplains, low sea elevation, high population density, poverty, and overwhelming dependence on nature, its

resources and services. We need to be prepared to face the worst environmental phenomena in future. Hence, knowledge-driven initiatives, including knowledge enhancement and vulnerability assessment should get priority. Subsequently, developing an action plan and aligning all national plans/goals and infrastructure development to build a climate-resilient Bangladesh is the only solution that we have now.



Impacts of Climate Change in Bangladesh

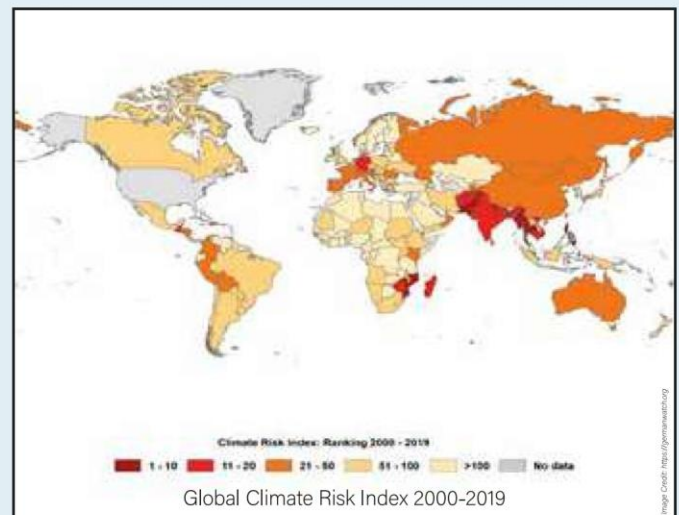
Our country has a history of extreme climatic events claiming millions of lives and destroying past development gains. Inconsistency in rainfall pattern, combined with increased temperature and drought, snowmelt from the Himalayas causing flash flood often results crop damage, famine, loss of property and many other problems making people unemployed. Climate change is causing our property and asset loss, ruining our investment and future. Millions of people are losing their settlement every year and are being displaced due to riverbank erosion, permanent inundation, saltwater intrusion and sea-level rise due to this global warming and climate change. Causes of climate change, including global warming, sea-level rise and other phenomena, have the potential to the security of the entire human race, challenge to the development efforts in the coming days.



Propelling Prosperity by Adaptation to Climate Change

The economic development pace of Bangladesh in the last decade has been well appreciated worldwide. The impressive track record of GDP growth and poverty reduction made us one

of the fastest-growing economies in the world. Bangladesh has been scheduled to graduate from LDC status in 2026 by UN which is another milestone for the county. The Government of Bangladesh has set all the Perspective Plans (PP2021 & PP2041) and goals to become a middle-income country by 2030 and a developed country by 2041. However, these plans may get obstructed or delayed as we are highly vulnerable to the impacts of climate change. In the Global Climate Risk Index, Bangladesh falls in the high-risk zone. Identifying these susceptibilities, mitigation and adaptation measures, mechanisms, and best practices are being incorporated at the national level. The country has shown its utmost political will to give priority to climate change matters and included formally by renaming Environment and Forest Ministry as Ministry of Environment, Forest and Climate Change Ministry in 2018.



Components of Climate Resilience

The Intergovernmental Panel on Climate Change (IPCC) defines resilience as “the capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation” (IPCC 2014). Attributes of building climate resilience is a wide range of studied matter. There are different models suggested for building climate resilience. However, a study carried out by BRAC suggested four major components for the resilience-building process. These are adaptive capacity, anticipatory capacity, absorptive capacity and transformation. Each of these components has multiple sub-components which contribute to enhancing resilience. At present, the significance of work regarding climate resilience has concentrated on action to be taken to sustain current schemes and constructions. The widely accepted components are absorptive, adaptive, and transformative, which all contribute to resilience work. A framework to achieve climate resilience clearly shows the significance of learning and knowledge-basing as the core underpinning factor.



BRAC Model for Components of Resilience Building

Enhancing the Knowledge Base to Face the Extremities

Strengthening the knowledge base will be the critical factor to adequately respond to the rising risks and extremities of climate change. Identifying the knowledge gap areas will help to build a mechanism to cope with the challenges. So, assessing the vulnerability and developing an action plan with local requirements will aid to deal with future climate change uncertainties and climate variability impacts.

Climate Vulnerability Assessment. Details of vulnerability assessment nationwide and focusing sectorial impacts need to be assessed. The government has already taken steps to form a Nationwide Climate Vulnerability Assessment (NCVA). The NCVA may serve as an instrument to share and compile the latest

data to get a clear perspective to develop a local action plan for a particular area.

Developing Action Plan. The Climate Change Action Plan aims to advance the climate change aspects with a resilient approach, which pursues the country's sustainable development. In the Action Plan, the nationwide approach is considered to mitigate the loss and damage of biodiversity, ecosystem and communities, combining disaster risk reduction and management (including emergency preparedness and response) and climate change adaptation approaches. UNFCCC climate risk management interventions or measures essential to drive climate resilience efforts and investments by all actors includes:

- > Climate risk and vulnerability assessments, disclosure and monitoring

- > Early warning systems and early action
- > Preparedness: contingency plans/emergency response
- > Climate risk governance and capacity-building
- > Nature-based solutions used to reduce risks across sectors
- > Climate-proofing infrastructure and services
- > Risk transfer: insurance and social protection
- > Sharing of knowledge and best practices on climate risk management
- > Volume, quality and access of public and private finance

Policy Promulgation to Achieve Climate Resilience

Response to climate change will definitely require structural transformations. These processes require a variety of analysis of climate response strategies. Considering the uncertainty in future climate change, optimum solutions are challenging to design. So, a wide range of policies is required to adapt. Decision-making tools can help make a comprehensive range of decisions of risks and uncertainties. Finally, validation of plans and aligning the climate knowledge to government plans will help to build a climate-resilient Bangladesh.

Validation of Plans, Reviews and Assessment by Scientists and Policymakers. This cycle involves learning from the research and knowledge gap and then put into the implementation phase after proper validation by scientists, policymakers and concerned government bodies. This analysis stresses the need for further research and action to bridge these gaps and overcome the identified barriers through a multi-stakeholder process in a coordinated and collaborative manner. This process also improves our understanding and build capacity to advance adaptation for climate resilience.

Aligning Climate Knowledge to Major Government Plans. Proper education is vital to endorse climate change actions. It aids to understand and addressing the extremities of climate-induced disasters. It empowers people with the knowledge, skillset, principles required to act as agents of change. Bangladesh already has the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) developed in 2008 and amended in 2009. Another important climate policy document is the Nationally Determined Contributions (NDCs)

(2015) which was submitted to UNFCCC. Consequentially, the 6th FYP (2011-2015) and the 7th FYP (2016-2020) have given the specific emphasis on addressing climate change and building climate resilience. The Bangladesh government recently approved the Bangladesh Delta Plan 2100 (BDP 2100) with the aspiration of achieving a safe, climate-resilient and prosperous Delta by 2100.

In the process of setting up national plans and policies to tackle climate risks, Bangladesh has gained extensive experience in adapting to climate change. This trend must continue with newer innovations, technologies and updating policies at all levels. Climate-based policies need to be implemented strictly. The problem with climate change impact is that its effects are not readily visible. Therefore, care needs to be taken by the leadership to maintain compliance over decades to preserve set standards, restrictions and measures.

Conclusion

Bangladesh is at the forefront of the most immediate impacts of global climate change and is geared to achieve climate resilience to sustain the development and security of the people. However, achieving a broad range of climate resilience requires widespread diversification and transformation of almost all sectors of governance, economy, infrastructure and social services. On top of that, climate actions often require making hard choices about immediate financial or societal impacts. This phenomenon was evident at recent COP26 too, where each country has agreed or disagreed based on their interest but looked for a common ground to curb global impact. There lies the importance of knowledge-driven policymaking on climate resilience. Building a knowledge base on climate action should not be limited to institutional learning, academic research and formal recommendations. Instead, in Bangladesh, we need to measure the impact of learning on a scale of policymaking and implementation impact. Climate action is complex and presents a plethora of problems in a developing nation like Bangladesh. But we need to keep in mind that the impact of climate change is inevitable, global and too large to mitigate. Only through the climate knowledge-driven initiatives, together we can build a climate-resilient Bangladesh.

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COP26 of the UNFCCC and the Oceans

Prof. Mizan R. Khan
Prof. Saleemul Huq



Global oceans are gaining increasing traction as a global agenda in recent years for several reasons. Firstly, directly and indirectly, humanity depends on oceans in various ways for climate and weather, water and food, trade, energy, transport, health, tourism and recreation, culture and identity. Secondly, ocean health is deteriorating rapidly because of increasing pollution both from terrestrial and land sources. Thirdly, the role of oceans in addressing climate change presents an immediate rationale of adding urgency in considering ocean-related issues. Finally, with the increasing impacts of climate change, ocean-related geopolitics and the potential availability of resources are drawing attention among global policymakers.

So, ocean matters are inching forward into the UN Convention on Climate Change (UNFCCC) process. In 2019 the Intergovernmental Panel on Climate Change (IPCC), which provides science-based inputs into the UNFCCC process, have published a Special Report on Oceans and Cryosphere. The report highlights our dependence on oceans and warns us of its degrading state that results from many different human activities. The report talks of the urgency of reducing greenhouse gas emissions to keep the temperature goal agreed under the Paris Agreement and present elaborate sets of options for adaptation to climate change impacts for a sustainable future for present and future generations.

Though Oceans were not a formal agenda under the Conference of Parties (COP), there was a dialogue on the Ocean and Climate Change and Chair of the Subsidiary Body for Scientific and Technological Advice (SBSTA). The technical arm of the COP presented the summary of the dialogue and invited Parties to consider strengthening adaptation and mitigation actions related to oceans. Also, in paragraphs 60-61 of the Glasgow Climate Pact (GCP), COP26 invited the relevant work programmes. It constituted bodies under the UNFCCC to consider integrating and strengthening ocean-based actions in their existing mandates and work plans and reporting on these activities within the existing reporting processes. Further, the COP invited the Chair of the SBSTA to hold an annual dialogue, starting at the SBSTA-56 session in June 2022, to strengthen the ocean-based actions and prepare an informal summary report thereon and make it available to the COP at its subsequent session.

In fact, together with COP's recognition of nature and ecosystem-based solutions to climate change, the ocean community could mobilize a stronger voice. This was reflected in the Declaration of the Ocean for Future, endorsed by over 100 civil society organizations, including scientists, companies and international organizations. Besides, more than 20 countries have also committed to the ocean-climate nexus, which have

with around twenty countries that have signed the 3rd 'Because the Ocean Declaration'. We know these informal declarations are kind of a pressure in international diplomacy, which bears meaning depending on the stakeholders behind the specific issues.

This mobilization had strong impacts on the UNFCCC Parties, which also resulted in the decision para 21 of the GCP: COP 'emphasizes the importance of protecting, conserving and restoring nature and ecosystems, including forests and other terrestrial and marine ecosystems, to achieve the long-term global goal of the Convention by acting as sinks and reservoirs of greenhouse gases and protecting biodiversity, while ensuring social and environmental safeguards.' This reflects the urge by the UNFCCC community for an integrated approach to managing terrestrial and marine biodiversity sources and sinks under climate change and biodiversity conventions.

We may recall that after arduous negotiations for nine years over the 3rd phase of the ocean law, the UN Convention on Law of the Sea (UNCLOS-III) was signed in December 1982 and subsequently was adopted formally in 1994. Since then, more than 150 states have ratified the Convention. Among the non-ratifier countries, the US stands out as the biggest and most powerful coastal country. The US, particularly its Congress, has some reservations, including its historically-cemented perception that being a Party to any international treaty would compromise its sovereignty and independence of actions. The Trump Administration tightened further those reservations. Hopefully, the Biden Administration will have a positive approach to this issue. This was already evident because the United States joined the High-Level Panel for a Sustainable Ocean Economic in Glasgow.

This renewed interests in ocean matters have geopolitical and strategic reasons from a global perspective. There is no clarity yet on issues of migrating exclusive economic zones (EEZs) or the future legality of huge EEZs of some small island states, likely to face watery death due to current and future sea-level rise.

Next, with snow level ebbing to its lowest in recent decades, particularly at the North Pole, nations are likely to get into conflicts over the potential availability of natural resources. Some nations look at the prospects of navigation, oil, gas and mineral resources with the melting of ice sheets. This has started generating tensions in the 16-member Arctic Council. As the US did not ratify the UNCLOS, despite efforts by the Obama administration, the US is showing renewed interest in ocean governance, as is evident in its activities at COP26.

Looking back, over the last half a century, a framework of ocean governance has been evolving. Together with the legal framework led by UNCLOS-III, some institutions have also been introduced and adopted, such as the Regional Seas Programme, the International Seabed Authority as custodian of the High Seas, Commission on Limits of the Continental Shelf, International Tribunal for the Law of the Sea, Oceans and Coastal Areas Network, etc.

The means of implementation, such as finance and capacity building at national and global levels, are increasing support. Recently, the UK announced a contribution of £6 million to PROBLUE, a multi-donor fund administered by the World Bank that supports projects related to ocean protection and the blue economy. For example, SDG 14-target 7 relates to increasing economic benefits to small island states and least developed countries. Now, there are intense discussions about the blue economy and the means of its implementation, such as the introduction of the Blue Bond and Debt-for-Climate Swaps. A few years back, Germany established the Blue Action Fund.

We are happy that Bangladesh, as a sea-faring nation, is sharpening its look to the south, to the Bay of Bengal. This has been reflected in the Government plans and policies of recent years. Bangladesh has already reached its maritime delimitation agreements with her neighbors - India and Myanmar. Now she must fortify its EEZ to ensure security and harness the untapped maritime resources, including vast potential ocean fisheries. Also, Bangladesh must be more active in ocean diplomacy through partnerships and networking with ocean-related institutions worldwide, including at the evolving ocean agenda under the UNFCCC.

Finally, several universities have already introduced Oceanography departments to educate the young generation on maritime affairs for capacity building. Bangladesh Navy has its research outfit - Bangladesh Institute of Maritime Research and Development (BIMRAD). The Independent University, Bangladesh has established the Center for Bay of Bengal Studies (CBoBS). The International Centre for Climate Change and Development (ICCCAD) at the IUB has entered into a tripartite agreement with BIMRAD and CBoBS to generate knowledge through research for the implementation of academic and field-based projects. With the mobilization of better marine-based research stations equipped with modern technology, Bangladesh must embark on its journey as a blue water nation.

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Shipping: Challenges and Way Forward for Bangladesh

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Introduction

The International Maritime Organization has set a universal truth as the theme of the World Maritime Day for 2021, which is: 'Seafarers: at the Core of Shipping's Future.' Seafarers have been and shall continue to remain at the core of all significant maritime activities at sea. They belong to the merchant marine or mercantile marine family, which was interesting given the title "Merchant Navy" by British King George V to the British merchant shipping fleets after their service in the First World War. Since then, a number of other nations have also adopted to use that title. Whatever may be the label, the role of seafarers remains the same both during peacetime or wartime at every place of 70% of the earth's surface having complex environments. During peacetime, the seafarers face the onerous challenges of the marine environment, which are demanding.

In reality, shipping is a complex business involving dozens of stakeholders where the brunt of the challenges are faced by the operators and owners of the platforms who keep the business moving according to the rules and conventions adopted by the stakeholders. This business is challenging, dynamic, competitive, and there are ups and downs, which depend on many factors arising from national and international issues. During the pandemic period due to COVID-19 in the last one and

half years, it has been a war-like situation in the whole business to get going as it is important to keep the supply chain alive by transporting almost 90% of the world's trade. The professionalism and sacrifice of the two million seafarers of the world's merchant fleet and other associated members have been exemplary. They deserve a big salute. In Bangladesh the role of the shipping sector is important for survival as it is within the main arteries of economic activities. Currently, Bangladesh flag carriers are rising, though it carries only about 10% of the total freight market. There are huge shipping opportunities if the investors are rightly supported and professionals are prepared to meet the challenges of the global environment.

Background of Shipping in Bangladesh

Bangladesh is a born maritime country with a long tradition of contributing to the maritime sector in various forms, i.e. building boats for other nations, supplying skilled or semiskilled human resources, or supporting related activities in this field. During the reign of the Bengal Sultanate, founded in 1352, Bengal was a major trading nation in the world and was often referred to by Europeans as the richest country of the world and had been known as a nation that made valuable contribution in the maritime

sectors (Shaikh, 2020). At the beginning of the 19th century, Chattogram produced vessels of different capacities used in European waters.

After independence, a national shipping company: Bangladesh Shipping Corporation was formed. Seafarers groomed within the country cheerfully joined the vessels with pride which were important value-adding components of the country's supply chain. But, state-owned shipping companies, which started well, also faced difficulties in surviving in the complex shipping business. Meanwhile, the government allowed the private sector to invest in shipping, and the response was positive. Side by side, private and public shipping companies were visible at blue water flying national flags. Due to the continuous decline of freight, ship owners came under pressure and ships were laid down along with the cancellation of old and new orders. There were few incentives for owners and seafarers, and a gloomy picture prevailed in the shipping sector.

With the beginning of the new millennium, Bangladesh again started to appear on the map of shipbuilding countries as a few prospective entrepreneurs commenced building new ships of 5000 DWT (approximately) or so. The shipping business constantly requires specialized and skilled seafarers with the proper education and training on related subjects. Major maritime institutes for seafarers have been Bangladesh Marine Academy and Maritime Institutes for seaman at Chattogram. Initially, these training institutes had an excellent reputation and record for producing internationally reputed skilled operators. With the addition of many private training institutes, which lacked accreditation for producing quality seafarers, the whole sector suffered due to an image crisis. With the addition of BSMR Maritime University for higher maritime education, all stakeholders have widely appreciated the government's role. However, control on number of institutes and quality of education/training need full attention so that the graduates can enter and compete in the world market with their competitive edge.

Shipping in the Economy

Shipping has been always affected by the world economy and trade. In recent years negative economic and trade trends affected maritime trade growth which was at its lowest mark in recent years since the global financial crisis of 2008–2009. Maritime trade volumes reached a total of 11.08 billion tons in 2019. UNCTAD estimated further fall of maritime trade in 2020 and expected some recovery by end of 2021. Again apprehensions are there that disruptions caused by the COVID-19 pandemic will have a lasting impact on shipping and trade all over the world where Bangladesh is no exception.

More than 80% of the country's trade by volume and an almost similar amount by value are carried by sea and handled by the major seaports in Bangladesh. The value of export and import of Bangladesh stood around USD 79 billion (2018-19). Earnings from shipping have grown from \$300 million in FY2015 to \$500 million in FY2019, but this is far below the country's potential. The gap between Bangladesh earnings from shipping freight

and payments to the rest of the world is huge. The largest maritime port Chattogram handled 3699 ships (7th FYP performance report, GED). The same report of the General Economic Division of the GoB says revenue earned by CPA was 29.3 Billion Taka in the same fiscal year. It is expected this volume would increase substantially with the entire operation of the deep seaports under construction and with full utilization of the other two seaports (Mongla and Payra). It is reported that the CPA has continued its leadership role in terms of being amongst the most financially profitable public authority during the 7FYP. Once multipurpose terminals around Matarbari and Maheshkhali area would be in full operation, economic activities connecting shipping would increase manifold. With the completion of all projects, the leading port may be treated as a kind of a commercial hub in the area, as seen in 8FYP. Hinterland connectivity within and beyond the border with efficient intermodal transportation and other ancillary supports would play a greater role to make the trade pattern sustainable in Bangladesh.

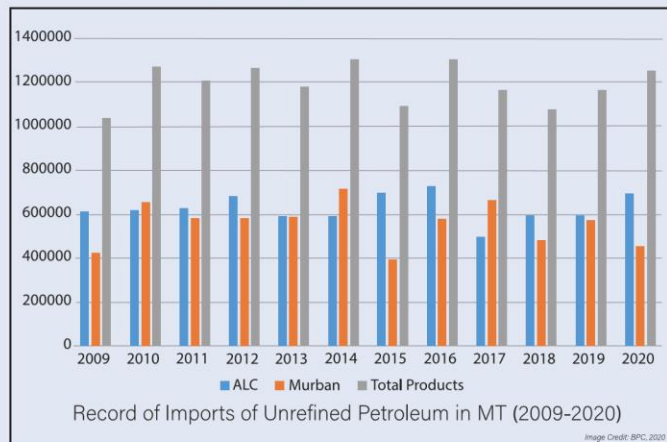
For success in maritime trade and business, both ship owners and seafarers have a greater role to play. To meet the entire set of SDGs in the maritime sector, we need to focus on the areas where the Bangladesh Flags can be protected. At the same time, new investors should be given incentives and guidance/cooperation to join the business. Our issues need to be addressed as a package so that both owners and employees' interests are met. The income of foreign currency by the seafarers



(usually on an average yearly 2000 seaman and 5000 officers employed at home and abroad) alone may be a few times more than the present picture, if proper target oriented Human Resource Development programmes are taken under proper quality control. Good examples are available in the Philippines, where the nation has captured a sizable portion of the world market.

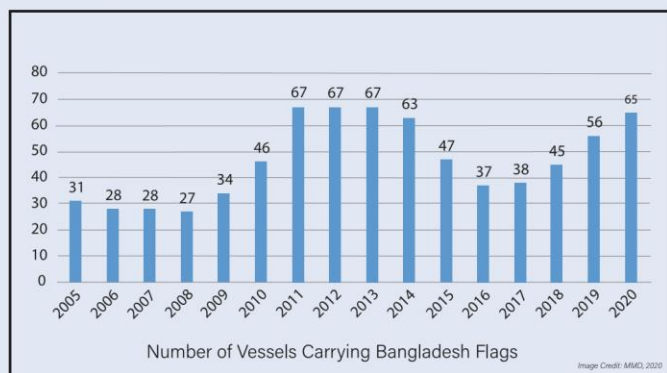
It is expected that due to signing off preferential trade agreements among Bangladesh, India, Nepal & Bhutan, the trade will increase in the region. There is no doubt that these countries would need to employ more ships for transportation of products & goods. This is an opportunity which Bangladesh has to grasp. This can be met both by building new ocean-going

vessels at local yards and simultaneously buying more ships. In both EU and ASEAN countries, more than 50% of trade takes place within member countries. Regional agreements can be beneficial for the safe operation of shipping in this region as well. Apart from RMG, machinery and food items, POL is a major item in the list of imported goods.



Owners and Operators

Shipping involves complex interactions of dozens of stakeholders. However, the two most vital stakeholders are owners and operators. The Bangladesh Ocean Going Ship Owners' Association (BOGSOA) was incorporated in 1989 as a nonprofit organization under the Companies Act (Act- VII) of 1913. The Company is Limited and registered at the office of the Registrar of Joint Stock Companies, Bangladesh. BOGSOA was formed by the owners of Bangladesh Flag Carriers to deal with their interests and issues affecting the growth and development of Bangladesh. At present, there are 68 registered (2021) vessels with 12 member companies in Bangladesh with the BOGSOA, which are not sufficient to carry even 10% of the freight volume of our cargo, which is worth over 10 Billion USD.



Despite rising operating costs & lower freight rates in the market for a long time, IMO introduced low Sulphur (0.5%) fuel oil to reduce pollution. IMO 2020 low Sulphur Fuel Oil requirement is

another challenging commitment for the owners which has been complied.

Legal Policy Issue and Other Challenges

Bangladesh Government implemented the Flag Vessels (Protection) Ordinance 1982 for the protection of Bangladesh Flag Vessels to expand shipping business. It created an opportunity to carry at least 40% of sea-borne cargo carried by Bangladesh Flag Vessels. Unfortunately, since the Ordinance was in place, Bangladesh Flag Vessels could not take advantage of this law due to various issues. Again on 18th November, parliament passed the historical Flag Protection Act, 2019 allowing 50% of cargoes to be carried by Bangladesh Flag Vessels. New provision again has deprived the right of the private sector to participate in the transportation of government goods/cargoes by Bangladesh Flag Vessels. Acceptance of this new rule has been under review by the private owners who own 90% of the flag carriers. At present, Bangladesh Flag vessel owners need to pay 3% tax at service for the freight tax earned in foreign currency. Usually, service providers outside Bangladesh cannot be taxable. Except for freight, all other inward remittance does not attract any tax & even if it does, it is less than 1%, which need to be addressed by the concerned authority. In order to expand ownership & derive benefit from flag protection, the advanced tax should also be fully withdrawn.

Conclusions and Way Forward

The World Maritime Day theme for 2021 has focused on seafarers as the essential people in the core of shipping. This would encourage the new generation to join the team and enrich the blue economy. Bangladesh flagships are again growing in numbers which should not decline as before. In order to meet SDG targets, Bangladesh must provide enough incentives to local shipping companies to add more ships to the existing fleet, freight operators to establish freight services, including container liner services to carry goods to/from Bangladesh using our own as well as chartered vessels. New investors should be encouraged to build ocean-going vessels in Bangladesh. Seafarers are to be given enough support, so that they are not harassed in international ports on visa related matters. Shipping is the mainstay and an integral part of international trade, which should be at the core of the country's blue economy. Bangladesh is one of the fastest-growing economies globally and is on track to be a top 30 Global Economy in the foreseeable future. Unless private investors are encouraged with adequate incentives, this sector may again give way to others keeping the nation in frustration.

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Prospects of Large Pelagic Fishes to Enhance Fisheries Blue Economy of Bangladesh

Md. Jalilur Rahman, PhD



The Fisheries Blue Economy might be defined as the sustainable use of marine fisheries resources for economic growth, improved fishers' livelihoods and ecosystem health. The Exclusive Economic Zone (EEZ) of Bangladesh covers an area of 1,18,813 sq km. It is very rich in fisheries resources. Still, proper utilisations of all types of resources are urgently needed to enrich the Fisheries Blue Economy (FBE) of the country. Many Large Pelagic Fishes (LPFs) are precious in many marine fish-loving countries like Japan and European countries, but those fishes are yet to be popularised and utilised in Bangladesh. There is ample scope to utilise more LPFs as a valuable export commodity to get more economic benefit for our anglers and FBE growth. This article highlighted some prospects of important LPFs and recommended proper utilisation measures for enhanced FBE growth.

Important Large Pelagic Fishes

Tuna. The most valuable tuna available in the EEZ of Bangladesh and the adjacent international water area is the yellowfin tuna (*Thunnus albacares*). Yellowfin tuna is an essential

component in Japan's sashimi sector; hence this species fetches a high price on the international market. India is exporting this high valued species to Japan and earning foreign currency. We are waiting for that day when Bangladesh will harvest a considerable quantity of yellowfin tuna and export it to earn foreign currency. Another important tuna species available in Bangladesh EEZ is skipjack tuna (*Katsuwonus pelamis*), the



Yellowfin Tuna Caught in Bangladesh EEZ

most important export commodity in the Maldives. Three other tuna species, bigeye tuna (*Thunnus obesus*), frigate tuna (*Auxis thazard*) and bullet tuna (*Auxis rochei*) are also available in the EEZ of Bangladesh but in small quantities. All the five tuna species stated above are deepwater and migratory, so the harvesting efficiency of those species will depend on when, where, and how the fishers would use the appropriate fishing gears. Nonetheless, the most abundant tuna species in the artisanal fishery of Bangladesh is the shallow water tuna, the Indo-Pacific little tuna, or Kawakawa, locally called Bom-Maitta (*Euthynnus affinis*). Though this species is abundant in Bangladesh EEZ and harvested by artisanal fishers, its market price is very low due to the presence of unattractive blackish-red meat throughout its body.

Mackerel. The most abundant, very popular, moderate-priced tuna-like fish is mackerel. In the Bay of Bengal, especially in India and Bangladesh EEZs, the Indian mackerel (*Rastrelliger kanagurta*), locally called Champa constitutes the major share of the group. Still, its market price is the lowest as it is the smallest member of the group. The medium-sized Indo-Pacific king mackerel (*Scomberomorus guttatus*) is locally known as Maitta. The large-sized Spanish mackerel (*Scomberomorus commersoni*), locally known as the Rocket Maitta are the two popular mackerel species, and their popularity is increasing day by day.



King Mackerel (Maitta) Caught in Bangladesh EEZ

Swordfish. Swordfish (*Xiphias gladius*), locally known as Korat Mach or Ekthuitta is the 2nd most high priced LPF available in the Bay of Bengal. This species has a significant potential for contributing to the export market and boosting Bangladesh's FBE growth.

Sailfish and Marlins. Indo-Pacific sailfish or billfish (*Istiophorus platypterus*), Indo-Pacific blue marlin (*Makaira mazara*), black marlin (*Makaira indica*) and striped marlin (*Tetrapturus audax*) are very similar species and resemble each other unless the dorsal fins are compared. In sailfish, the dorsal fin is much larger than that of marlins. The ECOFISH II team recently observed that the sailfish and marlins are unusually increased in the artisanal catch landed in Cox's Bazar, Patuakhali and Barguna regions. However, these fishes are not so popular in Bangladesh and remain as low priced species.



Sailfish & Marlins Landed in Cox's Bazar

Pelagic Sharks. Swordfish, sailfish, and marlins are all prey for large pelagic sharks. So, the balance between these sharks and those prey is vital for ecosystem balance. There are three main species of the large pelagic sharks in the Bay of Bengal, which are thresher sharks (*Alopias pelagicus*), bigeye thresher sharks (*Alopias superciliosus*) and silky sharks (*Carcharhinus falciformis*). The recent upsurge of the sailfish and marlins might be due to the decrease of these large pelagic sharks population. Another cause could be a scarcity of sailfish and marlin prey in the deep sea; thus, they went to shallower waters to hunt them, becoming caught in artisanal fishing nets and arriving in local landing centres.



Thresher Shark Caught in the BoB

Some Initiatives in Exploring LPFs

As a first initiative to utilise the large pelagic species of the Bay of Bengal, scientific exploration was conducted in 2007 under BIMSTEC (Bay of Bengal Initiatives for Multi-Sectoral Technical and Economic Cooperation). The exploration involved two scientists

from each member countries Bangladesh, India, Myanmar, Sri Lanka, Nepal and Thailand. The writer was one of the members of the 3-month long cruise using the SEAFDEC-2 (South-East Asian Fisheries Development Centre) Research Vessel. In this expedition, the presence of all the species described above was documented. As a follow-up to that activity, Bangladesh became a member of the Indian Ocean Tuna Commission (IOTC). DoF formulated a Pilot project on tuna and similar pelagic fishing in the deep sea. The project has been implemented since 2020 with some technical assistance from Sri Lanka and will be completed in 2023. BFRI conducted some catch and size assessment activities of mackerel and tunas in Cox's Bazar area. Finally, ECOFISH II project of WorldFish is monitoring the catch and size of important large pelagic species like mackerel, tuna, sailfish, marlins and sharks available in the Cox's Bazar region. This information will be helpful to formulate a sustainable management plan for those species.

Recommendations to Utilise LPFs

- > Assess stocks of LPFs focusing on yellowfin tuna, skipjack tuna and swordfish and standardised commercial harvest protocol
- > Motivate prominent entrepreneurs in harvesting and exporting tuna and tuna-like species focusing on yellowfin tuna, skipjack tuna, swordfish and mackerels
- > Popularise LPFs for domestic and export markets, highlighting

the nutritional benefits of those species

- > Produce various value-added products using LPFs and popularise those products for domestic and export markets
- > Popularise and technologically as well as financially supports harvesting, processing and exporting LPFs and their products for the domestic and export-oriented ventures
- > Promote Sri-Bangla longlining fibreglass boats which are being manufactured in Bangladesh for small-scale fishers to catch LPFs in the Bay of Bengal
- > Consider and promote LPFs as a priority sector of FBE growth in Bangladesh

Conclusion

To enhance the nutritional and economic benefits from FBE, we need to explore and promote LPFs for domestic and export markets. The prominent entrepreneurs and small-scale fishers need to be motivated and supported both technologically and financially in harvesting and exporting tuna and tuna-like species focusing on yellowfin tuna, skipjack tuna, swordfish and mackerel. If we can ensure those activities support LPFs utilisation, FBE will be enhanced, fishers' livelihoods will be improved, and Bangladesh will get extended economic benefits.

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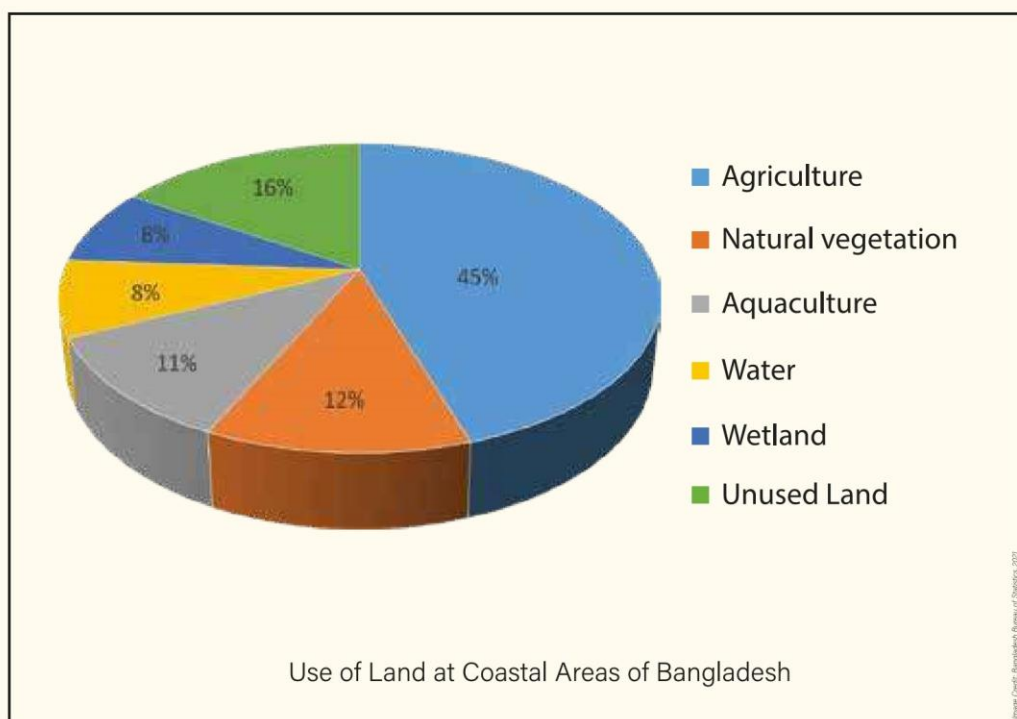


Sustainable Marine Agriculture: Towards Achieving Food Security of Bangladesh in the Face of Climate Change

Lieutenant Commander S M Anisur Rahman, (H3), BN

Introduction

Being a maritime nation, Bangladesh is the most precarious and unpredictable country due to climate change at the Bay of Bengal (BoB). The coastal area of this country is dominated by agriculture, followed by natural vegetation, aquaculture, water and wetland. Among these, coastal aquaculture, shrimp/prawn and finfish farming are expanding rapidly. Eco-friendly integrated farming is also getting priority. Small scale floodplain aquaculture also popularised and contributed significantly to the country's total fish production. Besides, the coastal fishers are also dependent on fishing at the Bay of Bengal. Presently, 15% of the country's fish production is coming from there. This coastal agriculture, both conventional and non-conventional marine food and fishes, contribute to our national food security. On the other hand, climate change significantly impacts marine agriculture to achieve sustainable economic growth in Bangladesh.



Marine Biodiversity

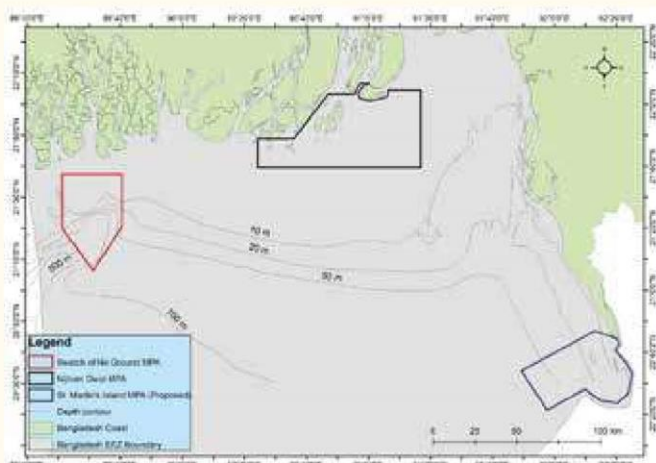
The Bay of Bengal is very rich in marine biodiversity. The major marine food fishes from BoB are hilsa, tuna, sardine, seabass, snapper, pomfret, grouper, catfish, threadfin, bombay duck, hairtail and jewfish. Squid, octopus, lobster, oyster, mussel, and seaweeds are among the non-traditional fisheries items. Among the crustaceans, penaeid shrimps (tiger shrimp, brown shrimp, white shrimp) are the most dominant, followed by some crab species (mud crab and swimming crab). In 2019-20 marine fish production was about 659,000 MT, out of which 70,000 MT fishes were exported (value: USD 469.67 million or 3985 crore taka). In 2018-19 only hilsa fish production was 5,32,795 MT, which contributed 12% of total fish production and 1% of the GDP of Bangladesh. It was about 70% of the world's total production. Bangladesh fisheries activity accounts for 4.4% of our national GDP. It also provided support of about 22% to the agricultural GDP and <3% to the foreign exchange earnings

through exports of fishery products. A total of 1.4 million people work full-time in this industry, with another 12 million working part-time. But in the face of climate change following factors are hindering the habitats for marine fishes at the BoB:

- > Arrival time of the monsoon every year
- > Seawater temperature variation with time
- > Change of sea current and bay wind direction with time
- > Salinity variation at seawater with time
- > Water density variation with time
- > Change of tidal stream due to development of the new islands
- > Change of depth of sea due to siltation

These factors are also responsible for reducing phytoplankton and zooplankton, which are the foods of marine fisheries.

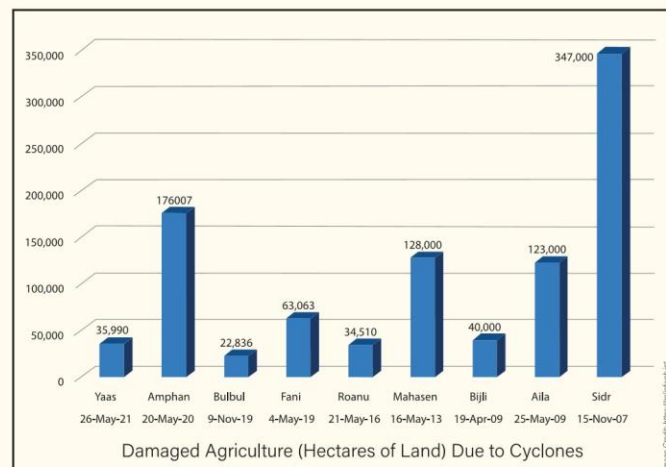
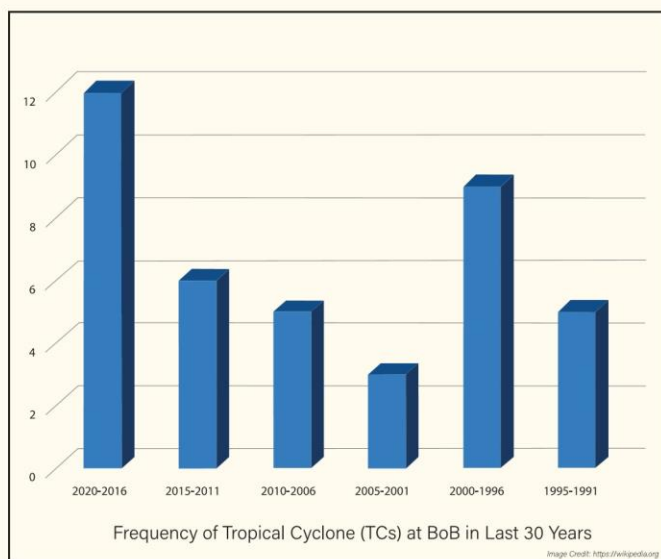
Multi-Use Marine Protected Areas



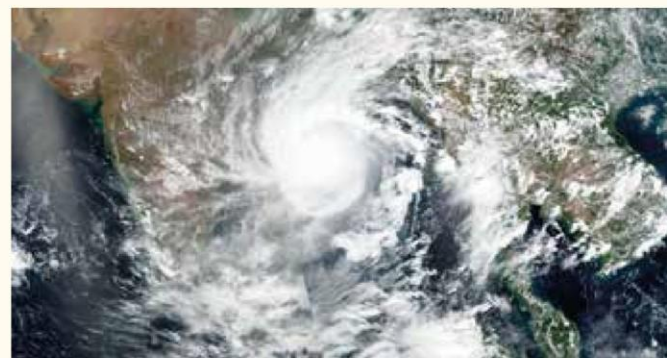
Ministry of Fisheries and Livestock (MoFL) declared two Marine Reserves as Marine Protected Area (MPA) in Bangladeshi waters (Swatch-of-No-Ground MPA and Nijhum Dwip MPA) in 2014 and 2019. The aim was to protect hilsa breeding & nursery grounds and prepare habitats for marine fishes, crustaceans, megafauna and migratory birds. The areas are beaconing the new hopes for a sustainable marine ecosystem in the face of climate change. The government, NGOs and local fishers are taking many initiatives and actions to protect marine biodiversity in these areas.

Tropical Cyclones (TCs)

In coastal areas of Bangladesh, the significant factors affecting food security due to climate change includes TCs, storm surges, tidal flood and seawater rise. Among these, the most unpredictable TCs cause maximum damage to our coastal agriculture. TCs that make landfall over Bangladesh's coast are responsible for major loss of life along affected coastlines and damaging the crop fields and coastal aquaculture.



The coastal regions of Khulna, Patuakhali, Barishal, Noakhali and Chattogram and the offshore islands of Bhola, Hatiya, Sandwip, Manpura, Kutubdia, Maheshkhali, Nijhum Dwip, Urir Char and other newly formed islands are the most vulnerable areas for cyclones, storm surges, tidal flood, and seawater rise. Maximum damages occur here, which hamper the national economic growth and weaken our country's food security.



Salinity Intrusion

Another consequence of tropical cyclones, storm surges, tidal floods and seawater rise is salinity intrusion. It causes an unhealthy environment for the average crop production throughout the year in the coastal belt. The organic matter content of the coastal soils is pretty low (1.0–1.5%). Nutrient deficiencies of N and P are pretty common in saline soils. Micronutrients such as Cu and Zn are both widespread. As a result, decreasing food crop production in Bangladesh's coastal region has a significant impact on the country's economy.

This threat is more elevated because of the reduction of freshwater flow from upstream and groundwater discharge. The coastal belt of Bangladesh consists of 19 districts, which cover 32% of the country and accommodate more than 35 million people. During 1973, salinity affected 83.3 million hectares of land, increasing to 102 million hectares by 2000. During 2009, salinity affected a recorded 105.6 million hectares. Around 2.5 million hectares of low-lying coastal lands represent 0.9 to 2.1

salinity levels among these affected areas. Over the last 35 years, salinity has increased around 26% in the coastal region of Bangladesh.

Global Warming

The rise of sea level at BoB due to global warming is another factor hindering our food security. It has slow but significant effects, which is also subject to the physical environment of Bangladesh. Relative sea-level rise is expected to be in the range of 0.5–1.5 m by 2100. By 2050, with a projected 50 cm rise in sea level, Bangladesh may lose approximately 11% of its land, affecting an estimated 15 million people living in its low-lying coastal region. The sea-level rise and climate change would significantly affect the country's agricultural output. The recent research depicts the followings:

- > 0.83 million hectares of agricultural land are vulnerable to sea-level rise in the coastal region
- > 0.3 m rise will cause a net reduction of 0.5 million metric tons of food grains
- > 8.0-17.0% of rice production could be affected by 2050 due to the loss of agricultural lands
- > Agricultural GDP will decline between 27.0%-57.0%
- > Hilsa fish production may decline up to 25% in inland waters and 10% in EEZ
- > The standard 30 cm and 50 cm SLR (Sea Level Rise) by 2030 and 2050 will lead to loss of up to 3.0% and 6.0% of coastal agricultural lands in the respective years

What can be done?

Addressing climate change will require many solutions. There's no magic bullet. Yet, nearly all of these solutions exist today, and many of them depend on how people are changing the way

they act and make decisions. For protecting land from damage due to tropical cyclones, storm surges, tidal flood and salinity intrusions following activities can be prioritised:

- > Building more dams along the river bank and coastline
- > Reducing the siltation rate at the river mouth and near the coast through continuous dredging
- > Plantation of mangrove forest along the coast
- > Introducing salt-tolerant crops in the coastal zone
- > Rainwater harvesting for cultivation and domestic use

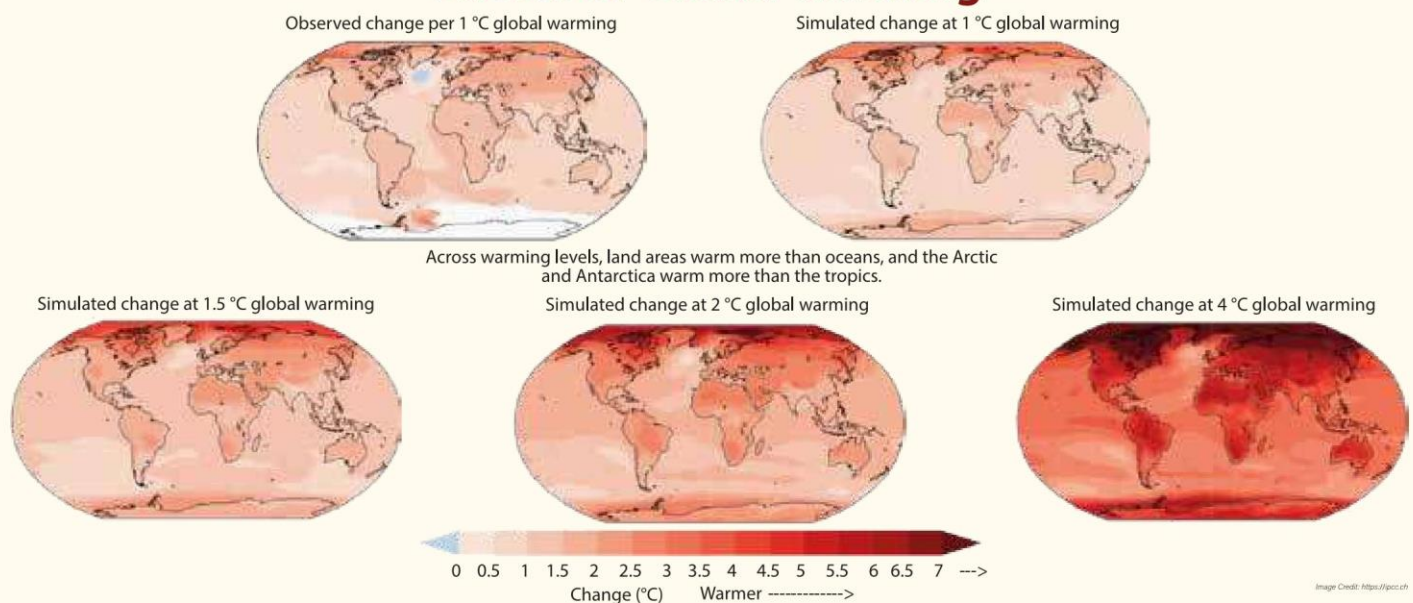
The dropping of global warming requires changes in technologies, behaviours, and policies that encourage less waste and more intelligent use of our resources. Improved energy efficiency and vehicle fuel economy, increased use of wind and solar power, extraction of biofuels from organic waste, carbon pricing, and forest protection are all effective approaches to reduce carbon dioxide and other heat-trapping gases on the planet.

Conclusion

Climate change has become a important issue all over the world. It involves rising temperatures and extreme weather events, rising sea levels, and a range of other impacts. It also has a significant impact on Bangladesh's coastline area and the biodiversity of the BoB. As a maritime nation, it has become apparent that its destiny has an unbroken link with the sea resources and coastal agriculture. The livelihood of coastal dwellers, the country's food security, and our country's economic prosperity are linked to this. Therefore, a long-term climate action plan has become imperative in the face of climate change.

Writer: Lieutenant Commander S M Anisur Rahman, (H3), BN is the Director (Admin) of BIMRAD.

Effects of Global Warming

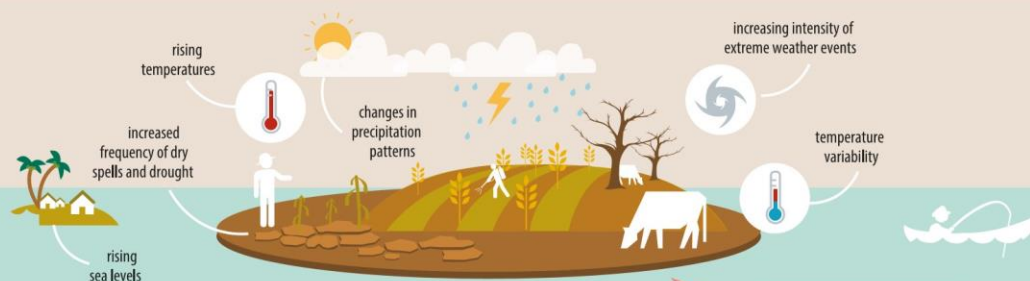


THE STATE OF FOOD & MARINE AGRICULTURE

CLIMATE CHANGE, AGRICULTURE AND FOOD SECURITY

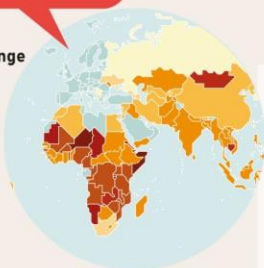
Towards Achieving Sustainable Economic Development

CLIMATE CHANGE AFFECTS AGRICULTURAL PRODUCTION IN MANY REGIONS



The greatest vulnerabilities to climate change impacts are in South and South-east Asia and sub-Saharan Africa.

Food insecurity and climate change vulnerability present day



Productivity declines would have serious implications for food security.



Millions of low-income people that are already highly food insecure, would be affected. **Smallholder producers** in developing countries are amongst the most vulnerable.

All these effects have negative impacts on the productivity of crops, livestock, fisheries and forestry.



CLIMATE CHANGE POSES A SERIOUS THREAT TO FOOD SECURITY

Significant improvements can be achieved with the introduction of sustainable agricultural practices. Smallholders need support to access the right technologies to implement them.

RESPONDING TO CLIMATE CHANGE

Innovation is key to farm system adaptation.

Some examples of sustainable agriculture practices



Precision agriculture



Natural predation of pests and reduction of pesticides



Cultivating nitrogen-efficient crop varieties



Integrated soil fertility management



Cultivating salt and drought tolerant crop varieties



No-till



Improved pasture management



Drip irrigation



Cultivating heat-tolerant crop varieties



Improved fodder grasses or legumes



Water harvesting & sprinkler irrigation

Food and Agriculture: Impact, Challenges and Way Ahead in the Face of Climate Change



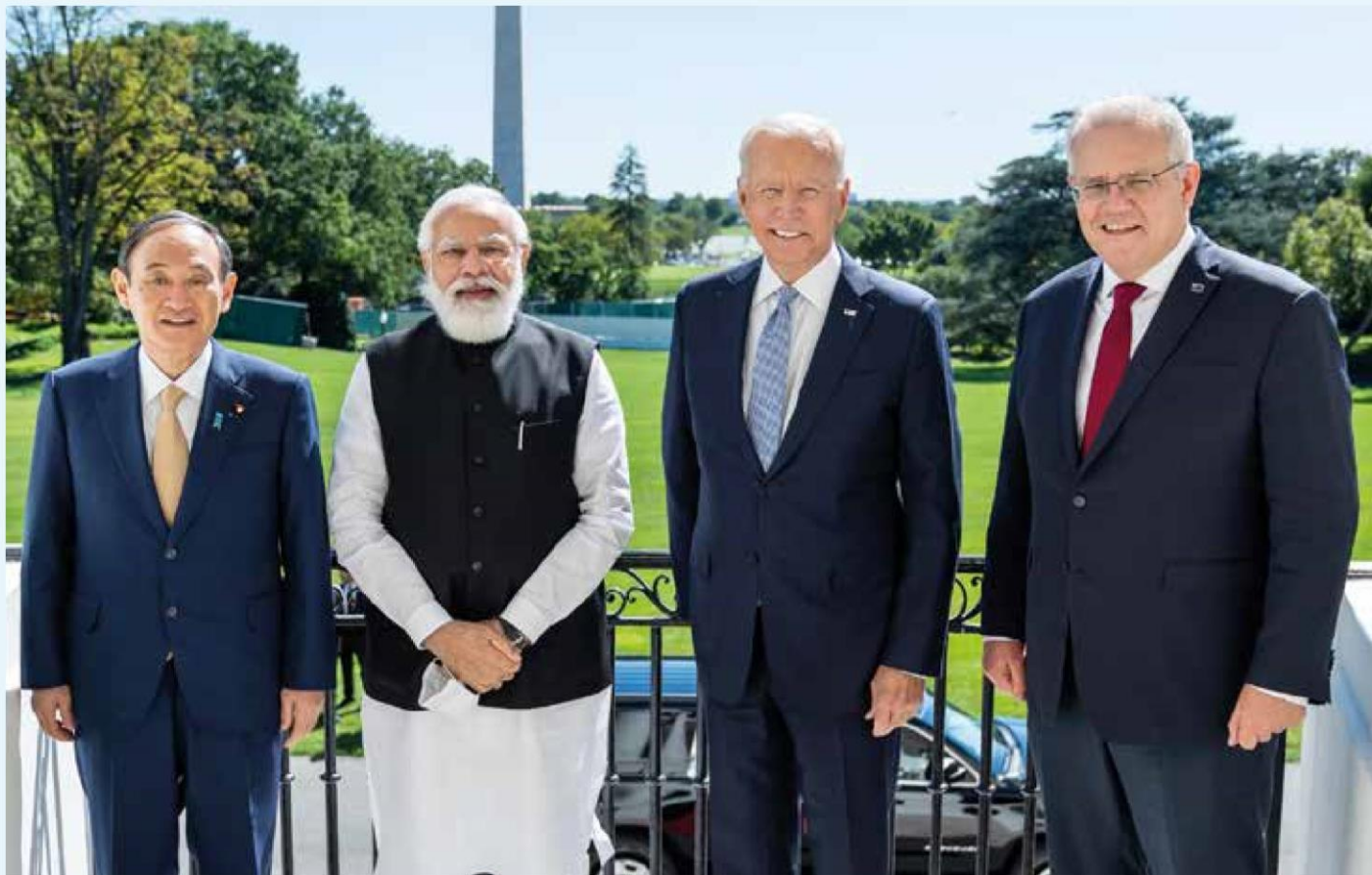
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Will AUKUS Complement or Relegate QUAD?

Commodore Mohammad Abdur Razzak, NUP, ndc, psc, MPhil, BN (retd)

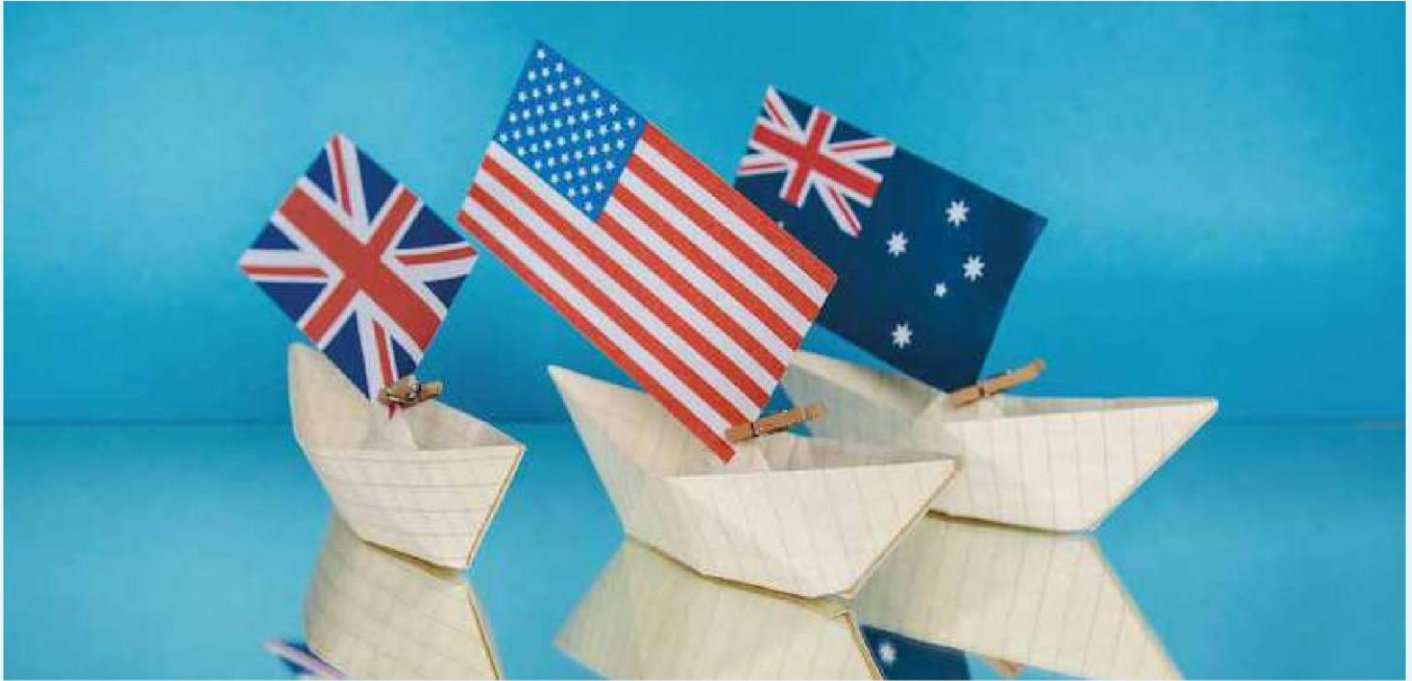


The AUKUS (Australia-the United Kingdom-the United States) security pact, which was made public barely a week before the first in-person QUAD (Quadrilateral Security Dialogue) summit on 24 September 2021, generated debate and discussion globally. AUKUS and QUAD have common character and objectives. The fundamental difference between the two is, AUKUS is a trilateral cooperative agreement to transfer military technology to Australia, and QUAD is a quadrilateral non-military strategic consultative platform between Australia, Japan, India and the United States.

QUAD is a loosely bound hybrid platform that intends to address a range of non-military issues for a free, open and rule-based Indo-Pacific. The QUAD began as an ad hoc grouping after the Tsunami in 2004. After a decade of inactivity since its formation in 2007, it resurfaced in discussions in 2017 under the Trump Administration at Japan's initiative. Again, there was no activity in the next four years. Nine months after the border scuffle between China and India on 20 June 2020 at Galwan valley, QUAD countries held the first leader level summit virtually on 12 March 2021, presumably, at India's diplomatic enthusiasm and persuasion.

After the virtual summit, QUAD leaders issued a joint statement entitled 'The Spirit of Quad'. Aside from focusing on combating the COVID-19 epidemic, the statement promised "to strengthen cooperation on the defining challenges ... promoting a free, open rules-based order, rooted in international law to advance security and prosperity and counter threats to both in the Indo-Pacific and beyond". According to the statement, the QUAD leaders are committed to supporting "freedom of navigation and overflight, peaceful resolution of disputes, democratic values, and territorial integrity".

Six months after the virtual summit, QUAD leaders met in person. Leaders talked on a wide range of topics like climate change, global sufferings from COVID-19 pandemic, supply chain, 5G technology, free Indo-Pacific and ASEAN Cooperation as well as a recommitment to the mutual partnership of shared security and prosperity besides "promoting the free, open rules-based order, rooted in international law and undaunted by coercion, to bolster security and prosperity in the Indo-Pacific and beyond" and recognised that the regional security has become ever complex. COVID-19 response and progress in relief dominated the joint statement.



AUKUS and QUAD members view the two-prong Chinese advancement into the Indo-Pacific and beyond-hard and soft power. Hard power is China's vertical and horizontal development of military capacity. Soft power is an economy-oriented activity globally.

The joint statements' focus is the cooperative development of soft power without reference to the military dimension anywhere in the statements. Long discussion on the COVID-19 vaccine was intended to deal with vaccine diplomacy.

the USA and India in 1992, suspended after India's nuclear test in 1998 and resumed after 9/11 when India joined the US "global war on terror".

Exercise Malabar was not mandated by the QUAD. It has been a regular annual naval event of the countries that are also members of the Quad. Japan joined the naval Exercise in 2007, the year QUAD was formed. USA, JAPAN and India have been regular participants since 2007. Australia participated in 2007 and 2020. Exercise Malabar is a multilateral naval drill outside

***AUKUS and QUAD Members View the
Two-Prong Chinese Advancement
Into the Indo-Pacific and
Beyond - Hard and Soft Power***

QUAD leaders also discussed the issue of emerging technology like 5G technology and chips, for example.

According to the United Nations COMTRADE database on international trade, QUAD countries' total import from China was USD 715.07 billion, and export was 387.33 billion in 2020. The USA, China's largest trading partner went into a trade war with China which could neither bring US companies back home nor turn the trade balance. Together, QUAD countries intend to turn the tables.

On the military side, the QUAD was paralleled by the naval Exercise Malabar which began as a bilateral naval drill between

the QUAD mandate, although the media often tend to play down the Exercise as 'Quad Naval Drill or Exercise' China also views it as such. The Exercise has been conducted in the waters abutting the Indian and the Pacific Ocean like the Bay of Bengal, Philippine Sea, Sea of Japan, Arabian Sea etc, except the South China Sea and the East China Sea. The huge military dimension of AUKUS seemingly prevents any probability from including the military component in the QUAD. Thus, AUKUS relegates QUAD from having any military texture in the future.

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Mongla Port Authority: Journey Towards Excellence

Commodore M A Wadud Tarafder, (C), NPP, psc, BN

Bangladesh is a riverine country. Numerous rivers have increased her beauty in manifolds. On the bank of one of such beautiful rivers, Chalna Port started its journey on 01 December 1950. A British merchant ship city of Leon set her footprint as a maiden ship of this port. Later, it was renamed Chalna Port Authority. The port was relocated to the bank of river Mongla in 1987 and renamed as Mongla Port Authority (MPA). MPA serves the southwest part as the second largest seaport of Bangladesh.

Commercial ships need to travel 131 km passage through UNESCO World Heritage Site the Sundarbans to use the port. Inland cargo vessels also traversed through the Sundarbans using river Sela for the movement of cargo to and from Mongla Port and Haldia port of West Bengal. As such, Mongla Port is obliged to preserve the sanctity of the Sundarbans, and it is very challenging.

Father of the Nation Bangabandhu Sheikh Mujibur Rahman was at the nation's helm for only about three and half years. He made an unprecedented master plan for the development of the nation in this short span of time. He led the Ministry of Shipping as the Head of the State, considering the importance of shipping and sea-based commerce.

Bangabandhu was not only concerned about sea-based commerce but also cautious about nature. He visualised the risks and challenges involved in plying cargo vessels through river Sela. Therefore, he directed to make an alternative inland water route by loop cutting dredging connecting Khulna and Mongla with the southern and eastern parts of the country. This

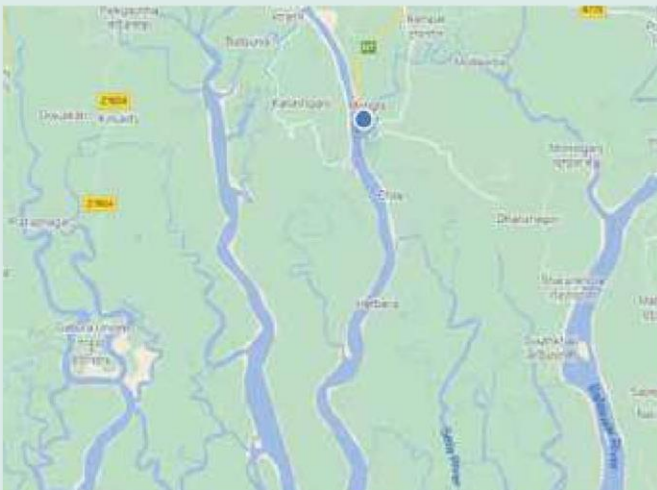
Betbunia of Rampal Upazila. The new route shortened the journey and became popular in a very short time.

MPA suffered a setback in terms of the arrival of ships and overall operations since 2002. It faced difficulties even in paying salary and legal dues to the employees. After taking over charge of the government in 2009, Prime Minister Sheikh Hasina made visionary plans and steered the country towards developments. MPA became an integral part of that visionary plan. She approved several multibillion-dollar megaprojects for MPA to make Bangabandhu's dream a reality.

A glimpse of megaprojects is enumerated in the subsequent paragraph:

Dredging. Navigability is the prime concern of MPA due to natural siltation. Previously, few dredging activities took place but on a smaller scale. Outer bar dredging was completed in 2020, allowing ships over 9 metres draught to enter the Pussur river channel. However, ships of said draught can arrive at Harbaria only, not up to the jetty. To address this impediment, the Inner bar dredging project has been initiated, targeting completion in 2022. Upon completion, ships over 9 metres of draught will be able to dock at the jetty and facilitate more container carrying feeder vessels.

VTMIS. Vessel Traffic Management and Information System (VTMIS) has been initiated to comply ISPS Code under International Maritime Organisation. This project extends from MPA to Hiron Point, covering the entire length of the port channel. Simply, this is a digital and automated way of handling



alternative route started from Ghashiakhali of Morelganj Upzilla under Bagerhat district and landed in river Mongla through



vessels in the port channel and recording data relevant to radio communication and navigation for further use. Live feed of vessels'

passage in the port channel is also available for local and remote view. This project is scheduled to be completed by the end of 2021.

Construction of Container Jetty. Two container jetties are being constructed with gantry crane facilities under Public-Private-Partnership (PPP) project by Saif Port Ltd. They are scheduled to be completed by 2022. This project will enhance container handling capacity by four times. Another two container jetties are planned to be constructed under a soft-loan project by PRC. Necessary MOA and MOU have been signed in this regard. Two more jetties are also planned to be constructed under India's Line of Credit (LoC) programme.

Cargo/Container Handling Equipment. Seventy-five equipment are being procured to enhance cargo/container handling capacity. Sixty-four of these items have already reached, and the remaining eleven are scheduled to reach by the end of 2021.



Support Vessels. Six support vessels consisting of two tugboats (70-ton bollard pull), one hydrography & research vessel, one buoy laying vessel, one search & rescue vessel and one pilot mother vessel are being acquired to modernise the support vessels' fleet. Some of them will be available for use in 2022, while others in 2023.

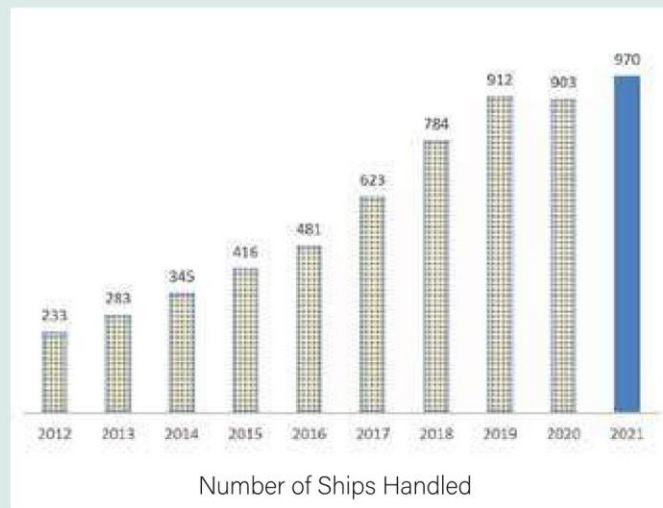
Surface Water Treatment Plant. Drinking water has always been a significant concern in the Mongla area. Presently, freshwater from Foyla (22km away from MPA) is being brought by pipeline and served to visiting vessels, industrial plants and employees of the port. It has become more challenging with the ever-increasing demand and scarcity of existing sources. This plant is designed to provide 4,000 metric-ton drinking water per day and is expected to come into operation by the end of 2021.

Modern Waste and Spilled Oil Management Project. It is a pioneer project in Bangladesh to comply with the MARPOL convention and preserve the Sundarbans' natural sanctity. This project aims to collect and treat solid and liquid waste from ships and vessels operating within the port limits and the Pussur River. This project can also augment national capacity to manage emergency oil spills under NOS COP.

Strategic Master Plan. The use of Mongla Port has become ever increasing since 2009. It has become challenging to meet this increasing demand through a piece-meal plan/project. Hence, an effort has been underway with the assistance of reputed international consultants to address the demand with a visionary perspective. A strategic master plan will certainly guide MPA to expand its operation to meet short-term (2025), mid-term (2041) and long-term (2070) requirements.

Upgradation of Port. The use of Mongla Port is not limited to meeting domestic needs. Bhutan and Nepal being land-locked countries, have a dire need to use seaport facilities for bulk cargo transportation. As such, Bangladesh, Bhutan, India, Nepal (BBIN) initiative has been launched to address this subregion's economic interdependence better. MPA, being the closest port for this subregion, need to upgrade its infrastructure. Few LoC programmes have been launched accordingly.

In fact, executing any megaproject takes time, and so far, none of the said megaprojects has been completed. However, a few small projects were undertaken as interim measures and to facilitate megaprojects. These interim measures have displayed a huge outcome in terms of turnover of ships, handling cargo and revenue income. As a result, MPA has made the highest record of success in 70 years.



Construction of the Padma bridge [expected to be open for public use in 2022] will certainly ease roadways and railways communication with capital, which will demand more cargo flow through MPA. To address this need, more ships will require to visit MPA. Hence, ship handling capacity needs to be increased through dredging, constructing jetties, and acquiring cargo handling equipment. More ships in port demand more support vessels, cargo/container yards, more risk of environmental pollution. In summary, more use of port means overall up-gradation of port facilities.

All the projects mentioned above are targeted to be completed by the end of 2021 or in 2022. It indicates the synchronised effort from MPA, especially the present dynamic management team with pragmatic leadership and all-out support of the government,

has made it possible for concerted efforts and guiding the projects towards successful completion in time.

The journey of MPA doesn't stop here. Projects like maintenance dredging, automation of services, ease of multimodal transportation of goods to and from MPA etc are in the pipeline to maintain its shining performance. MPA is already one step ahead in becoming an eco-friendly port by

implementing modern waste and spill oil management projects. It aims to be the first eco-friendly seaport in our country. MPA looks forward to serve as a subregional port by 2025.

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Bay of Bengal Perspectives: Correlation Between Climate Change, Marine Ecosystem and Biodiversity

Afifat Khanam Ritika



Increased CO₂ and other greenhouse gases from industries, transportation, electricity production, commercial and residential activities, agriculture, and deforestation result in climate change and global warming. According to a report published at the International Union for Conservation of Nature (IUCN), World Conservation Congress concluded that oceans have taken up 93% of the warming created by humans since the 1970s. In that perspective, if the heat generated between 1955 and 2010 had gone into the Earth's atmosphere instead of the oceans, temperatures would have jumped by nearly 36.2°C (E&ENews PM, 7 September 2016) (As for reference, the last checked Earth's atmosphere was 14°C at 2.00 pm on 27 October 2021).

Climate change is the most significant global threat to marine ecosystems as it changes ocean chemistry. Global climate change is responsible for sea-level rise, sea surface temperature, ocean heating, ocean acidification, coastal flooding, salinity intrusion etc.

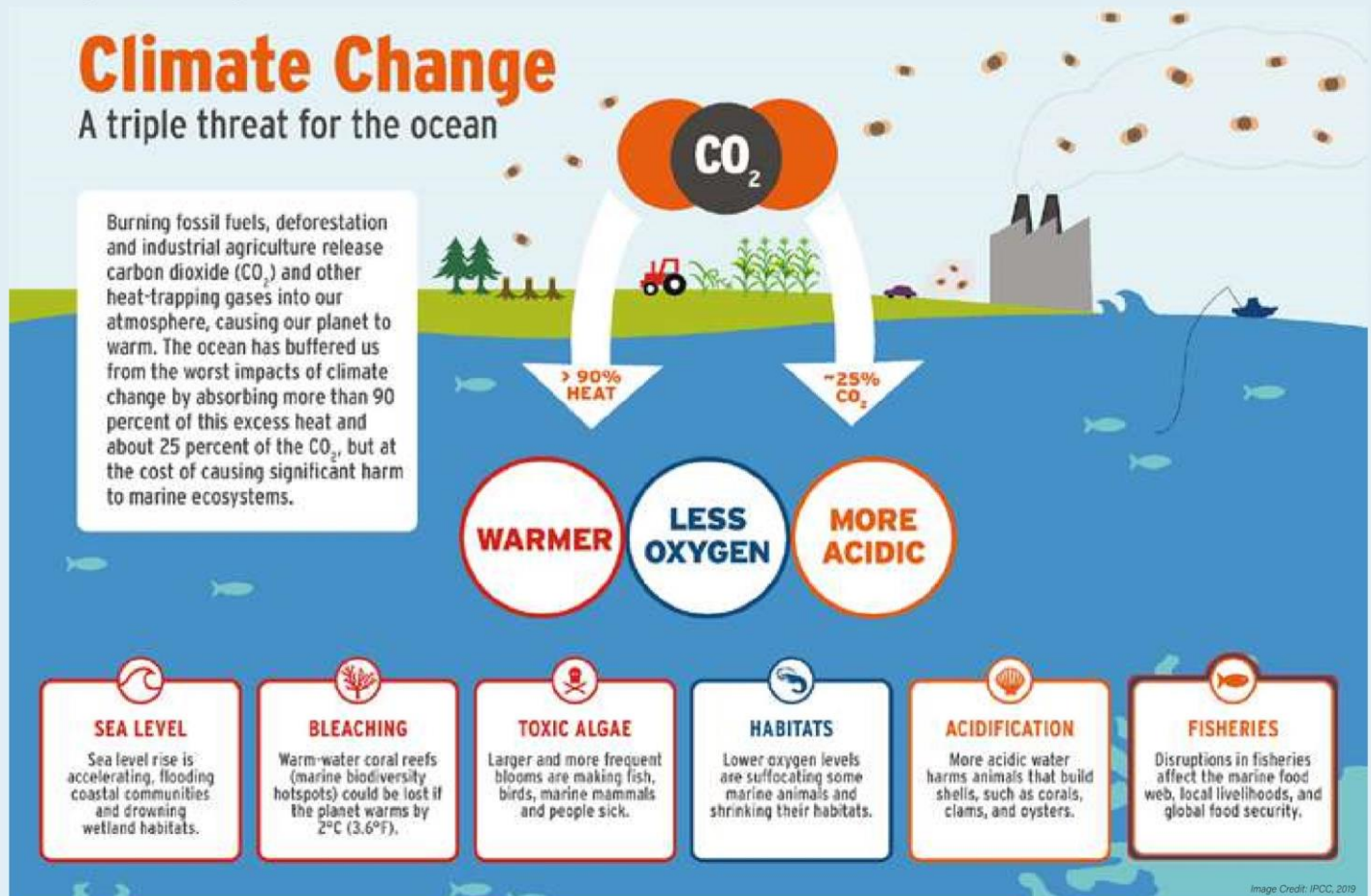
All those factors that occur due to climate change have direct and indirect impacts on marine biodiversity. Direct impacts act on physiology and behaviour and alter distribution, composition, growth, reproductive capacity, recruitment and mortality. Indirect impacts mean the effect on the food web and habitat. Ocean heating, regular cyclone formation and other disaster destroy the feeding, breeding and nursery ground for fishes and other commercially important species.

The warming of ocean water affects water quality parameters such as dissolved O₂, dissolved CO₂, salinity tolerance level, pH level, and sea surface temperature, causing physiological and behavioural changes in fishes. Most fish species have a relatively narrow range of optimum temperatures needed for their primary metabolism and the survival of their food supply. Fishes are poikilothermic animals; even a difference of 1°C temperature or 0.1 unit pH in seawater may affect their physiology, abundance, and distribution. More mobile species should adjust

their ranges over time, while less mobile and sedentary species may not. Depending on the species, the habitat area it occupies may expand, shrink or be relocated. As a result, the distribution of marine fish will increase in some areas, a decline in others, or shift altogether. These are opposed to everyday natural phenomena. The following figure represents the method of affecting climate change into the ocean.

primary production (Phytoplankton) that finally affects the food chain's secondary, tertiary, and quaternary layers. Acidic water increases ocean salinity, which impacts biodiversity by disrupting the habitat's standard parameters.

Our primary concern is the Bay of Bengal. Generally, when we talk about marine biodiversity, it mainly indicates fish.



Some clear examples how climate change mainly affects marine biodiversity are given below:

Climate change is responsible for global warming and increases sea surface temperature. The temperature reduces the dissolved oxygen level in the water. When a species does not get enough oxygen, it will suffocate and adapt to low oxygen levels by changing behavioural activities or migrating or dying. In adaptation, if the temperature is lower than the optimum level, fishes stopped/reduced feeding and growth rate hampered. If the temperature is higher than the average level, it affects sexual behaviour and growth rate. Physiological changes, behavioural changes, migration, or death are all signs of a species' extinction in a habitat. As a result of climate change, many commercially important species will become extinct in the long run.

Besides, if we consider the pH level of water, CO₂ absorption reduces the pH level in the water. In consequence, ocean acidification occurs. An acidic ocean is responsible for low

Bangladesh catches 7 lakh MT/yr fishes from the Bay of Bengal, whereas the possible exploration rate is 80 lakh MT/yr. About 4,000 crores Tk/yr comes from the country's fish export sectors. These export fishes have mainly come from the marine fisheries. The marine waters of Bangladesh are home to about 475 fish species, 36 shrimp species. About 336 species of molluscs, 3 lobsters and 7 species of turtles and tortoises, 168 species of seaweeds, 3 species of sponges, 16 species of crabs, 3 species of lobsters, 10 species of frogs, 3 species of crocodiles, 24 species of snakes, 3 species of otters, 1 species of porcupines, 9 species of dolphins and 3 species of whale found in the territorial water of Bangladesh. Among the marine and migratory animals, 4 species of fishes, 5 species of reptiles, 6 species of birds, and 3 species of mammals are threatened (SPARRSO, ICEAB10, Japan, 2010). A species can become endangered due to various stressors, including climate change, which has severe consequences for marine ecosystems that are high in productivity and support significant fisheries, particularly

in developing nations like Bangladesh. Sea surface temperatures (SST) have increased by 0.2-0.3 °C along the Indian coast of the Bay of Bengal for the 45 years from 1960 to 2005 (Vivekanandan et al. 2009). They have predicted an increase of 2.0-3.5 °C by the end of the century. Sea level rise is mainly caused by thermal expansion, and researchers have noted an accelerating rate of increase at 12-13 mm/decade in the northern Indian Ocean (Unnikrishnan and Shankar, 2007).

Mariners once feared the Bay of Bengal because of its man-eating sharks and other tops of the food chain predators like grouper, croaker, and rays. Catches now consist mainly of species like sardine, herrings, anchovy, mackerel, whiting, sprat, hilsa etc which are at the bottom of the food chain. The balance from top to bottom of the food chain has been disrupted, and many species have been lost. Experts believe that these types of consequences mainly occur due to the extreme direct impact of climate change.



The coral reef is also under serious threat. A heated ocean causes thermal stress that contributes to coral bleaching and pathogenic infections. The heated ocean creates cyclones and other storms frequently, and that disrupts the coral habitat. Besides, ocean acidification decreases coral growth and structural integrity. Due to ocean acidification, shellfish and other sea creatures are at high risk of using calcium carbonate minerals to form their shells. More acidic water can store less

calcium, making it unavailable to calcifying animals like oysters, clams, sea urchins, shallow water corals, deep-sea corals, and calcareous plankton.

It is essential to balance the diversity depending on their functional activities rather than the species or genetic diversity within a community or ecosystem. An example of functional diversity is the number of planktonic feeders compared to the number of predators. Functional diversity is thought to be one of the main factors determining the long term stability of an ecosystem and its ability to recover from significant disturbance. Climate change destroys the balance of ecosystem components through biodiversity loss.

Climate change is a global problem and requires a global solution. Climate adaptation resilience is one of the topmost options to avoid its reaction to marine life for every victim. To avoid the loss of marine biodiversity and adopt climate change vulnerabilities, the following measures may play a vital role:

- > Enhanced ecosystem resilience
- > Secure breeding and nursing ground
- > Brood collection of endangered species for artificial breeding
- > Enhance genetic diversity
- > Reduce megafauna catch
- > Chain MPA declaration and proper management technique development
- > Slowing down fishing pressure and regional pollution rate
- > Avoid destructive fishing gear
- > Proper implementation of the fishing ban period
- > Effective implementation of existing fishing rules and regulations

Sea is an open water body. Single-handed management may bring immediate results, but it will never sustain. A regional approach is needed for possible adaptation.

Writer: Afifat Khanam Ritika is a Research Officer, BIMRAD.



CLIMATE RISKS: 1.5°C VS

EXTREME WEATHER

100% increase in flood risk. | vs | 170% increase in flood risk.

WATER AVAILABILITY

350 million urban residents exposed to severe drought by 2100.

ARCTIC SEA ICE

Ice-free summers in the Arctic at least once every 100 years. | vs | Ice-free summers in the Arctic at least once every 10 years.

PEOPLE

9% of the world's population (700 million people) will be exposed to extreme heat waves at least once every 20 years.

SEA-LEVEL RISE

46 million people impacted by sea-level rise of 48cm by 2100. | vs | 49 million people impacted by sea-level rise of 56cm by 2100.

CORAL BLEACHING

70% of world's coral reefs are lost by 2100. | vs | Virtually all coral reefs are lost by 2100.

OCEANS

Lower risks to marine biodiversity, ecosystems and their ecological functions and services at 1.5°C compared to 2°C.

2°C GLOBAL WARMING



SPECIES

6% of insects, 8% of plants and 4% of vertebrates will be affected.

vs

18% of insects, 16% of plants and 8% of vertebrates will be affected.

vs

410 million urban residents exposed to severe drought by 2100.

vs

28% of the world's population (2 billion people) will be exposed to extreme heat waves at least once every 20 years.

COSTS

Lower economic growth at 2°C than at 1.5°C for many countries, particularly low-income countries.

FOOD

Every half degree warming will consistently lead to lower yields and lower nutritional content in tropical regions.

Dr. Ainun Nishat talks to BIMRAD Correspondent about COP26

Dr. Ainun Nishat

Professor Emeritus, Centre for Climate Change and Environmental Research, BRAC University.

Bangladesh is frequently cited as one of the most vulnerable countries to climate change because of its geographic location and flat deltaic topography with very low elevation. Despite the recent strides towards achieving sustainable development, Bangladesh's potential to sustain its development is faced with significant challenges posed by climate change. Therefore, it is of utmost importance to understand and assess the threats to Bangladesh's population and economic sectors. This threat assessment needs to be completed with a thorough fathoming of our options towards transforming Bangladesh's climate resilience. In December 2015, 195 states signed up to the landmark Paris Agreement. From 31 October to 12 November 2021, COP26 was held in Glasgow where 200 countries participated. These two are the most important global summits for tackling the climate change. In these summits goals were set, and countries are taking steps to deliver on them. But, are the countries actually on track to achieve the targets set by the Paris Agreement or COP26?

The UN Climate Change Conference of the Parties (COP) is the world's most important summit on climate change. Climate change experts had described this year's conference COP26 as the most significant climate event since the 2015 Paris Agreement. As the current Climate Vulnerable Forum (CVF) presidency, Bangladesh released Climate Vulnerable Manifesto on 07 September 2021 following the CVF high-level exchange on the COP26. In this backdrop, what have we achieved from COP26 and what should be our future strategy? PAAL correspondent talked to Dr. Ainun Nishat, an Emeritus Professor at Center of Climate Change and Environmental Research, BRAC University, in quest of these answers.

Professor Ainun Nishat is recognized as a pioneering expert in water resource management and climate change in Bangladesh. He represented Bangladesh at the United Nations Economic and Social Council in the Committee for Energy and National Resources Development and the UNFCCC. He worked on different climate change-related projects, which included the third climate change assessment of IPCC. The professor was a key member of experts that prepared the National Adaptation Program of Action (NAPA-2005), Bangladesh Climate Change Strategy and Action Plan (BCCSAP 2008 and 2009). Also, he was one of the Lead Authors of Working Group-II of IPCC in preparation for the Third Assessment Report. Dr. Nishat has worked with various international organizations,



including World Bank, ADB, and several UN agencies. As an expert in water resource management, he was a member of the Indo-Bangladesh Joint River Commission (JRC). He was also a member of the Bangladesh delegations in COP26.

BIMRAD Correspondent: The 26th UN Climate Change Conference of the Parties (COP26) has just taken place in Glasgow, UK; what is your evaluation, and what have we achieved from this conference?

Dr. Nishat: Well, in the 2015 Paris Climate Change Conference, it was decided to keep the global temperature well below 2°C compared to pre-industrial levels and pursued efforts to limit the temperature increase to 1.5°C. Negotiators at the United Nations climate talks in Glasgow, Scotland, struck a global climate deal to reduce emissions in line with an ambition to limit global warming to well below 2°C and ideally 1.5°C by 2030. But as mitigation measures, how much carbon emission needs to be cut off for member countries that had not been finalized yet.

In Glasgow, the world admitted to providing 80 billion USD and committed to raising 20 billion USD by 2022. There was also a commitment by participating countries to boost this climate-related finance and support to help LDCs. It has been decided that the fund allocation management strategy should be followed correctly. Half of the fund should be provided before adaptation; the rest should be kept for mitigation. Each country should also have their additional internal fund. Technology transfer, capacity development and transparency were also fixed in the Glasgow conference. The fund should be used transparently, and it should be utilized in partnership with civil society and private sectors. In COP26, the decision has been taken about the close involvement of the private sectors and other stakeholders.

COP26 has also given an alarm to Bangladesh for handling climate funds. Few criteria have been finalized like accountability,

transparency, inclusiveness, partnership, MRV (Measurement, Reporting and Verification) in COP26 before transferring funds in any country. I think Bangladesh needs to be prepared to fulfil these criteria to get the climate funds in future.

Bangladesh has a definite target for climate change issues. My suggestion is to reach the target globally. Bangladesh can talk in subgroups, then LDCs and then G77. Subsequently, it will be placed at the global level.

BIMRAD Correspondent: Reaching a consensus, especially the core debating issues like reducing Carbon emission and fossil fuel dependency, will be complex. Out of the 135 countries pledging carbon neutrality, only 66 have put a target year on their policies, laws or propositions in COP26. Considering the global economic recession due to the pandemic and economic interest of individual nations, how realistic will be their implementation?

Dr. Nishat: Yes, it is a matter of consideration. All the countries have agreed to complete the pledging process by November 2022. Significantly, only 10% of countries emit almost 80% of global carbon emissions. Surprisingly, India and China are under these 10% countries. So, there is a big gap between agreement and the present real scenario. I think it should be handled separately. The IPCC's latest findings say 1.5°C warmings will be reached or exceeded in the early 2030s. My suggestion is even limiting global temperature to 2°C by 2030 is also good enough

Even with 80 billion USD, are the developing countries ready to utilize it? Number 100 is a magic number, and it is being fulfilled rather than the distribution mechanisms through GCF or GEF. The world has admitted that they have not reached the magic number, but whatever money they have committed is more than enough for the countries' need right now.

BIMRAD Correspondent: The world has seen hotter average temperatures throughout the last three years. The experts are predicting a rise in average temperature throughout this decade. Would you please give us an idea about how this temperature anomaly may affect marine biodiversity, coastal irrigation and marine aquaculture and your suggestions to mitigate it?

Dr. Nishat: It is out of our imagination. The marine ecosystem is the function of the ocean current, and it is changing. As the global temperature increases, ice melts fast from the arctic, resulting from changing ocean currents and altering the aquatic habitat. So, this has a significant impact on countries that generally depend on marine living resources like fish. A sufficient amount of greenhouse accumulated in the atmosphere should remain in the arctic for at least 30 to 40 years more. Therefore, we should plan our adaptation very strongly. The drainage system should develop adequately all over the country. Already Bangladesh Government has taken many adaptation strategies, but it needs holistic approaches. We need to redesign, replan, and research new cultivars. According to IPCC-6 (Volume 1), if the world cannot control the temperature at 4°C, many unforeseen

Bangladesh has a definite target for climate change issues. My suggestion is to reach the target globally. Bangladesh can talk in subgroups, then LDCs and then G77.

as science is advancing simultaneously to adopt the situation with new inventions and technologies.

BIMRAD Correspondent: About the Climate finance of the Paris Agreement, which was started at COP16 (Cancun) to COP26 (Glasgow), the pledge by the developed countries was that they would provide USD 100 billion a year to support the developing countries to tackle climate change from 2020 onwards, and the amount would be increased after five years. So far, no concrete framework, roadmap or consensus has been seen to deliver the fund. As a developing country and the worst sufferer of Climate Change, how do you regard the overall stance of developed countries?

Dr. Nishat: It is not true that funds have not been committed. They have committed between 60 to 80 billion USD, and they have admitted that they have a shortfall of 20 billion USD, which they want to make up within next year, and separate committees have been set up to sort it out.

consequences will happen, including the inundation of coastal cities and exacerbated water scarcity in many regions. Bangladesh is also vulnerable to all these phenomena. Such kinds of predictions are models based on reasonable knowledge. I believe Bangladesh can acknowledge the climate change vulnerabilities. We already have a vulnerability map and now need proper actions.

BIMRAD Correspondent: Approximately 30% of the population of Bangladesh lives along the coastal zone of Bangladesh. Their livelihood is heavily dependent upon the seas and adjoining areas. What are the threats posed to the coastal community of Bangladesh and their livelihood from the effects of Climate Change, and how should we be prepared to face it?

Dr. Nishat: Nobody knows the answer. A vast area will be under saline water. Maybe there will be more saltwater fish rather than freshwater fish. But the flora would be changed. There will not be a single Shundori plant in the Sundarban. It will be replaced by

the Goran tree. The huge natural ecosystem-based change will occur with the change of climate. That may create severe food crises from all around the country.

But, we can develop polders vigorously and develop a proper drainage system so that the saline water may not cover the freshwater. Projecting the vulnerabilities, experts should come forward to find out the solutions. Yet, no such vital initiatives have been made. Things should be kept in mind that regional cooperation is also essential. We may protect the eastern or mid-southern districts by ourselves, but districts like Satkhira will be the most affected, and we cannot protect Satkhira without the cooperation of India. So, regional cooperation is a mandatory factor. However, keeping all these things in mind, the earliest response from the experts is essential.

BIMRAD Correspondent: Bangladesh has been carrying out mitigation, adaptation planning and implementation for quite a long time and has formulated strategies to lessen the impact of Climate Change. Do you suggest any changes to these policies or

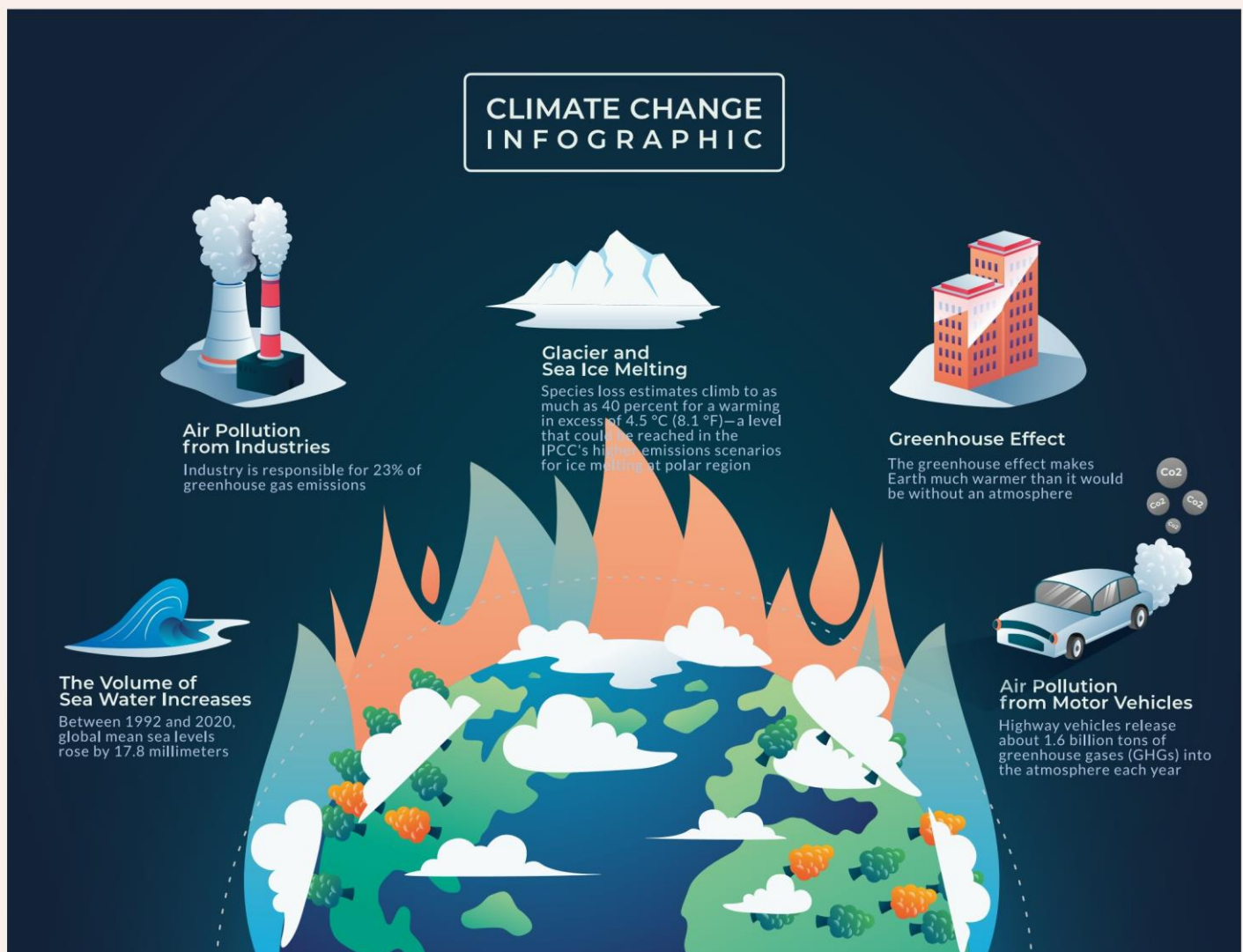
strategies to leave a better Bangladesh for our next generation?

Dr. Nishat: Just think, Bangladesh contributes only 0.3% of global emissions. As a mitigation strategy, if Bangladesh cut down 100% of these emissions, actually nothing would happen to the world.

In this present situation, Bangladesh needs to keep track of the world's technological advances. Bangladesh has the highest number of solar energy sources globally, but the qualities are the worst. The capacity is almost one-fourth of the global capacity. Bangladesh will release the final volume on "adaptation" by the end of April, where there will be some adaptation directions.

As a Team Leader, I have already developed a "Climate change strategy and action plan", which is also a helpful document. That may guide the directions to adapt and handle climate change in Bangladesh.

BIMRAD Correspondent: Thank you very much for your pragmatic answers. BIMRAD wishes all the best to you.



Scuba Diving Institute in Bangladesh: A New Dimension of Ecotourism

Edbar Zaman



Blue Economy

The definition of Blue Economy, according to the World Bank, is the "Sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystems." It implies having an economic growth plan that utilizes ocean resources while also maintaining a sustainable approach to the marine environment. For many decades, Bangladesh has utilized resources from its rivers, lakes and oceans. But as human behavior changes because of the lack of natural resources, it is now vital to explore the concept of the Blue Economy. From the multisectoral use of marine sectors, the two already developed areas that contribute to Bangladesh's economic development are fisheries and tourism. With some advancement, we can flourish these sectors without any doubt. But for the sustainable development of marine living resources, the most critical factor is using environmentally friendly fishing methods and protecting the microorganisms like planktons and

the conservation of coral reefs. Keeping this in mind, the ecotourism in the fisheries hotspots should also get priorities to promote the blue economy.

Planktons and their Necessity

It is imperative to conserve the tiniest microscopic living things in the ocean for a Blue Economy Strategy to succeed. These tiny creatures are the foundation of the entire marine ecosystem and food chain. They are called planktons or primary producers. They are often microscopic or less than one inch in length, but they could also be larger species like crustaceans and jellyfish. Planktons use sunlight, nutrients, carbon dioxide, and water to produce oxygen and nutrients for other organisms through photosynthesis. With 71% of the Earth covered by the ocean, phytoplankton produces up to 50% of the oxygen we breathe. Without planktons, there would be few living organisms on this planet. Planktonic organisms are food to a vast range of animals



from barnacles, sea squirts, large fish and whales, for example, the whale shark that only feeds on planktons. Another critical aspect of the entire ecosystem is corals; they are an essential part of the process. Many corals, such as soft corals and gorgonians, depend exclusively on phytoplankton as their primary food. So as you see, without these tiny organisms, many species would not survive on this planet.

Coral Conservation



There is no doubt that the world we live in today and the habits we humans have developed are not conducive to the coexistence of the environment and ourselves. Conservation of marine life is essential to the survival of our future generation because everything is interlinked to each other. Not many realize that the world oceans and lakes which occupy about 75% of the Earth's surface are the primary sources for the sustainability of all living creatures on this planet. Therefore, it is essential to safeguard

this vital aspect of survival. Corals, like planktons, are also the foundations of all of our aquatic life. Corals rely on planktons to survive, and all marine life relies on corals for their survival. Surprisingly, even in this day and age, many people believe that corals are just a piece of rock. But that is far from the truth. Corals are living organisms living in colonies, which provide food and shelter for most of the marine ecosystem. Corals also protect coastal erosions and create barriers to protect us from tides and waves.

Ecotourism such as recreational scuba diving not only opens up a sector for economic growth but, at the same time, promotes the sustainability and preservation of marine life.

Coral Bleaching

If the coral system collapses, all marine life will perish. This includes all the fishes, the ecosystem related to the fishery and the economy itself. In the photo, the coral on the left is a colourful, healthy red coral. The one on the right shows the gradual death of the same coral, which has turned white. This is also called coral bleaching. When this happens, the fish cannot survive because the ecosystem dies with the death of the coral. When a coral reef is healthy, there is always much fish, but the opposite is the case when the corals die.



Significance of St. Martins Island



St. Martins needs to be protected not only because of tourism but also because of its rich diversity of marine life. Promoting and protecting this tiny island may not seem to be a big deal, but the process will create new thinking within the community of Bangladesh. St. Martins is the only coral island we have so far. It has a very diverse marine life such as; 68 species of corals, 234 species of fishes, five species of dolphins, 151 species of algae, 191 species of molluscs, 40 species of crabs, etc. St. Martins is also the breeding ground for sea turtles. All these are essential to the survival of the fragile ecosystem in the region. However, many of these animals are now on the verge of extinction.

As explained before, corals are a vital part of the marine ecosystem. Without planktons and corals, the lifeline of the ocean and marine life will perish. For years, traditionally, our local economy flourished on fishing revenues. There is absolutely no doubt that the amount and variety of fish we harvested only a

decade ago have reduced significantly compared to the past. These biodiversities are slowly being lost due to manufactured pollution, non-sustainable overfishing, unregulated construction, tourism activities, and the destruction of coral reefs. Another aspect to consider is the enormous potential growth of the local economy.

Marine ecotourism is a new concept within generation Z. This generation Z, who are now entering the workforce, are more conscious about protecting the environment and are faster to adapt to sustainable development concepts. Bangladesh has the world's longest unbroken beach. The unexplored marine life and the untouched underwater world can be a massive attraction to the dive industry. Diving generates revenue from the sport and generates and develops a slew of other associated industries in the region. So, we must take a much closer look to protect St. Martins more sustainably.

Ecotourism: Prospect of Scuba Diving



The Bay of Bengal is the world's hotbed of tropical cyclones and is also vulnerable to climate change. So, regular study on marine life is significant for their sustainable development. Recreational scuba diving not only opens up a lot of sectors for economic growth but, at the same time, promotes the sustainability and preservation of marine life. Scuba diving is a tool for scientific research based on visual observation of the underwater world. Scientific divers are trained to maintain safe scuba diving practices while using various equipment to survey and sample marine life and the physical environment. A professional, safe, and international diving institute based on the Professional Association of Dive Instructors (PADI) or Technical Diving International (TDI) - SCUBA Diving International (SDI) requirements can be established in Bangladesh as a maritime nation. The institute might envision incorporating a "Centre for excellence" for all underwater developments, including job creation and training for future generations.

This theme is based on five levels:

- > Economic development of the diving sector
- > Promote and develop all the underwater sectors
- > Promote marine environment protection
- > Establish an underwater education school consisting of recreational scuba diving, commercial diving, marine environmental studies, and marine economic development programs
- > Create platforms to introduce commercial business opportunities in the underwater sector

Once a well-planned international diving curriculum from PADI and TDI-SDI is in place, the impact on the local fishery, tourism, local economy, geopolitics, and international financing prospects will be noticeable. The other important aspect of this diving institute would be to encourage students and professors to do more research on the marine environment in the coastal areas of Bangladesh. It is also possible to attract international funding's for these research projects.

However, all of these diving operations in Bangladesh must be regulated by proper international diving agencies such as PADI,

TDI-SDI etc. It will reduce the risk of accident as any diving accident involving a foreigner will trigger an immediate negative response from the international community. This increase of divers will bring international visibility, attracting other tourism activities like snorkeling, kayaking, hiking, environmental tourism, etc. It will also help open local businesses like hotels, resorts, restaurants, local cottage industries etc. Economic growth based on marine tourism primarily focusing on recreational diving has been very successful in Egypt, UAE, Qatar, Thailand, Sri Lanka, Maldives, India, the Bahamas, Mauritius etc. The same model can be applied in Bangladesh too.

Due to the unexplored and untouched dive locations in St. Martins, Kaptai lake and other locations in Bangladesh, this sector could quickly turn into an attractive diving tourist destination like India, Maldives, Myanmar etc. The best location for diving in Bangladesh will be St. Martins Island. Hence, it is essential to preserve and protect the island and its marine life. Many experts are urging to declare St. Martins Island as an MPA, but still have an option to open it for sustainable ecotourism.

According to IUCN Protected Area Categories System, there are total 2 (two) types of MPA assigning management categories and governance types. One is strict Nature Reserve Protected Areas that are strictly set aside to protect biodiversity and possibly geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure the protection of the conservation values.

Another is Wilderness Areas that are generally larger and less strictly protected from human visitation than the category Strict Natural Reserve. Although not usually subject to mass tourism, they may be open to limited people prepared for self-reliant travel such as on foot or by boat. So, we can choose an option where tourism and protection of nature will be performed simultaneously as St. Martins Island generates around 708.0 m US dollars per annum in the tourism sector alone.

Writer: Edbar Zaman is Currently Working as a Financial Controller in Germany and also as a PADI, TDI and SDI Diving Instructor Worldwide.

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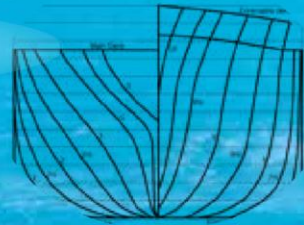
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UN and Bangladesh Sign Deal to Aid Rohingya Relocation to Bhashanchar in Bay of Bengal



The United Nations and Bangladesh government have signed an agreement on 9 October 2021. This agreement aimed to help Rohingya refugees on an island in the Bay of Bengal, where thousands have been relocated from cramped camps near the Myanmar border.

More than 19,000 Rohingya have already been moved to the Bhasan Char island by the government, and the UN said one of the key reasons to sign the agreement was to start serving that population.

Bangladesh plans to relocate 100,000 Rohingya to the island in phases from the crowded refugee camps in Cox's Bazar district.

The agreement came as a paradigm shift after the UN and humanitarian groups criticised the relocation, saying the 30-year-old island regularly submerged by monsoon rains was unsuitable for habitation. But Prime Minister Sheikh Hasina's government has spent more than \$112 million on development, adding sea walls, hospitals, schools and mosques, and insists it is no more a vulnerable area.

The agreement allows for close cooperation between the government and the UN on services and activities to benefit the island's residents. The UN also said it had discussions with Rohingya living in Cox's Bazar as well as those already living on Bhasan Char island prior to the signing of the agreement.

Bengal Meat and WorldFish Jointly Launches Bengal Fish

Bengal Fish and WorldFish will work together to ensure safe and nutritious fish, according to the press release issued by Bengal Meat on 25 October 2021. In a press briefing, they mentioned,

Bengal Fish is committed to delivering improved, nutritious, and safe fish from trained farmers through WorldFish research to the buyers. The collected fish will be processed in the Bengal Fish's



factory of Bengal Fish in Pabna without any preservatives while maintaining international standards. Bengal Fish has also started its journey with freshwater Rohu, Katol, Bata, Shing, Gulsha,

Black Tiger Prawn, Horina Shrimp, Red Snapper Fillet, Sea Bass Fillet and Basa Fillet.

Bangladesh Joins Pledge to End Deforestation by 2030



Bangladesh has signed the Glasgow Leaders' Declaration on Forests and Land Use at COP26, pledging to end and reverse deforestation by 2030.

Mostafa Kamal, a member of the Bangladesh delegation and secretary of the Ministry of Environment, Forest and Climate Change

said that NDC had uploaded a letter of consent from Bangladesh on the website of the United Nations Framework Convention on Climate Change (UNFCCC) on 26 August, 2021 stating its commitment to forest protection, afforestation, and forest expansion by 2030.

R.V. Meen Sandhani Finds 457 Sea Creatures in Bay of Bengal



The research and survey vessel, "RV Meen Sandhani" has so far detected 457 species of marine fish and animals in the Bay of Bengal since 2016, said Fisheries and Livestock Minister SM Rezaul Karim in Parliament on 14 September 2021. Of these 457 species, 373 marine species are fishes, 24 shrimps, 21 sharks and rays, 21 crabs, 5 cuttlefishes, 5 squids, 4 octopuses, 3 lobsters and 1 squilla.

The survey ship has been cruising since 2016-2017 to assess the stock of marine resources and conduct researches and surveys. It has so far conducted 31 surveying cruises, he said, replying to a tabled question from MP M Abdul Latif.

The survey vessel, equipped with the latest technology of fisheries and other oceanographic research, was procured from Malaysia in 2016 after Bangladesh got a vast sea area through the disposal of longstanding disputes with the two neighbouring countries i.e. India and Myanmar.

Besides, the Food and Agriculture Organisation (FAO) and Institute of Marine Research (IMR) conducted a 15-day acoustic survey cruise in the Bay of Bengal by the latest marine research vessel 'RV Dr Fridtjof Nansen' in August 2018.

PM Hasina: Consensus Over Climate Finance is a Significant Achievement

Prime Minister Sheikh Hasina said that her participation in the COP26 was very much important for protecting the interest of Bangladesh.

She has said the consensus of global leaders over accelerating climate finance alongside releasing \$100 billion keeping pace with the Paris deal implementation and SDGs was a significant achievement.

Hasina also said that the adoption of the Dhaka-Glasgow Declaration, which was formulated by 48 heads of state and governments of climate-vulnerable countries, is the outcome of Bangladesh's leadership in climate diplomacy.

The prime minister came up with the observation while delivering

her written speech at the press conference at her official residence Ganabhaban on 17 November 2021.

The press conference was arranged to inform the outcome of her two-week visit to the United Kingdom and France.

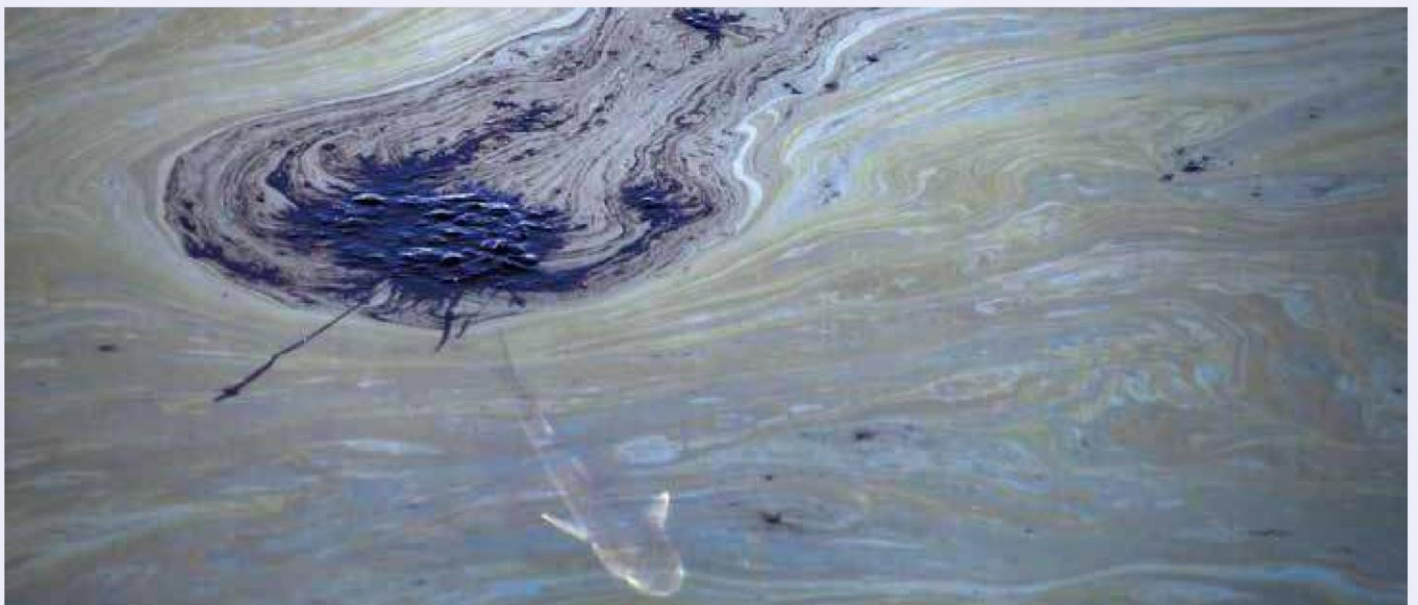
In the UK, the prime minister attended the 26th UN Climate Change Conference of the Parties (COP) in Glasgow, Scotland and Bangladesh Investment Summit 2021 in London. During her visit to France, she handed over the first UNESCO-Bangladesh Bangabandhu Sheikh Mujibur Rahman International Prize for the Creative Economy and joined the 75th founding anniversary event of UNESCO and the Paris Peace Forum in Paris.



'Catastrophic' California Oil Spill Kills Fish, Damages Wetlands

A large oil spill off the southern California coast left fish dead, birds mired in petroleum and wetlands contaminated, in what local officials called an environmental catastrophe.

The U.S. Coast Guard, heading a clean-up response involving federal, state and city agencies, on 4 October 2021 announced an around-the-clock investigation into how the spill occurred.



An estimated 126,000 gallons, or 3,000 barrels, had spread into an oil slick covering about 13 square miles of the Pacific Ocean since it was first reported on 3 October 2021 morning, Kim Carr, the mayor of Huntington Beach, told to a news conference.

She called the spill an "environmental catastrophe" and a "potential ecological disaster". The beachside city, about 40 miles (65 km) south of Los Angeles, was bearing the brunt of the spill.

Carr added: "Our wetlands are being degraded, and portions of our coastline are now covered in oil".

The spill was caused by a breach connected to the Elly oil rig and stretched from the Huntington Beach Pier down to Newport Beach, an area popular with surfers and sunbathers.

The California Department of Fish and Wildlife ordered a fishery closure for coastal areas affected by the spill.

Goa Maritime Symposium 2021: Deliberates Maritime Security and Emerging Non-Traditional Threats



Thirteen Indian Ocean littoral countries attended the Indian Navy hosted Goa Maritime Symposium (GMS-21) under the aegis of Naval War College, Goa on 11-12 May 2021 that was focused on "Maritime Security and Emerging Non-Traditional Threats: A Case for Proactive Role for IOR Navies," with emphasis on capacity building amongst the IOR Navies to tackle emerging common maritime threats.

Owing to the COVID-19 pandemic, the event for the first time was hosted in virtual mode, with online participation of Naval representatives from India, Bangladesh, Comoros, Indonesia, Madagascar, Malaysia, Maldives, Mauritius, Myanmar, Seychelles, Singapore, Sri Lanka and Thailand.

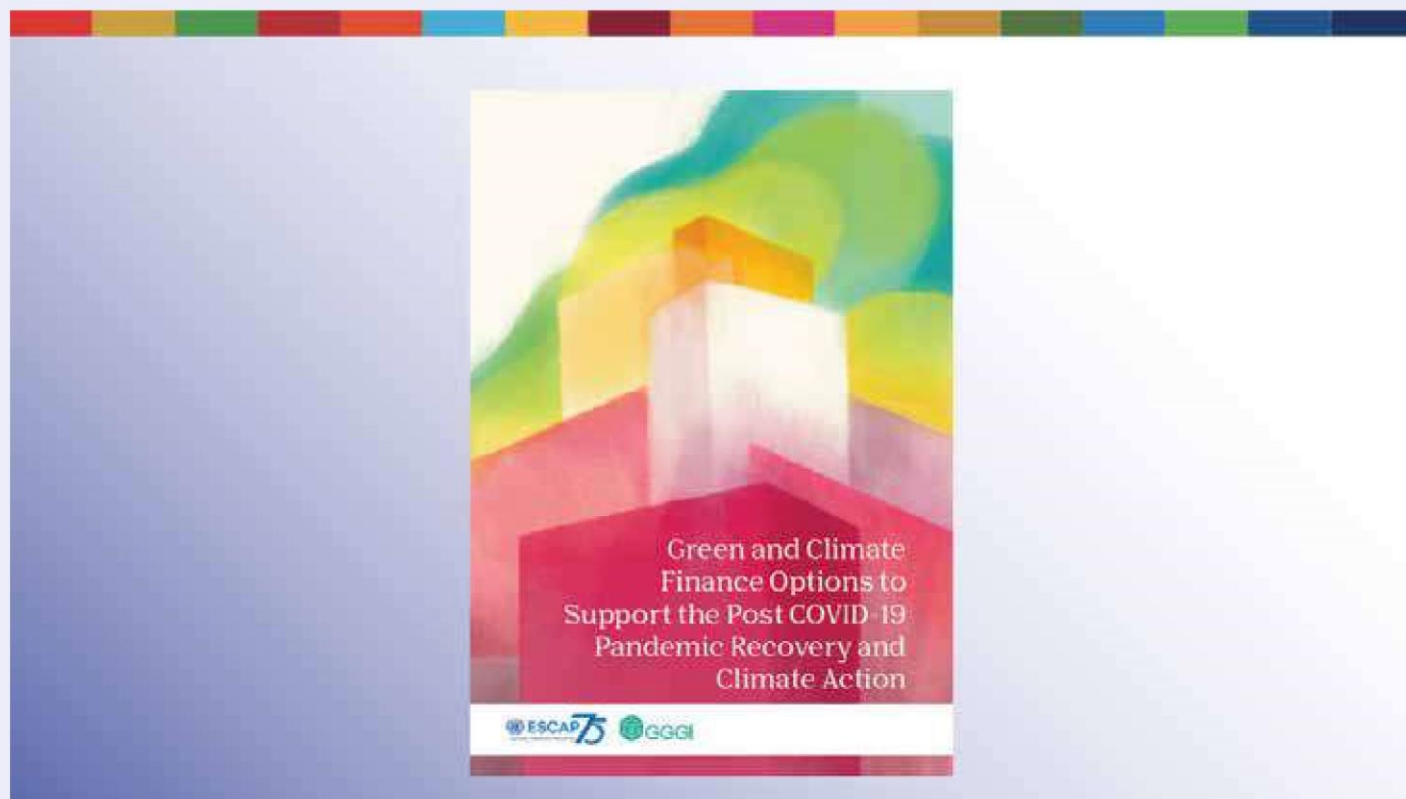
Commodore Nitin Kapoor, Deputy Commandant Naval War College, welcomed the participants through a welcome address post while the symposium was formally inaugurated by Rear Admiral S Venkat Raman, Commandant Naval War College, who also delivered the keynote address. In his closing address, Commodore Shantanu Jha, Commodore (Foreign Cooperation), thanked all member countries for their contribution during the symposium.

With the Indian Ocean becoming the focus of the 21st-century strategic landscape, the symposium played "a constructive role in bringing together the stakeholders who have a role in evolving strategies, policies and implementation mechanisms

on the issues of common interest in the maritime domain. In addition to presenting cooperative strategies for enhancing interoperability among partner maritime agencies, the event provided

a forum for the articulation of views on the crucial maritime issues, followed by theme-based discussions", the Defence Ministry said.

ESCAP and GGGI Launch Publication Aimed at Mobilizing Climate Finance to Achieve Net-Zero



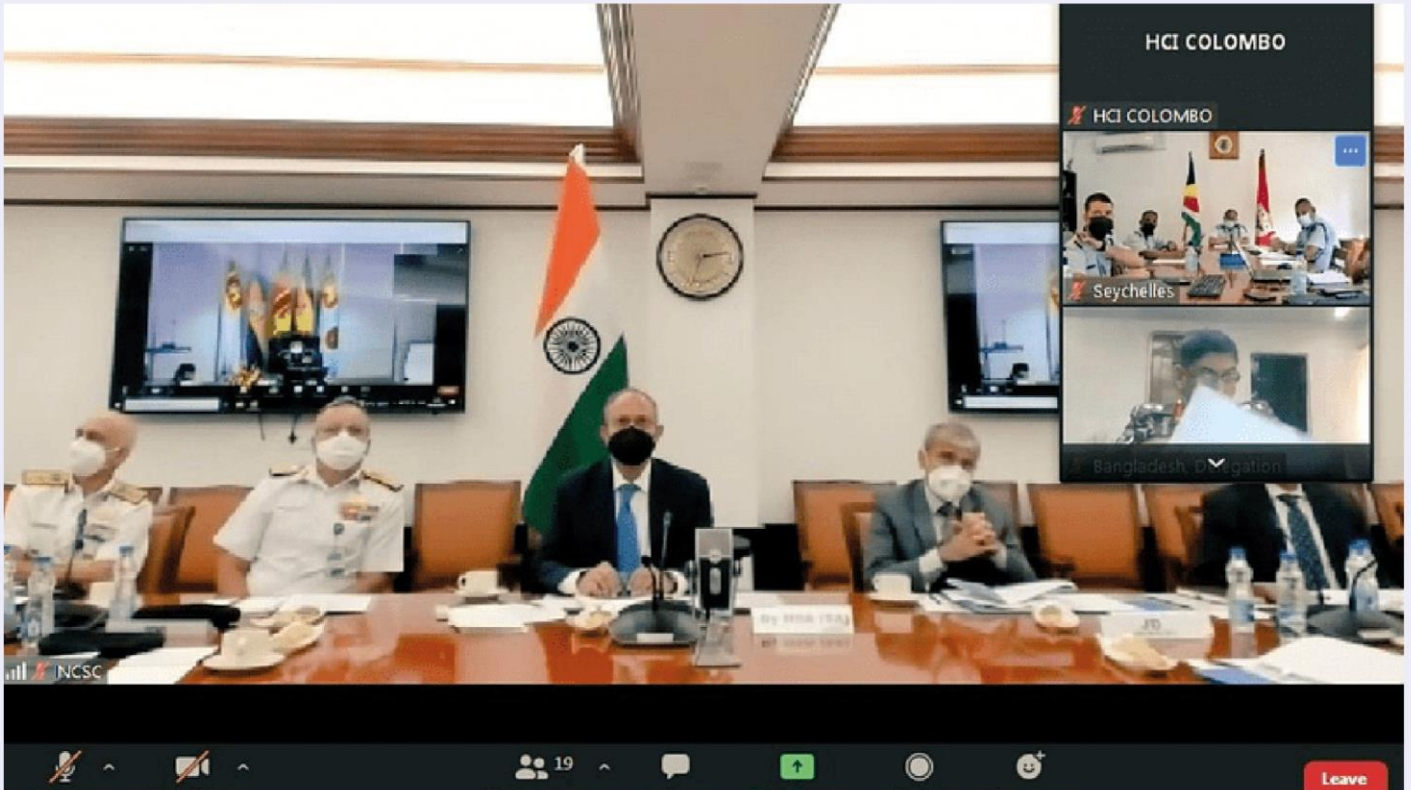
Recognising the urgent need to increase the flow of investment into developing countries and emerging markets to meet the targets set in the Paris Agreement, the first of ESCAP-GGGI's joint endeavours, is the launch of the publication Green and Climate Finance Options to Support the Post COVID-19 Pandemic Recovery and Climate Action.

ESCAP and GGGI will continue to work with Asia-Pacific countries and the private sector to work towards a carbon-neutral future. In doing so, they are collaborating on country-level projects in the Asia-Pacific region to support climate finance policies, green bonds, funds and facilities that support governments in meeting their NDCs.

India, Sri Lanka, Maldives Meet Identifies Terrorism, Trafficking Among 4 Areas of Concern

Terrorism and radicalisation, marine safety and security, trafficking and organised crime, and cyber security were identified as the "four pillars" of cooperation in a trilateral security meeting held between Sri Lanka, India and Maldives. The first Deputy National Security Adviser level meeting of the Colombo Security Conclave was held virtually on 4 August 2021 in Sri Lanka. "The meeting was marked by the convergence of views on common security threats and was held in a warm, positive and forward-looking manner. It discussed specific

proposals for cooperation and each of these pillars, including holding regular interaction, joint exercises, capacity building and training activities. All participants stressed the vital role of cooperation and coordination in dealing with contemporary security challenges in the region, as well as capacity and capability enhancement among themselves, in keeping with the spirit of regional cooperation. The security conclave was held under the Chairmanship of General LHSC Silva, Chief of Defence Staff and Commander of Army of Sri Lanka. India was



represented by Pankaj Saran, Deputy NSA, while Aishath Nooshin Waheed, Secretary, NSA's Office at the President's Office of Malpes, represented the Maldives. The meeting also saw Bangladesh, Mauritius and Seychelles participating as

Observers. The decision to establish Colombo Security Conclave was made in November 2020 at the NSA-level meeting of India, Lanka and Maldives to forge closer cooperation on maritime and security matters among the three

Dhaka, Colombo to Sign PTA to Improve Trade, Connectivity



Bangladesh and Sri Lanka are looking to sign a Preferential Trade Agreement (PTA) as they seek to improve trade relations and connectivity, both via air and sea. Foreign Minister AK Abdul Momen and his Sri Lankan counterpart Prof Gamini Lakshman Peiris held a meeting at the State Guest House Padma in Dhaka in this regard. Peiris visited Dhaka to attend the Council of Ministers' Meeting of the Indian Ocean Rim Association (IORA) held on 17 November 2021 in the capital.

The two ministers emphasised on expeditious conclusion of PTA and enhancing trade and commerce between the two countries, while also further strengthening air and maritime connectivity for the greater benefit of the two peoples.

Peiris at the time sought collaboration in the areas of e-commerce,

involvement in the digital sector through sharing of Bangladesh's expertise.

Momen mentioned Bangladesh's success in the medical sector and urged his Sri Lankan counterpart to import pharmaceutical products from Bangladesh.

Both the ministers noted the ongoing cooperation under IORA, maritime cooperation, maritime security, blue economy, climate change, and prevention of overexploitation of marine resources. They also pledged to explore possible collaboration between the Bangabandhu Sheikh Mujibur Rahman Maritime University of Bangladesh and the National Institute of Oceanographic Marine Sciences of Sri Lanka.

Protecting Marine Environment: Bangladesh Urges ISA Members to Abide by UN Framework



Bangladesh has urged the member states of the International Seabed Authority (ISA) to abide by the UN framework to secure the marine environment from harmful effects that may arise from Seabed activities.

On 7 December 2021, Rear Admiral (retd) Md Khurshed Alam, secretary (Maritime Affairs Unit) of the Ministry of Foreign Affairs, made the call at the 26th session of the ISA Council at Kingston, Jamaica under the Presidentship of Bangladesh in a hybrid format. In his opening remarks, Khurshed Alam highlighted the strength of ISA as an organisation in regulating

and controlling all mineral-related activities in the international seabed area for the benefit of mankind as a whole.

Michael W Lodge, secretary general of ISA highlighted the Authority's achievements and progress amid the pandemic while urging the member states to remain vigilant to ensure benefits of oceans shared by all.

The council is likely to take important decisions with regards to the status of national legislation relating to deep seabed mining, the status of contracts for exploration and related matters, drafting regulations for exploitation of mineral resources in the area.

CLIMATE CHANGE IS THE GREATEST THREAT TO HEALTH

BUT TACKLING IT IS THE BIGGEST PUBLIC HEALTH OPPORTUNITY

WHO IS AT RISK?

All populations, but some are more vulnerable than others



Children



Elderly



Those already ill



Those living in poverty

CLIMATE CHANGE RISK FACTORS FOR OUR HEALTH



UV Radiation



Animal or plant allergens



Ozone, particulate matter



Heat



Animals: vectors, reservoir animals



Environmental media: food, water

Non-communicable diseases

Communicable diseases

PHASING OUT POLLUTING FOSSIL FUELS IN FAVOUR OF CLEAN AND RENEWABLE ENERGY

Healthy energy without coal power, swift decarbonisation for health, stopping of subsidies for fossil fuels.

MORE EFFICIENT & HEALTHIER BUILDINGS

Put health at the heart for renovating and climate proofing the EU's existing building stock

CHANGED FOOD PRODUCTION AND DIETS

Decrease the risk for cardiovascular disease and cancer through reduced meat consumption, which also leads to less climate-harming emissions from agriculture.

ACTIVE TRANSPORTATION: WALKING AND CYCLING

Prioritise walking & cycling and other measures that will boost health. Diesel cars are not a healthy solution.

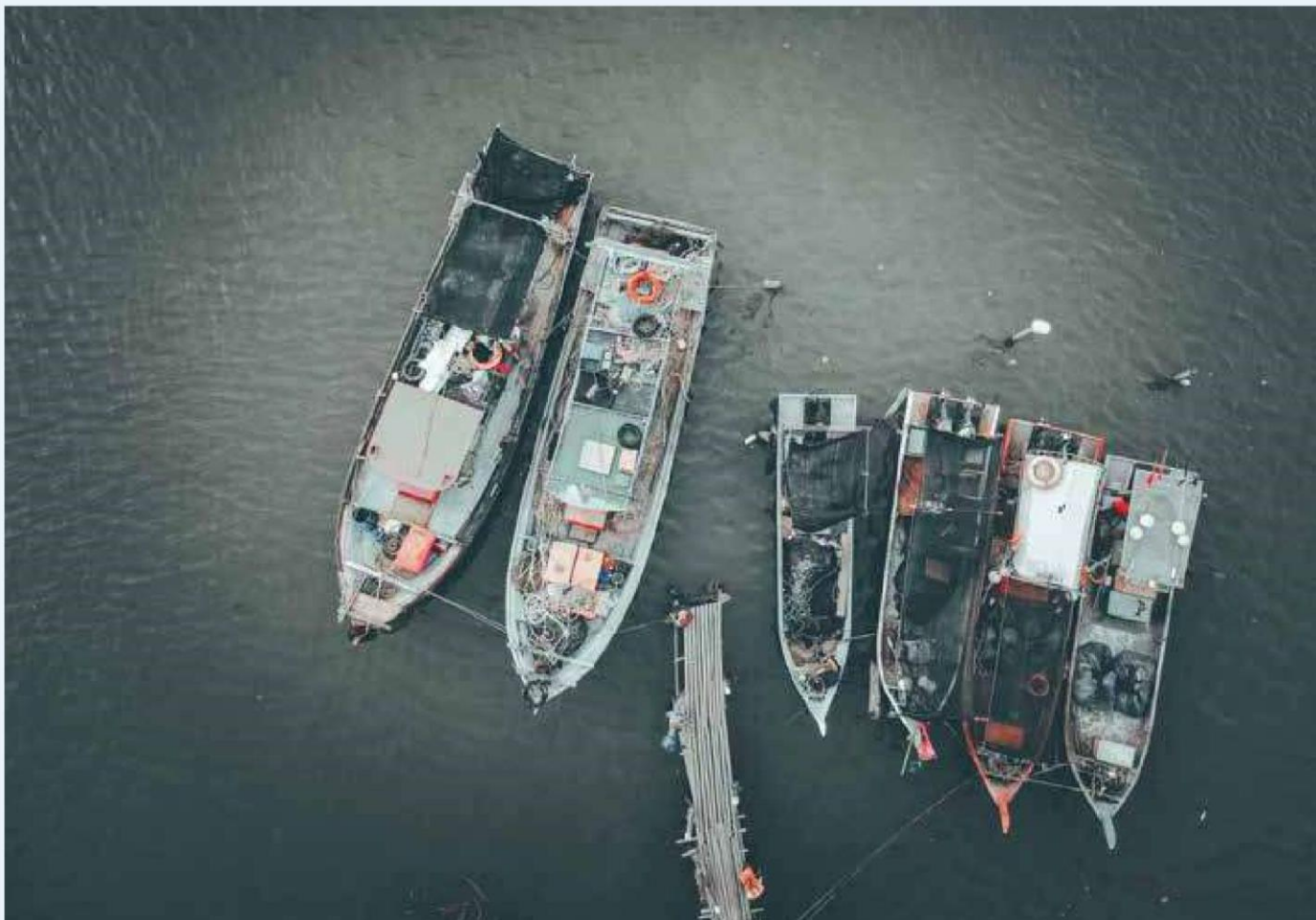
Actions from the health sector

Health sector and health decision makers have to sit at the table whenever policy proposals and measures on climate change, energy, transport, agriculture etc. are negotiated and decided. Tackling social and health inequalities should be a priority.

Health professionals should get involved and speak up about the health effects of climate change and the opportunities for mitigation.



BIMRAD Participated in Bay of Bengal Maritime Dialogue



Pathfinder Foundation and Centre for Humanitarian Dialogue (HD) jointly organised a 1.5 track 'Bay of Bengal Maritime Dialogue' on 26-27 July 2021. The focus of the virtual summit was on regional maritime cooperation for marine environmental protection, Illegal, Unreported and Unregulated (IUU) fishing and humanitarian treatment of fishermen. Luminaries and distinguished participants from littoral countries of the Bay of Bengal participated in the dialogue. They discussed a range of issues and provided new perspectives and commentaries related to regional cooperation, fishery stocks and environment. Bangladesh Institute of Maritime Research and development (BIMRAD) participated in the dialogue at the invitation of the organisers. Dr Md. Abdul Wahab, Professor of Fisheries (retd), BAU and team leader of ECOFISH II project of World Fish Bangladesh represented BIMRAD at the dialogue. He delivered a presentation on 'Opportunities and Challenges for Marine Environmental Protection in the Bay of Bengal', which explored various aspects, prospects and challenges of conservation and environmental protection mechanisms in the Bay of Bengal.

BIMRAD and SAU Jointly Organised Webinar on Marine Biodiversity of the Bay of Bengal



On 08 September 2021, Bangladesh Institute of Maritime Research and Development (BIMRAD) and Sher-E-Bangla Agricultural University (SAU) jointly organised a webinar on the theme "Marine Biodiversity of the Bay of Bengal:

Assessing the Challenges for the Economic Growth of Bangladesh.” Dr Kazi Ahsan Habib, Professor of Faculty of Fisheries, Aquaculture and Marine Science, SAU, delivered the keynote paper on the topic “Status of Our Knowledge on Ocean Biodiversity, Gaps, and Potential for their Protection and Sustainable Development”. The speaker focused on the current trends in biodiversity of the Bay of Bengal, its impacts on the national Blue Economy initiatives, its challenges and threats, mariculture opportunity for Bangladesh and present activities of the UN Decade (2021-2030) of Ocean Science for Sustainable Development.

Among three panel discussants, Elisabeth Fahrni Mansur of WCS Bangladesh talked on “Potential Ecosystem Impacts of Marine Megafauna Depletion in the Northern Bay of Bengal”, where she highlighted various contemporary issues of marine ecological function related to marine megafauna, including dolphins, porpoises, turtles, sharks, and rays.

Prof Dr Md. Abdul Wahab of World Fish Bangladesh talked on “Climate Change and Environmental Impacts on Marine Fisheries in the Bay of Bengal and Adaptation Measures”, where he highlighted the issues related to climate change impacts on fish stocks, responses-adaptation measures and research needed for its sustainable development.

Professor Sayedur Rahman Chowdhury of the University of Chittagong discussed various aspects on “Status of Marine Protected Areas of Bangladesh and Management Strategy for Conservation and Sustainable Development of Marine Biodiversity”.

Rear Admiral M Lokmanur Rahman, NBP, NGP, ndu, psc, Acting Chairman of BIMRAD, welcomed all the participants to the webinar. Dr Haseeb Md. Irfanullah moderated the session during the webinar. Captain M Minarul Hoque, (H), BCGM, psc, BN, Director General, BIMRAD, delivered the concluding remarks and a vote of thanks to the participants. Proficient maritime scholars, academicians, maritime researchers, and stakeholders participated in the webinar and exchanged views and thoughtful opinions.

BIMRAD Participated in NOTC Training Workshop on MSP Technology

A seven-day online training workshop on “Marine Spatial Planning (MSP) Technology” was organised by NOTC, China, from 6-13 September 2021. Three researchers from BIMRAD participated in the training session. A good number of participants (officials, researchers, experts in marine spatial planning related fields) from various countries took part in the workshop.

The programme was inaugurated by the Deputy Director of International Programme Division of International Cooperation Department, MNR, People’s Republic of China.



The whole session was covered by 13 lectures delivered by 15 eminent professionals and experts.

Lectures included the following topics:

1. China’s Sea Area Use Management Development and Institutional System
2. Integrated Coastal Management (ICM) from concept to concrete in China: the role of Marine Spatial Planning
3. China’s Marine Spatial Planning System and Progress
4. Coastline Ecological System Restoration Approaches and Practices
5. Ocean Observation Meeting the Challenges of Global Climate Change
6. Marine Renewable Energy Technology Development Progress
7. An Introduction to Chinese Language and Culture
8. Harmful Algal Bloom and Microalgal Resources
9. MPAs and Marine Ecological Redlining in China
10. Marine Spatial Planning: Theory and Practice
11. Development of Coastal Zone Planning in China
12. Marine Environment Forecasting Technology and Application
13. Application of Spatial Data Analysis in China’s Land and Marine Spatial Planning

MSP is a highly required action plan for any ocean governance, and BIMRAD is actively focused on such maritime activities.

A Webinar on Geomorphological Features of the Bangladesh Delta

A webinar on “Geomorphological Features of The Bangladesh Delta: Challenges for Efficient Water Management” was organised by Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh and Nuffic Netherlands on 28 September 2021. The welcome address was delivered by the



Vice-Chancellor of the University Rear Admiral M Khaled Iqbal (retd), Professor Dr. Dano Roelvink and Dr. MICK Van Der Wegen from IHE Delft, Netherlands and Dr. G M Tarekul Islam from BUET and Dr. M. G. Mostofa Amin from Bangladesh Agricultural University delivered their valuable papers during the webinar.

Researchers from BIMRAD, BSMRMU faculty and students along with delegates from other universities and organizations attended the webinar online.

BIMRAD Participated in the International Webinar on Climate Change Mitigation



A webinar on “Pre-COP26 on Role of the Ocean in Climate Change Mitigation and Adaptation: What Countries Must Address in COP26 Negotiations” was organised jointly by the National Maritime Foundation of India, The Ocean Foundation of USA, and The Climate Platform of France on 07 October 2021. Researchers from BIMRAD participated in the session. The webinar drew a high response from both home and abroad, including officials, scholars, and professionals in related fields. NMF was the host of the webinar. The panel of webinar agreed that all participant counties must address issues related to climate fair shares, climate ambition, climate finance, loss and damage and carbon markets.

Participation in Indo-Pacific Regional Dialogue 2021



Indo-Pacific Regional Dialogue 2021 on the theme “Evolution in Maritime Strategy during the 21st Century: Imperatives, Challenges, and Way-Ahead” was organized by National Maritime Foundation (NMF), India, from 27 to 29 October 2021. Apart from a short opening and closing session, there were eight panels in the International Conference.

Rear Admiral M Lokmanur Rahman, NBP, NGP, ndu, psc, former Acting Chairman of BIMRAD, moderated panel four on the theme: “Cooperative Maritime Domain Awareness (MDA) Strategies within the Indo-Pacific”. This session was held on 28 October 2021, from 1405 h to 1700 h (BST), and was highly interactive.

In the opening remarks the moderator mentioned, ‘Ensuring freedom of navigation through the waters of the Indo-Pacific is increasingly being seen as a global imperative, with regional MDA being a key facilitator. Several nations have expressed their commitment to a free, open, prosperous, and rules-based order in the region through participative and collaborative approaches. Unsurprisingly, therefore, the region has witnessed an upsurge in MDA hubs and information-sharing centres. While on the one hand, this presents exciting opportunities for collaborations, on the other, the proliferation of such centres also brings attendant challenges.’

Later, the welcome address was delivered by Admiral Ravindra C WIJEGUNARATNE from Sri Lanka Armed Forces. Mr Martin Cauchi-INGLOTT from EU CRIMARIO II Project (South Asia, South East Asia, & Indian Ocean Regions), Rear Admiral KM RAMAKRISHNAN from Indian Navy, Mr Raj MOHABEER from General Secretariat, Indian Ocean Commission (IOC), Dr Navi RAMGOLAM from Regional Maritime Information Fusion Centre (RMIFC) and Lt Col LESTER Yong Jia Rong from Information Fusion Centre, Singapore delivered their opinion as panellist during the dialogue.

More than 200 participants (officials, researchers, experts and professionals) from various countries attended the session.

A Webinar on “Blue Economy Related Database Management: Prospects & Challenges”



A webinar on “Blue Economy Related Database Management: Prospects & Challenges” was organized jointly by Blue Economy Cell, Energy and Mineral Resources Division, Ministry of Power Energy and Mineral Resources on Wednesday, 10 November 2021, at 11.00 am through online (Zoom Video Communications) platform.

S. M. Zakir Hossain, Additional Secretary, EMRD welcomed the guests and delivered his welcome speech. Researchers from BIMRAD participated in the session. Many participants (Govt. & Non-Govt. officials, researchers, experts on related fields) from different national sectors participated in the webinar. The webinar was very much fruitful and interactive with the voluntary contribution of the participants.

Participation in 2021 Seminar on “Marine Spatial Planning and Blue Economic Development for BRI Countries and Island Countries”



2021 Seminar on “Marine Spatial Planning and Blue Economic Development for BRI Countries and Island Countries” was

sponsored by China Oceanic Development Foundation and organized by Fujian Institute of Oceanography from 11 November 2021 to 24 November 2021, in Xiamen, China.

Total seven (7) participants from Bangladesh got the opportunity to participate in the seminar. Afifat Khanam Ritika, Research Officer, Bangladesh Institute of Maritime Research and Development (BIMRAD) was nominated to participate in the seminar.

Total 15 lectures from the participants of 15 countries were delivered to introduce national marine economic development status and planning, marine spatial planning development situation, marine fishery international cooperation status especially the cooperation with China, management mode and cooperation needs, etc. The sessions were organized with lectures, discussion and evaluation sections. On successful completion of the sessions total 74 participants were awarded with certificate.

Participation in Workshop on “Which Blue Economy Priorities for the Bay of Bengal?”



A workshop on “WHICH BLUE ECONOMY PRIORITIES FOR THE BAY OF BENGAL?” was jointly organized by The Bridge Tanka and French Development Agency (AFD) on 26 November 2021.

The workshop aimed at to giving a floor to administrations and actors of the field from Bangladesh, India and Sri Lanka on how they perceive, adapt to and engage with the physical and socio-economic impacts of climate change on the fishery resource and coastal preservation and flagging national priorities and needs for action in socio-economic projects, and possibly pre-identify opportunities of bilateral support.

About more than 60 participants (officials, researchers, experts in marine spatial planning related fields) from different countries took part in that session.

Afifat Khanam Ritika, Research Officer, Bangladesh Institute of Maritime Research and Development (BIMRAD) participated as a speaker of Panel 2 and shared her views in the workshop.

Participation in Seminar on “Inspired by Bangabandhu’s Vision of Regional & Global Peace: Envisaging Regional Peace & Cooperation in the Bay of Bengal”



A seminar on “Bangladesh Inspired by Bangabandhu’s vision of Regional & Global Peace: Envisaging Regional Peace & Cooperation in the Bay of Bengal” was jointly organized by Centre for Bay of Bengal Studies (CBoBS), IUB and Ministry of Foreign Affairs on 30 November 2021. Mr. Md. Shahrar Alam, MP, State Minister, Ministry of Foreign Affairs attended the seminar as chief guest. Ambassador (Retd) Mr. Tariq A Karim moderated the entire program.

Captain M Minarul Hoque, (H), BCGM, psc, BN, Director General, BIMRAD took part as one of the speakers. In his speech he said, “Bangabandhu’s approach was integral to his vision to achieve his international strategies for the welfare of his people as well the rest of the world. Given the limited time available to him, he laid the foundation of international strategy for our emerging country. For more than fifty years, Bangabandhu’s vision and thoughts have been shaping Bangladesh’s foreign policy. His initiatives in promoting regional peace have been materialized by becoming active members of SAARC, IORA, BIMSTEC and other international alliances.”

He also mentioned, “The united and coordinated efforts of the people, which were identified by Bangabandhu as a force, will be further strengthened under the bold leadership of Bangabandhu’s daughter, Prime Minister Sheikh Hasina. So long as Bangabandhu’s torchbearers are at the forefront, Bangladesh will march forward towards progress. Together we will be able to build Bangabandhu’s dream of Sonar Bangla.”

Apart from him, Professor Dr. Tanweer Hasan and Mr. A. Matin Chowdhury from IUB delivered their welcome remarks. Dr. Gowher Rizvi, Adviser to Hon’ble Prime Minister of Bangladesh and Dr. Atsushi Sunami, President, The Sasakawa Peace Foundation, Japan participated in the seminar

through their recorded voice messages. Dr. Emadul Islam from IUB presented his Keynote paper. Professor Dr. Imtiaz Hussain of IUB and Amb Mashfee binte Shams, Secretary (East), Ministry of Foreign Affairs also presented their remarks. The seminar was closed by giving vote of thanks by Professor Niaz Ahmed Khan of IUB.

Researchers from BIMRAD, IUB faculty and students along with national and international delegates from different countries and organizations attended the seminar.

Participation in Workshop on “Maritime Domain Awareness and Interoperability”



An online workshop on “Maritime Domain Awareness and Interoperability” was organized jointly by India - EU on December 8, 2021.

HE Mr Ugo Astuto, EU Ambassador to India and Vice Admiral Ravneet Singh, Deputy Chief of Naval Staff, Indian Navy delivered opening remarks. This workshop re-visited existing MDA frameworks and initiatives, and solicits related views from various global/international organizations, to better understand how gaps can be bridged, to foster a safer and more secure IOR. A good number of participants (Govt. & Non-Govt. officials, researchers, experts on related fields) from different national and international sectors participated in the session. Researchers from BIMRAD also participated in the workshop.

BIMRAD and KU Jointly Organize a Webinar on “Marine Pollution: A Growing Peril to Marine and Coastal Zone of Bangladesh”

A webinar on the theme “Marine Pollution: A Growing Peril to Marine and Coastal Zone of Bangladesh” was organized jointly by Bangladesh Institute of Maritime Research and Development (BIMRAD) and Fisheries & Marine Resources Technology Discipline, Khulna University (KU) on December 09, 2021 at 1100-1240 (BST).

Rear Admiral M Mahub-ul Islam, BSP, ndc, psc, BN, Acting Chairman, BIMRAD chaired the session. Ambassador (Retd) Tariq A. Karim, Director, CBoBS, IUB moderate the session.



The webinar was designed with one key note presentation and three panel discussions.

Dr. Muhammad Abdur Rouf, Professor and Head, Fisheries & Marine Resource Technology Discipline, Khulna University delivered the keynote paper on the topic “Marine Pollution: An emerging concern for Bangladesh”. He mainly discussed on marine pollution, its sources, different industries contribution, effects upon the environment and action for Bangladesh.

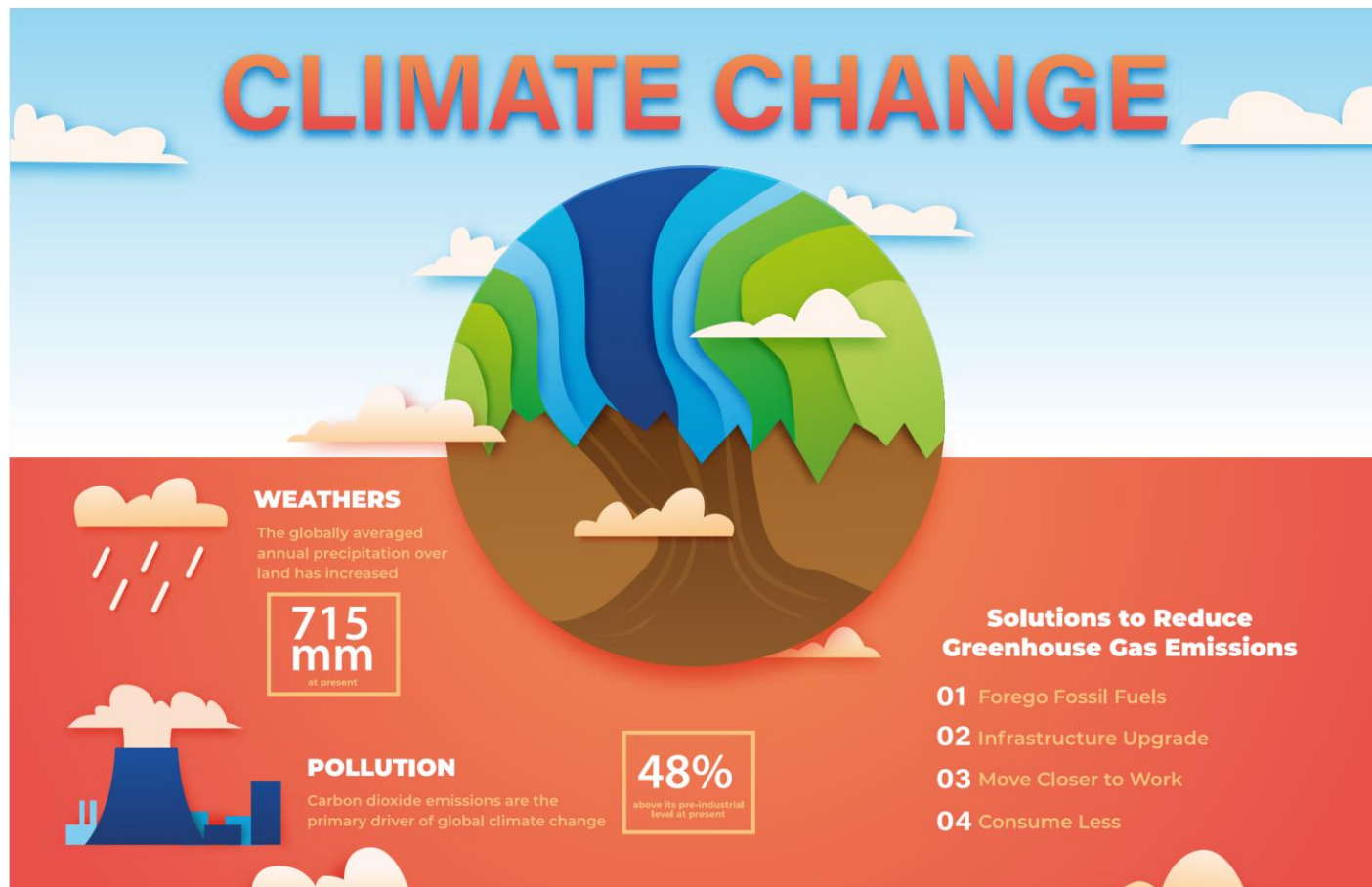
Among three panel discussants, Commodore Syed Ariful Islam, (TAS), ndc, psc, BN (retd), (Ex DG Shipping) talked on “Pollution by Shipping Industry in the Marine and Coastal

Zone of Bangladesh”, and focused on the present scenario of pollutants/emissions, casualties and possible ways to control the rapid growing shipping industry in the coastal area of the Northern Bay of Bengal.

Dr. Md. Golam Sarower, Professor, Fisheries & Marine Resource Technology Discipline, Khulna University talked on “Evaluation of trace element and heavy metal pollution in the Bay of Bengal”, where he highlighted the sources of trace elements and heavy metal pollution, the ecological and public health risks of metal contamination and possible ways to use the effluents in a controlled manner to protect the Sea.

Dr. Md. Wahidul Alam, Associate Professor, Department of Oceanography, University of Chittagong delivered his speech on “Marine Pollution Prevention in Bangladesh: A Way Forward for Implement Comprehensive National Legal Framework” and described about the comprehensive policy framework for marine pollution control in Bangladesh.

Proficient maritime scholars, academicians, maritime researchers, and stakeholders participated in the webinar and exchanged views and thoughtful opinions. At the end, Captain M Minarul Hoque (H), BCGM, psc, BN, Director General, BIMRAD delivered his concluding remarks and vote of thanks to the participants.



খুশিলি রাবার ফ্যাক্টরি

রাবার যন্ত্রাংশ তৈরির বিশুদ্ধ প্রতিষ্ঠান



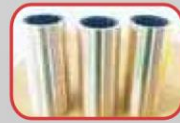
মান সম্মত রাবার যন্ত্রাংশ সরবরাহের মাধ্যমে কাস্টমারের অন্তর্গত অর্জনই আমাদের একমাত্র লক্ষ্য

- ★ স্যাম্পল অথবা ড্রইং প্রাপ্তি সাপেক্ষে যে কোন ধরনের রাবার স্পেসার্স তৈরী করা হয়।
- ★ উন্নত কাঁচামাল ব্যবহার করে আন্তর্জাতিক মানের বিদেশী মেশিনে প্রতিটি রাবার স্পেসার্স তৈরী করা হয়।
- ★ আধুনিক ল্যাবরেটরীতে প্রতিটি রাবার স্পেসার্স নিরীক্ষার মাধ্যমে মান নিয়ন্ত্রণ করা হয়।
- ★ প্রতিটি রাবার আইটেম কোয়ালিটি কন্ট্রোল সেল দ্বারা **Qualified** হওয়া সাপেক্ষে সরবরাহ করা হয়।
- ★ আমাদের কার্যক্রম আন্তর্জাতিক ক্লাসিফিকেশন সোসাইটি **Bureau Veritas** দ্বারা সনদ প্রাপ্ত।



আমাদের প্রোডাক্ট সম্ভারঃ

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18 Months After the Cyclone Amphan The Tears of Coastal People Have Not Yet Dried Up

Rafiqul Islam Montu



'I used to have everything. But now I'm left with nothing. Our extended family owned a great amount of land and property. Natural disasters have been claiming our lives regularly. The cyclone of 1988 wreaked havoc on the area. Then came a slew of other cyclones.'

Suja Uddin Gazi, 72, uttered his sentiments. For the last one and a half years, his family has been living on the riverbank. Six members of his family live in a cramped room with a leaf fence and a thatched shed, despite the fact that a year back, he and his family resided in a lovely big house with plenty of space. The family used to meet their daily needs by growing crops on their own farm. Suja Uddin's house was swept away by Cyclone Amphan, and his family has been living by the riverside since the night of the cyclone on 20 May 2020.

Sreepur village is located in the Pratapnagar union of the Asashuni Upazila of the Satkhira district located on Bangladesh's southwest coast. The embankment was broken on the night of the cyclone due to high tidal pressure, allowing water to infiltrate beyond the riverbank. On that night of the

cyclone, Suja Uddin Gazi and the rest of the villagers took refuge beside the riverbank. For the past 18 months, they have been in dire straits in every aspect, and their lives are at stake. Many people have fled the neighbourhood searching for work and a better life. The worst-affected areas are Koyra Upazila of Khulna District and Asashuni and Shyamnagar Upazilas of Satkhira District. Different villages in these Upazilas have experienced a severe crisis due to cyclones.

Crying Never Stopped

Cyclone Amphan has displaced many people along Bangladesh's southwest coast. Many of them have departed the area, along with their families. I've met a lot of these displaced families. I conducted interviews with some of them.

Tripti Das, a resident of Rishipara in the Pratapnagar Union under Satkhira District, had her house, but presently underwater due to cyclone for almost ten months. She and her family eventually had to leave her neighbourhood. Her recent residence is at Dighraj village, Dakop Upazila of Khulna District.

Cyclone Amphan has also changed people's lives. Faruk Hossain, a local farmer, is now working as a van driver in Khulna city. The village market's prominent vendors are now selling things inside the villages like hawkers. Nur Hossain, a shrimp farmer, is now a boatman. Even before the cyclone Amphan hit, Mafuar Rahman had everything. Now, he resides on someone else's property.



The cyclone has affected Asashuni Upazila alongwith four other Upazilas on Bangladesh's west coast. Shyamnagar Upazila in Satkhira District and Koyra, Dakop and Paikgachha Upazilas in Khulna District were also severely hit by Cyclone Amphan. I spoke to several villagers of those areas, and each of them has passed a challenging life year since Cyclone Amphan hit. Approximately one million people in these five Upazilas were affected in various ways. According to local union council sources, more than three lac individuals have not returned to their houses yet. Many of the families who were impacted due to cyclones have relocated.

Hopefully, when the floodwater will be receding, some people will be able to return home. However, a significant portion will never be able to return home as they have changed their professions. More than 2,000 people evacuated the area after Cyclone Aila in 2009, according to Shamsur Rahman, chairman of Dakkhin Bedkashi Union Parishad in Koyra Upazila. Even after six months of cyclone Amphan, many people have left their houses. A considerable percentage of them will never return.



Adopting New Profession

Natural calamities, such as cyclone Amphan, have prompted many people in the southwest to shift their careers. A villager who used to be a farmer is now a city van driver or day labourer. Many people are striving to make a living by boating or joining the fishing industry. The once-large fishermen have now shrunk to the size of small fishers. Natural calamities are destroying people's lives in this area. People are running here-and-there for their livelihood. Some are borrowing money from non-governmental organizations (NGOs), while others are borrowing from moneylenders. As a result, their lives are becoming increasingly complex.

Nur Islam, 45, of Kurikahunia village in Pratapnagar union of Asashuni Upazila, used to be a shrimp farmer but now makes a living by boating. Collecting three meals a day for family members has become difficult for him. The last resource is to sell the cows and return the lease money to the landowner of the shrimp farm. It will no longer be possible for him to cultivate shrimp.

In the same village, Mafuar Rahman, 35, also used to be a shrimp farmer. On three bighas of land, he started farming. Presently water is being reduced, but the ground is still flooded. Cyclone Amphan has flooded his home as well. No farmer in the Pratapnagar Union has been able to get ready for shrimp farming this year.

The Chairman of Koira Sadar Union Parishad, stated that the unplanned and poorly constructed embankment is the main root cause of Amphan's crisis

A Brutal Struggle for Survival

How do people manage to get through this year after so many crises? This was the question I had been asking to many Cyclone Amphan impacted people. Many people stated that they had sold the property in response to my query. Almost everyone has taken loans from various sources. Most of the families now have higher debt burdens. People don't have money to fight against any new natural disaster. It is impossible for them to build new dwellings every year. Almost all the families are in a state of emergency. Even people can't afford to spend money to repair their accommodations and to buy other



necessities. Natural disasters are raising the 'hidden climate costs' for their family.

The NGO Uttaran had a study on Upazila's impacted residents and confirmed their coping mechanisms. There are seven different techniques they are adopting. Reduced daily meals, borrowing and begging, reduced medical expenses, asset sales, displacement, child labour, and relief assistance are among them. Their survey revealed this picture after the cyclone Amphan hit in May 2020.

A study done in December of the same year revealed a different picture. In the poll, the response rate was 100%. According to the study, in May, 74% of the people in the affected area had reduced their food intake; 45% of people were borrowing and begging; however, the rate had risen to 67% by December. In May, 83% of respondents said they planned to cut medical costs. However, by December, the percentage had risen to 98%. In May, 39% of respondents claimed they had sold assets, but by December 2020, that number had risen to 73%. 22% of people were displaced in May, reduced to 17% in December. In May, the percentage of children working was 59%, reduced to

54% in December. In May, 94% of people used relief to pay for their families, reduced to 79% in December.

Demand for Strong Embankment

What caused such a conundrum in this area following Cyclone Amphan? In response to this issue, the chairman of the Koira Sadar Union Parishad, Humayun Kabir, stated that the unplanned and poorly constructed embankment is the main root of the crisis in the area. This embankment, which was constructed in the 1960s, has gradually deteriorated. Previous cyclones that wreaked havoc on this shaky embankment also put the residents of this area in jeopardy. The residents of this region have been demanding a strong embankment for the last few years.

'Construct a strong embankment for us. Please work in this sector for our survival. Allow us to live and make a home for our family. Otherwise, we will have to move to another place.' said Sukumar Chandra Baulia, 65, of Hajatkhal village in Koyra Upazila.

Writer: Rafiqul Islam Montu is a Coastal Journalist.



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