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MARITIME CAMPUS

A QUARTERLY MAGAZINE OF
BANGABANDHU SHEIKH MUJIBUR RAHMAN
MARITIME UNIVERSITY, BANGLADESH

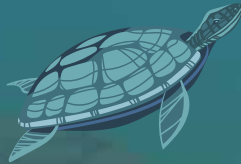
Bangabandhu, a Voice for Peace

**Necessity of Preserving
the Health of the Bay of Bengal**

50 Years of Independence
Maritime Education,
Research and Training

COVID-19
Ports Worldwide and
Chattogram Port

Colours and Nature
of the Economy

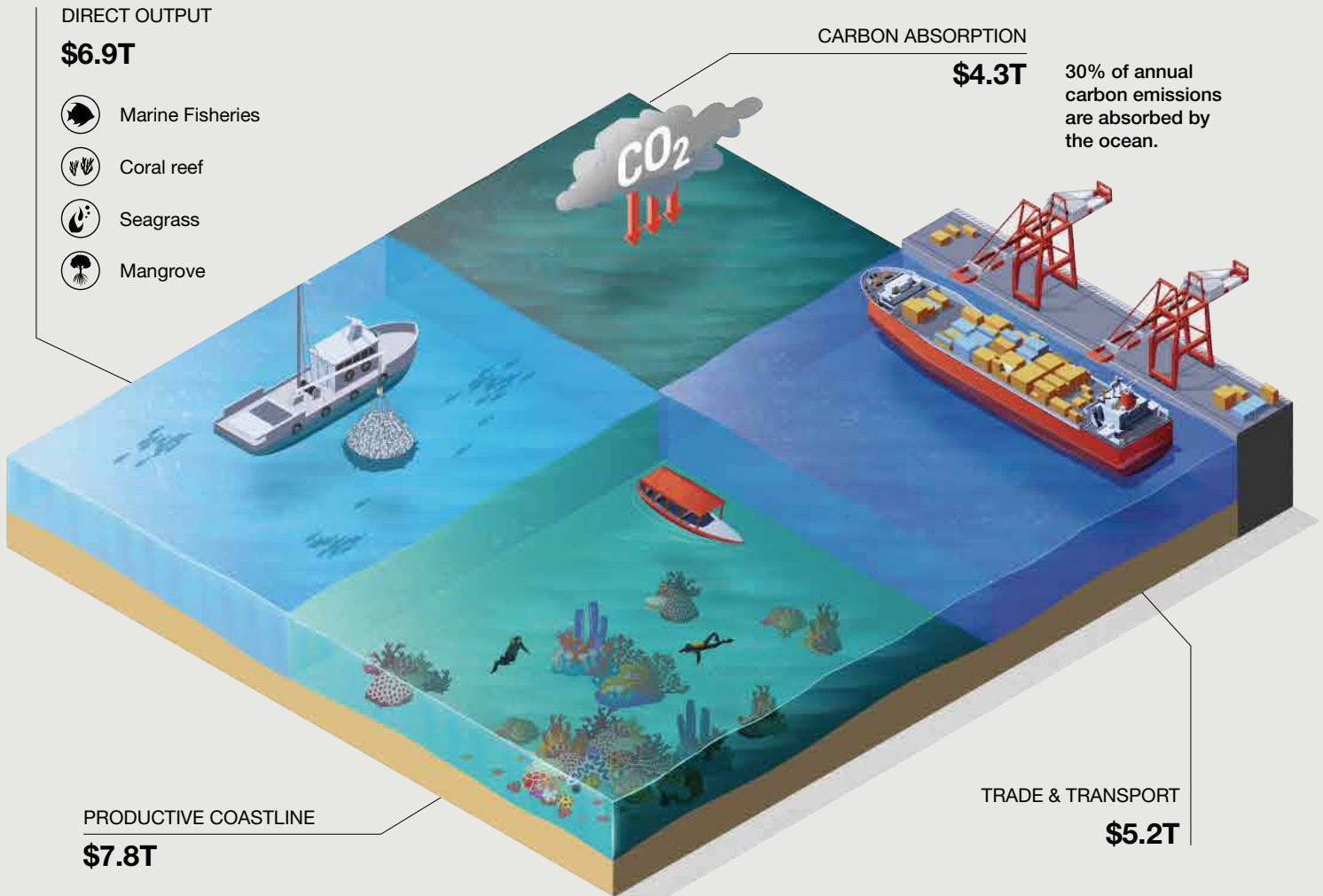


INFOGRAPHICS

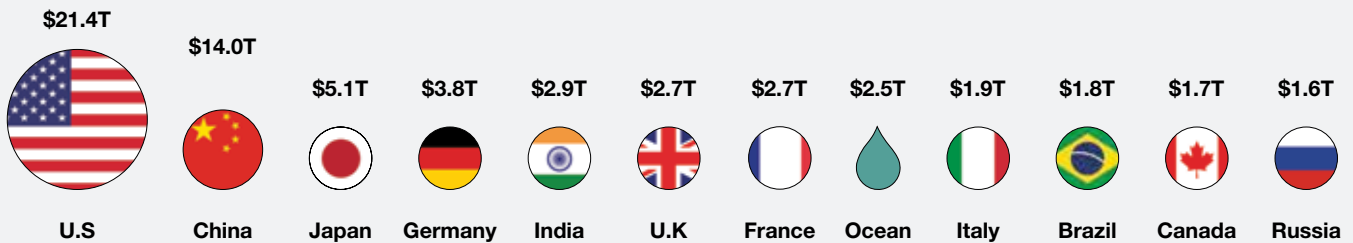
VISUALISING THE IMPACT ON OUR Ocean Economy

The 'Blue Economy' is the sustainable use of the ocean and its resources for economic development. According to the World Wildlife Fund, these combined assets are valued over \$24 trillion

Global ocean assets value



In fact, an annual gross marine product of \$2.5T-comparable to a country's gross domestic product-**makes the ocean the world's 8th largest economy.**

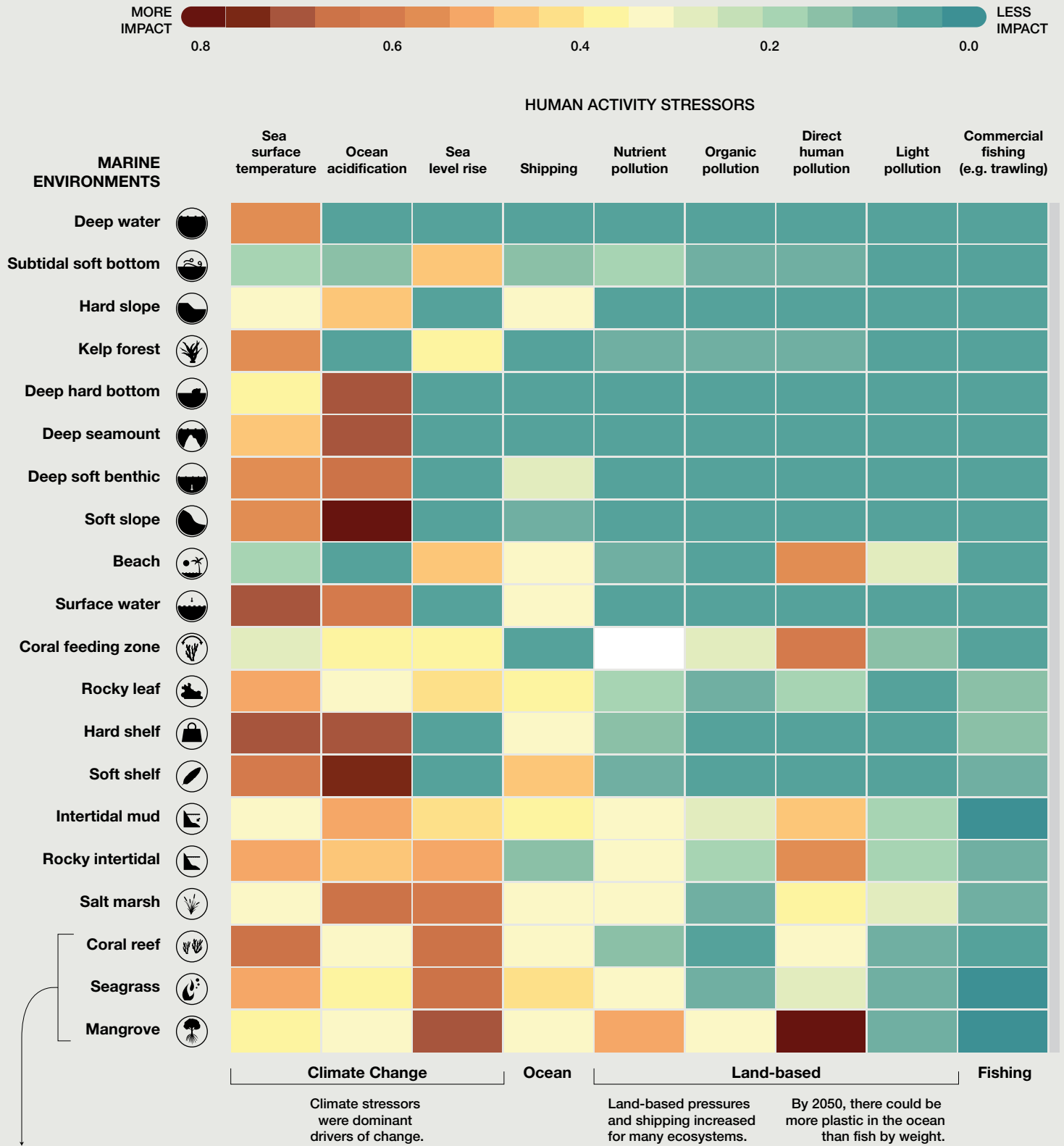


However, these vital ocean assets are under threat.

An 11-year scientific study tracked the effect of multiple human activities across different types of marine environments.

CUMULATIVE HUMAN IMPACT

by marine environment and human activity stressor (2003-2013)



Coral reefs, seagrasses and mangroves were most at risk from human stressors, experiencing the fastest increase in cumulative human impact.

At current rates of temperature rise, coral reefs will disappear by 2050.

Climate-induced declines in ocean health could cost the global economy \$428 billion annually by 2050—drastically altering our dependence on the oceans.

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Maritime Campus

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Editorial

Preserving biodiversity in the Bay of Bengal is a requisite for the Blue Economy

Since healthy oceans are crucial for the survival of human civilization, all the countries having coastline should play respective roles for preserving the biodiversity and the living habitats of the oceans. Without a healthy ocean, human beings will fail to obtain the abundant natural resources. As a maritime nation, Bangladesh has to shoulder the responsibilities in maintaining the health of ocean. The goal of our lead article is to look at why the Bay of Bengal has to be conserved and how we might protect its biodiversity and living ecosystems.

The nation is celebrating the Birth Centenary of the Father of the Nation Bangabandhu Sheikh Mujibur Rahman. To commemorate his memory and contribution for the independence of Bangladesh, Maritime Campus has been publishing dedicated articles on him. This issue of the Maritime Campus sheds lights on the struggle and sacrifice of Bangabandhu for realising the rights of the deprived and the oppressed, which is an example for the human community.

The Bay of Bengal has emerged as the most potential offshore region in Bangladesh for the development of the Blue Economy. The Bay of Bengal possesses enormous potential geo-resources those surely would contribute to the economic development of Bangladesh. Maritime Campus, however, always welcomes other point of view, even if it contradict conventional notion. The author of the article in our Academia section stated that the current global concept of climate change does not take into account coastal hazards; rather, the vulnerabilities of all atmospheric hazards to the maritime sectors are the primary challenges in achieving sustainable maritime development and Blue Economy achievement.

In our Panorama section, besides describing seven colours of economy, the author of the article recommended that to sustain the Blue Economy, policymakers and investors need to pay more attention to projects that help alleviate the quality of life for individuals, make sure better working conditions, better pay, and a higher standard of gender equality.

Additionally, the 'Campus Canvas', 'Maritime Bangladesh' and 'Around the World' sections will inform you about all the important maritime events and developments happened during the first quarter of 2021.

Finally, I would like to express my gratitude to the Chief Patron and Hon'ble Vice-Chancellor for his valuable guidance to bring this issue into light. I would also like to thank all the departments for the support they have rendered by providing information about the activities of their respective departments.

Finally, I appreciate the members of the Editorial Board for their relentless effort to publish this magazine within shortest possible time.

Thanking you

Captain A T G M Sarker, (TAS), psc, BN (retd)

Editor and Controller of Examinations

Email: editor.mc@bsmrmu.edu.bd



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LEAD STORY

Necessity of preserving the health of the Bay of Bengal



The Bay of Bengal is the largest of the earth's 66 largest marine ecosystems. The bay is the source of livelihood for millions of people, living across Bangladesh, India, Sri Lanka, Myanmar, Thailand, Maldives, Indonesia and Malaysia. This ecosystem offers a massive potential for economic development for the future of these 8 countries, hence the sustenance and preservation of this marine ecosystem is the only way forward for them to attain the potential of sustainable economic growth.

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PANORAMA

Colours and nature of the economy

The economy also has colours, not less, a total of seven colours. Notably, different scholars classified the economy in various classes according to their characteristics. Among the various types of classification, the economy has also been classified in different colours based on their individuality.

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HORIZON

50 years of independence: maritime education, research and training

BSMRMU is established to provide higher maritime education and to generate expertise in different maritime sectors through graduating and training the professionals who are envisioning for the maritime research to explore and exploit the untapped potential of the Bay of Bengal and coastal areas of Bangladesh.

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MARITIME BANGLADESH

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ACADEMIA

Sustainable maritime development and the achievement of Blue Economy under climate change fantasy in Bangladesh

Blue Economy would sustain if the resources of the sea and ocean are exploited and utilized in its best form without any natural and anthropogenic hindrance. All the atmospheric hazards such as cyclone, storm surge and the coastal flooding, are the natural threats while, sea piracy, pollution and other hazardous impact caused by anthropogenic players are the man-made threats.

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FOCUS

Bangabandhu, a voice for peace

Bangabandhu always vouched for the emancipation of peace and stability across the globe. He was a proponent of world peace. After gaining independence of Bangladesh, Bangabandhu expedited his mission to spread the message of world peace.

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COVID-19 ports worldwide and Chattogram port

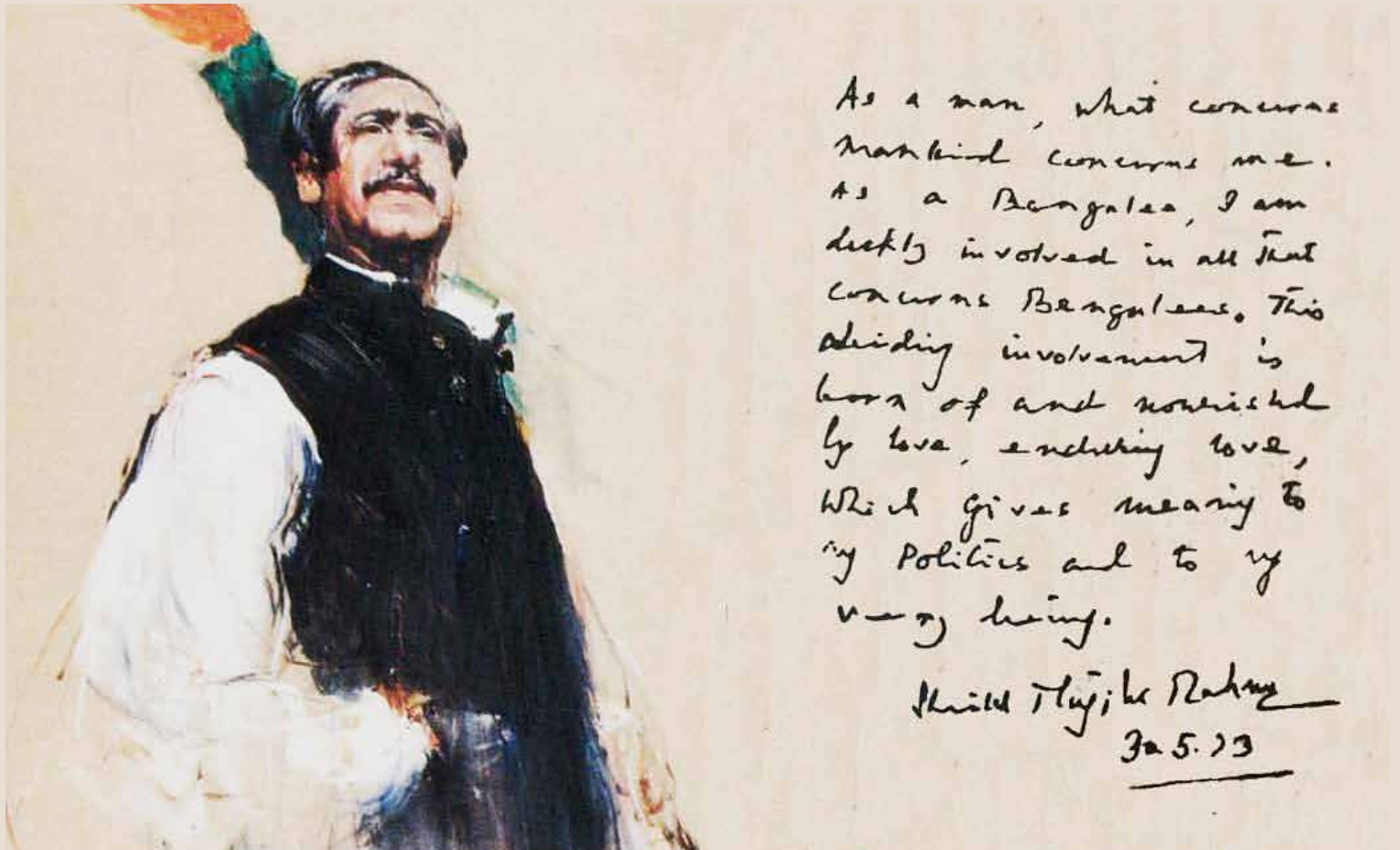
Ensuring smooth operation, port practised work shifting in a format of 'one week on and two weeks off'. Besides, Chattogram Port Authority provided safety protective materials to keep workers safe.

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PORThOLE

Graduation parade at Marine Fisheries Academy

On March 15, 2021, 165 cadets were graduated from the Marine Fisheries Academy's 39th and 40th batches. These cadets are highly trained for proper extraction, conservation, and management of marine fishery resources of Bangladesh.



Bangabandhu, a voice for peace

Maritime Campus desk

"As a man, what concerns mankind concerns me. As a Bangalee, I am deeply involved in all that concerns Bangalees. This abiding involvement is born of and nourished by love, enduring love, which gives meaning to my politics and my very being". - The Father of the Nation Bangabandhu Sheikh Mujibur Rahman, the opening lines of his book 'The Unfinished Memoirs'.

Bangabandhu's entire political career had echoed three words: Humanity, Freedom and Peace. His deeds drew inspiration from his unwavering love for the people. His lifelong goal was the welfare of the people. His love for humanity shaped his political career and encourage him into the realm of struggle. This value always reflected his political ideals: Democracy, Secularism and Socialism. From an early age, Bangabandhu was driven by the desire to lessen human sufferings and bring smiles to the faces of the sufferers. He became involved in politics when he was a school student and his political awareness drove him towards the call of the poor, oppressed and victims of colonial exploitation. In his memoirs, he vividly noted his journey towards politics, his struggle for securing the rights of his people. He joined the Pakistan movement in the hope of freeing poor

Muslim peasants from the oppression. His autobiography revealed him working in a kitchen for the people affected by the famine of 1943-44. Risking his own life, he rescued victims from Muslim and Hindu communities, who were fleeing from communal riots.

After the creation of Pakistan, we find Bangabandhu spearheading the movements for securing the rights of the Bangalee people. He had to embrace imprisonment time and again. But he always placed humanity above all. His greater struggle was to set Bangalees free from oppression and secure democratic rights for them.

He was greatly attracted by two aspects of socialism: freeing people from all sorts of exploitation and eliminating the disparity between the rich and poor. He was always supportive of global anti-colonial

and anti-imperialist struggles. In 1952, he participated in the Peace Conference of the Asian and Pacific regions held in China, where he had the opportunity of interacting with leaders and activists of peace movements from different countries. In his memoir book on China "Amar Dekha Noya Chin", he wrote, "We are willing to join the peace struggles of people from countries around the world -- Russia, USA, UK, China."

His idea of nationalism was inclusive, promoting the coexistence of various religious beliefs. He believed in secularism and fervently opposed misinterpretations of religious scriptures, which gave birth to extremism and violence in the name of religion. He fought against the communal riots of 1946, 1954 and 1964. His epic speech of 7th March 1971 reflected his anti-communal esteem, where he warned to refrain from communal violence, urging the majority community to uphold their dignity and ensure communal harmony. Through this speech Bangabandhu ecstatically presented the Bangali nationalist struggle for sovereignty in the light of the peaceful and democratic struggle for freeing up people from the shackles of oppression.

In the global arena, he was put in the league of Mahatma Gandhi and Martin Luther King, who had led all nonviolent movements to establish people's rights. The vibrant portrayal of Bangabandhu as a standard-bearer of peace, humanity and freedom inspired the global community to amplify support for the Bangladeshi cause in the 1971 war of liberation.

The struggle and sacrifice of Bangabandhu for realising the rights of the deprived and the oppressed is an example of the human community. He played an outstanding role in achieving UN membership of Bangladesh. In the 21st century, his principle and ideology are being reflected in different activities of the UN. At the world stage of the UN, he highlighted the growing necessity of empowering people, protecting human rights, ensuring socioeconomic freedom and establishing democracy and peace.

Bangabandhu's mainstay of foreign policy was the peaceful solution of all disputes. That is why he adopted the foreign policy: "Friendship to all and malice towards none." He vouched for the emancipation of peace and stability across the globe. He was a proponent of world peace. "We want peace everywhere in the world", he would remark. After gaining the independence of Bangladesh, Bangabandhu expedited his mission to spread the message of world peace.

In a message to the World Peace Congress Conference held in Moscow in 1973, he said, "I am really glad to hear the news of the world peace conference. When people in different parts of the world are struggling against imperialism, colonialism and racial discrimination and are striving for economic and political liberation, this Congress will be able to strengthen and inspire all those who are committed to world peace. If the world needs to establish permanent peace, the oppressed people of the world will have to free themselves from the exploitation."

He believed in the principles of non-alignment, peaceful coexistence, he opposed colonialism, racism and imperialism. That is why under his leadership Bangladesh extended unwavering support to the struggles in Vietnam, Cambodia, Laos, Angola, Mozambique and Guinea-Bissau. He believed that the struggle of the people for freedom cannot be stopped by the force of arms. He condemned the apartheid regime in South Africa and expressed his exasperation against the illegal occupation of Arab lands by the State of Israel. He was committed to

any effort towards world peace, disarmament and human welfare.

Bangabandhu was also concerned by the disheartening impact caused by the global arms race, which was fueled by the Cold War, while the common mass in several corners of the world were afflicted by abject poverty, hunger and sometimes armed conflict or ethnic cleansing. At the Commonwealth Summit of Heads of Government held in Ottawa on 2-3 August 1973, Bangabandhu appeared eloquent on world peace as he said: "I believe that both the developed and developing countries have an overriding common interest in survival and peace. The arms race remains a threat to mankind. Inherent in it is not only the threat of total destruction, but also colossal wastage of the earth's resources. Can we not do something to divert these resources so that they may contribute to alleviating human suffering and advancing human welfare? Can we not concert our efforts to contribute to creating an environment of peace in the world?"

He had also focused on the need for being self-reliant. He concluded his speech by placing his utmost confidence in the "indomitable power of people to achieve the impossible." He remarked, "Suffer we may, but we will defy death. The people's resolve is the ultimate force driving our battle for survival ... We will move forward through the united and coordinated efforts of the people."

In 1973, when Bangabandhu was conferred Julio Curie Peace Medal for his contribution towards world peace, Romesh Chandra, the Secretary of the Julio-Curie award, said, "Sheikh Mujib is not a just Bangabandhu, he is a world leader from today". He became a world leader after he led his countrymen towards freedom from oppression and tyranny. He believed, if peace was allowed to prevail, people will prosper. Now, the nation is marching towards progress, which is currently led by his daughter and successor, Hon'ble Prime Minister Sheikh Hasina. Under her bold leadership, the nation strives to achieve the Father of the Nation's vision for a prosperous motherland, the Sonar Bangla. At the same time, the world will not forget the voice for peace of Bangabandhu.

The Father of the Nation Bangabandhu Sheikh Mujibur Rahman is receiving the Julio-Curie Peace Prize.



Necessity of preserving the health of the Bay of Bengal

Maritime Campus desk

Ocean is a vastly unexplored part of the planet earth. It contains various natural resources and another sphere of life. It acts as a huge sink for all types of atmospheric wastes and a supplier of a principal building block of life, which is water. In fact, oceans cover two third of the surface of this whole planet. Besides being the largest pool of flora and fauna on this planet, oceans are abundant with minerals, petrochemical resources and a lifeline for world trade. Ocean system holds the largest key for a sustainable future of mankind and other living beings of this unique habitable planet and the importance of its conservation has been manifested in the Goal 14 (Life Below Water) of the declaration of Sustainable Development Goals (SDGs).

Amongst the 66 large marine ecosystems of the planet, The Bay of Bengal happens to be the biggest of them. The bay is the source of livelihood for millions of people, living across Bangladesh, India, Sri Lanka, Myanmar, Thailand, Maldives, Indonesia and Malaysia. This ecosystem offers a massive potential for economic development for the future of these 8 countries, hence the sustenance of this marine ecosystem is the only way forward for them to attain the potential of sustainable economic growth.

Global warming, dumping of industrial wastes into rivers which eventually turn up into sea, changing dynamics of sediment flow are all playing negative role on ocean health. Extreme weather conditions fuelled by climate changes pose threat to ocean habitats. Waste and pollutant dumping are affecting the oceanic ecosystems. Maritime travelling, exploration of petrochemical resources from seabed,

underwater energy harvesting systems, global submarine internet communication network are all altering the structure of ocean based ecosystems. The entrance of wastes and other foreign particles in the ecosystem of seas are threat to the biodiversity of oceans.

Since healthy oceans are crucial for the survival of human civilization, all the countries having coastline should play respective roles for preserving the biodiversity and the living habitats of the oceans. Without a healthy ocean, human beings will fail to obtain the abundant natural resources the oceans have to offer. As a maritime nation, Bangladesh has to shoulder the responsibilities in maintaining the health of ocean. The Exclusive Economic Zone of Bangladesh is almost the size of the geographical map of Bangladesh. The long term economic growth, sustainable and equitable development of Bangladesh is largely dependent on a healthy Bay of Bengal. Maintaining the health of Bay of Bengal depends principally on proper understanding of the threats to its ecosystem, which includes climate change, water pollution, flow of pollutants from industrial, agricultural and other sources through sediments in to the sea and over-exploitation of natural resources. The country also has to address the issue of plastic waste. If Bangladesh can make its portion of Bay of Bengal healthier, it will be easier to attain its SDGs.

As a rising economy, Bangladesh has to go for an effective and planned utilisation of marine resources, without endangering ecological balance of the Bay of Bengal. It can be attained by enacting a solid framework of ocean governance relying on marine and coastal



resources by maintaining marine ecological balance. Bangladesh has taken the opportunity of utilising the concept of Blue Economy after it won huge amount of maritime area through maritime boundary arbitration cases with India and Myanmar as Exclusive Economic Zones (EEZs). The country has undertaken several projects covering coastal aquaculture, exploration of economically important maritime flora, creating awareness and train personnel through workshops, seminars, training sessions, conferences and dialogues. However these projects will fail to deliver the desired outcomes if the designated ministries do not coordinate in an organised manner. Hence, it is important now for the country to foster the Blue Economy in the Bay of Bengal and develops programmes and policies and involves concerned ministries under a single platform for desired outcomes.

The Government of Bangladesh is developing Exclusive Economic Zones (EEZs) in Mongla, Bhola, Mirsarai, Sitakunda, Anwara and Maheshkhali, which may go against the Blue Economy development if their infrastructures lack proper waste and effluent management systems for saving the maritime ecosystems.

Bangladesh is a landmass whose geological origin roots to the deposition of sediments carried by the Ganges-Brahmaputra river system. It is the largest delta on the planet, which opens up at the Bay of Bengal. The 710 km long coastline of the country has created a hub for a large community of people who are directly dependent on the sea for livelihood. Coastal and marine fishery and other related fields serve as a source of income for millions of people. A major source of protein intake for the populace of Bangladesh comes from the Bay of Bengal. Shrimp farming and salt industries are solely dependent on the bay and shrimp is a major foreign currency earning item for the country. The coastal sand and sediment at the Bay of Bengal is thought to be rich with Rare-Earth Elements (REEs) which are yet to be explored. The soil structure of the seafloor of the bay has also shown prospects of oil and gas. Most importantly, the two of the major ports of Bangladesh, Mongla and Chattogram, serve as the connecting point with the world trade through sea for the country.

Despite knowing the immense potential for the country's economy, Bangladesh is yet to explore significant portion of the Bay of Bengal.

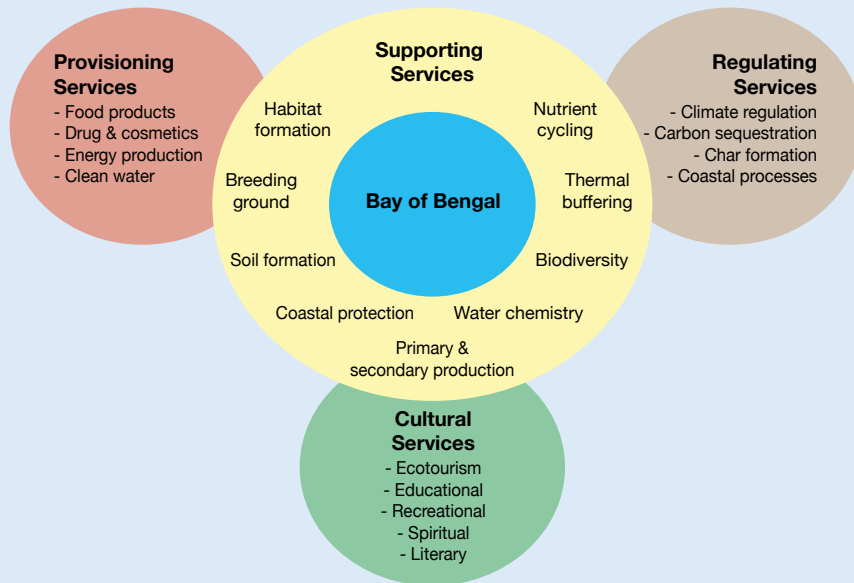
The country's fisheries industry is largely limited to fresh water based fisheries and up to shallow water fisheries of coastal region. Due to the unattainability of data on stock of deep sea fisheries and absence of survey, it is hard to measure and realise the true potential for marine fisheries sector. The country also has the room to explore avenues in seaweed sector, mariculture, cage culture of fishes, utilising energy potential of sea waves and tides and tapping the huge amount methane carried by sediment to the Bay of Bengal. The country also needs to explore the desalination of water to meet the rising fresh water demand for the growing population.

The climate of Bangladesh is largely controlled by the Bay of Bengal as the humidity, temperature, rainfall and other natural phenomena are dependent on it. It is the monsoons that cause the torrential rains, which has made the big floods over the years and has also made the land of this country fertile. Floods have detrimental impact on the country but it has a huge role in new land formation and replenishing the dwindling ground water reserves. The new lands and chars or islands emerging out in the south of the country are the outcomes of this new land formation process.

The biodiversity, flora, fauna and the climatic patterns of the long coastline and the great mangrove forests of Sundarbans, the small islands of the south are greatly regulated by the sea. Similarly, the livelihood, the lifestyles of the people living in those regions is also affected by the sea. The regions lying along the sea lines are important tourist destinations. The world's longest sea beach in Cox's Bazar, the largest mangrove forest of Sundarbans and Saint Martin's coral island are the prime spots of tourist attractions in Bangladesh. These spots offer the country the unique opportunity to develop eco-tourism through proper management and infrastructure development, security and promotions, thus building tourism facilities without disturbing the ecological balance.

Climate change has emerged as the principal threat of this ecosystem by threatening to alter pH, salinity, oxygen level, water temperature and so on. The disorientation caused by climate change will affect the fish stock, which will ultimately put stress on the food security of the population who are dependent on the bay. Sea level rise due

Map of ecosystem services at the Bay of Bengal



Source: *Journal of Ocean and Coastal Economics (Future importance of healthy oceans: Ecosystem functions and biodiversity, marine pollution, carbon sequestration, ecosystem goods and services - By Mohammad Mosharraf Hossain, University of Chattogram.)*

to climate change will also cause the loss of homes, livelihood and destruction of important infrastructures along the coastlines and land below sea level adjacent to the coastal lands. Climate change will also disturb the ecological balance and food cycle of the mangrove forest. Therefore, mitigation and adaptation activities have to be initiated to minimise the impact of climate change on the human habitat along the coast lines, their livelihood and the surrounding environment.

Another major threat for the health of ocean is pollution. The pollution can have several origins. Most notorious sources of sea pollution in Bangladesh include ship breaking, municipal wastes, and industrial wastes, chemical wastes from agricultural lands, atmospheric depositions, plastics, trans-boundary pollution, oil spills and waste disposals from marine vessels.

The open air dismantling of scrap ships in Chattogram creates pollution of sea environment through heavy metals, asbestos, oil spills and organic pollutants like dioxin. Occurrences of higher than normal level presence of metals in fishes pose harm to both the environment and human health.

Municipal, Industrial and agricultural wastes in the form of harmful chemical fertilisers and pesticides also attribute to sea pollution. Hazardous chemicals, heavy metals accompanied by organic pollutants are carried by the river systems, which lead to the severe contamination of ocean waters.

During the dry season, air gets contaminated with many airborne and reticulate matters originating from households, industrial sources, power generation units near the coastal area and marine vessels. These airborne pollutants finally end up getting deposited into the sea.

Since the Bay of Bengal Large Marine Ecosystem is adjacent to 8 different countries, it is the collective responsibility of each country to look after their respective river systems that finally end up in the Bay

of Bengal. By creating a joint pollution control and monitoring framework can address the issue of trans-boundary pollution of the Bay of Bengal. This framework will help to ensure the trans-boundary river systems being kept pollution free and also check the atmospheric deposition of pollutants into the bay beyond its natural assimilative potential.

Among these 8 countries, Indonesia, Sri Lanka, Thailand, Malaysia and Bangladesh are 5 of the top 20 contributors of unmanaged plastic wastes to global ocean. As it has been anticipated that plastic pollutants will constitute of one third of the ocean biomass of the future, it becomes essential to check the flow of unmanaged plastics in to the ocean.

The rising economies adjacent to the Bay of Bengal make it one of the busiest maritime transportation routes of the world. The future will see the movement of maritime traffic only increasing further with

new posts, expanded exploration of marine resources and growth of more industries. With the rise of such avenues of growth also opens up scope of increased pollution. Increased reliance of petroleum for powering the growth engine of economies and increasing chance of oil spills in oceans from major accidents linked with crude carriers must be considered for future scenarios. Serious thinking and action plans have to be implemented to mitigate these risks that can harm the ecosystem and biosphere of the Bay of Bengal severely.

Lack of proper infrastructures and lack of awareness often leads to the pollution associated with tourism. Often at times, tourists visiting places like Saint Martins in Bangladesh exceeds the capacity. Measures to check and control the level of pollution by the tourists are inadequate and an undeterred rise of such pollution will become a threat to the biodiversity in the future.

The conservation of biodiversity of the Bay of Bengal is critical for the sustainability of the ecosystem. Different initiatives of conservation of rare marine and coastal species like sea turtles, Hilsa fish are crucial for maintaining ecological balance. Bangladesh has already started to reap the benefits of such conservation, as Hilsa fish has contributed more than 1% of the country's GDP. Step by step initiatives for other species are also imperative for reaping full benefits of biodiversity conservation.

Coastal vegetation is also another important aspect for preserving the health of oceans. Sundarbans along the coastlines act as a natural barrier against cyclonic storms and a home to numerous animal and plant species. Bangladesh also had created a huge success story of coastal vegetation after the catastrophic cyclone of 1991, which left hundreds and thousands of people dead and destroying properties worth billions of US dollars. Sundarbans has a long tally of ecological services to offer which the UNESCO granted it a heritage status. Coastal vegetation also plays a positive role in mitigating the adverse effects of climate change. Bangladeshi government is



The river system contributing water and sediment discharge to the bay of bengal

Constant monitoring of ocean health is essential for preserving its health. A proper set of parameters should be identified and metrics should be defined which will then be able to reflect the health and dynamic changes in the ecosystem of the Bay of Bengal. The country can employ available technologies for monitoring physiochemical properties of the sea. Bio-monitoring is also essential for checking the status of the flora and fauna dwelling in the Bay of Bengal ecosystem, for tracing the level of organic and inorganic pollutants in the sea. GIS based remote sensing can be employed to study and monitor ocean health from remote geographical positions with international collaboration. However, the availability of data not always

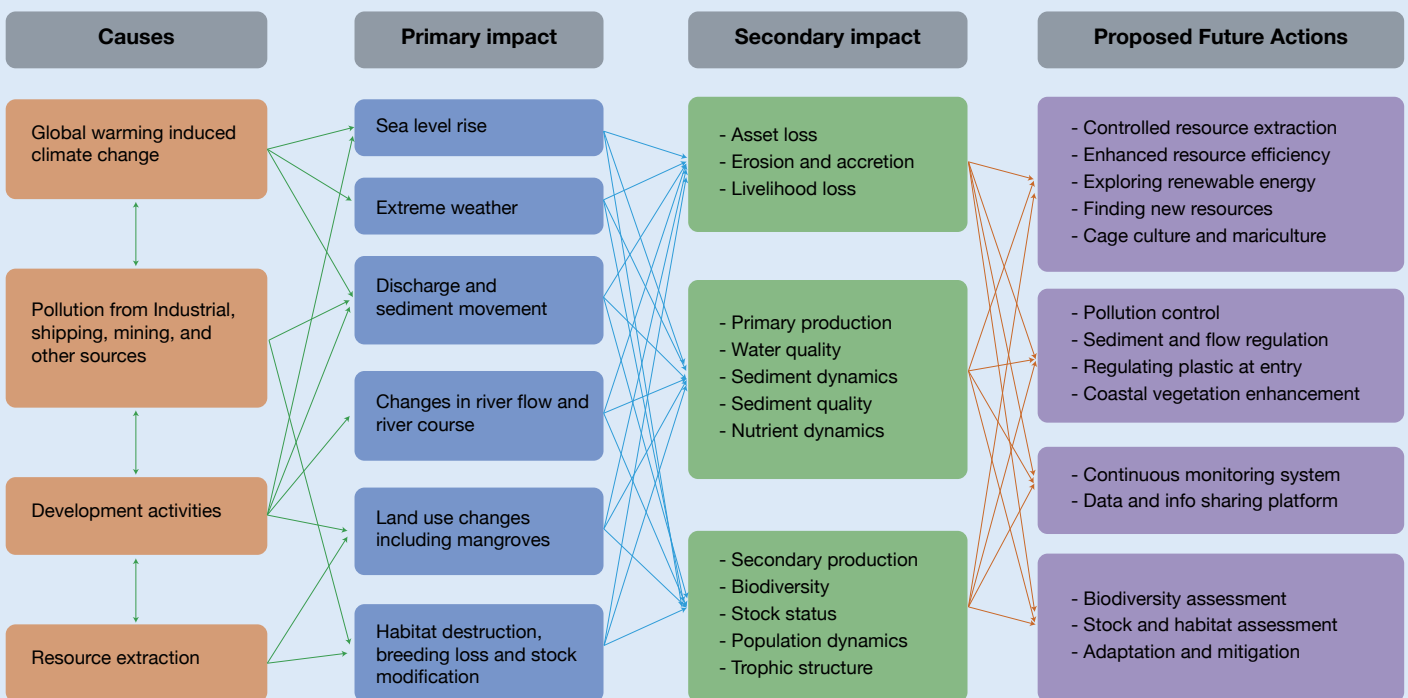
assessing the revival of Chakaria Sundarbans according to the shrimp farming model of Thailand and Vietnam, where the shrimp farming's productivity has been enhanced by mangroves.

Bangladesh should also consider enacting marine protected areas like marine reserves, sanctuary for plant and animal species, banning and controlling of catching specific fish species for specific periods with strong scientific consideration, formation of captive breeding centres, conservation and reintroduction of endangered and threatened species.

becomes easy, hence local development of such monitoring systems should be encouraged instead. The country should also join hands or collaborate with other partner countries in monitoring and maintaining the health of the Bay of Bengal.

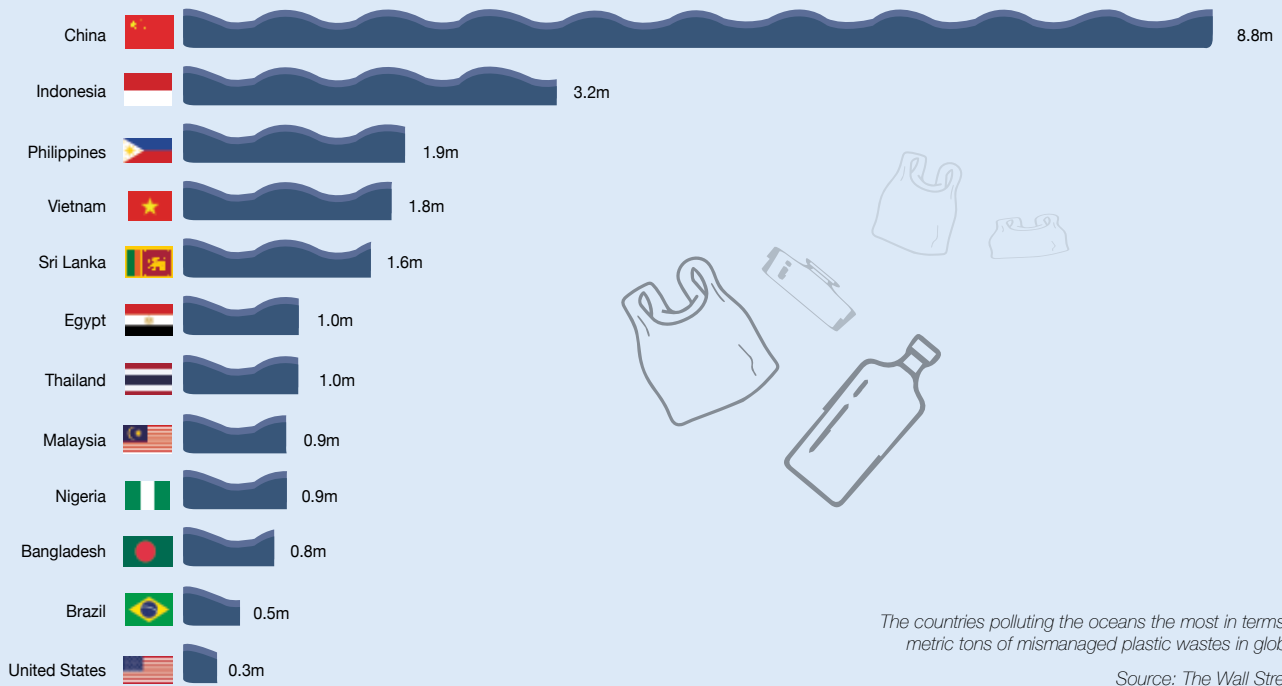
Besides relying on the acumen of scientific and academic experts, it is also important to take the help of local habitants whose livelihood are intricately related with the ecosystem of the Bay of Bengal. Local fishermen, honey collectors, wood cutters have traditional and

The decision matrix for future health of the Bay of Bengal



Source: *Journal of Ocean and Coastal Economics (Future importance of healthy oceans: Ecosystem functions and biodiversity, marine pollution, carbon sequestration, ecosystem goods and services - By Mohammad Mosharaf Hossain, University of Chattogram.)*

// Lead Story //



indigenous knowledge and have developed intimate insights about marine and coastal environment through their day to day exposure for their livelihood.

A well designed monitoring framework has to be set up with the participation of all the stakeholders as providers and consumers of data, which will be collected and analysed for evaluating the status of health of the Bay of Bengal. A rich collection of data and management of the data is essential for making policy decisions. The data management has to be open, versatile and robust, because the livelihood of billions of people of the 8 countries is intricately linked with this marine ecosystem. Planning for designing such framework should be accomplished through local and regional collaboration for the conservation, assessment and utilisation of the resources for

extracting the full potential of Blue Economy.

In the context of Bangladesh, development of a sustainable Blue Economy is imperative, as the oceans constitute the largest part of the earth's surface. With a rising population and rising global competitiveness, Bangladesh in the coming days will have to rely more on the resources from maritime sources. Wave energy, rare earth metals from coastal sediments and extraction of petrochemical resources from sea will only add to the economic growth and human development of the country. The Bay of Bengal can become a major source of water and food for the growing population of the country. Therefore, it has become a matter of necessity for enacting mechanisms for conservation of the marine ecosystem of the Bay of Bengal, fighting the challenges that lay ahead in the path of the conservation.

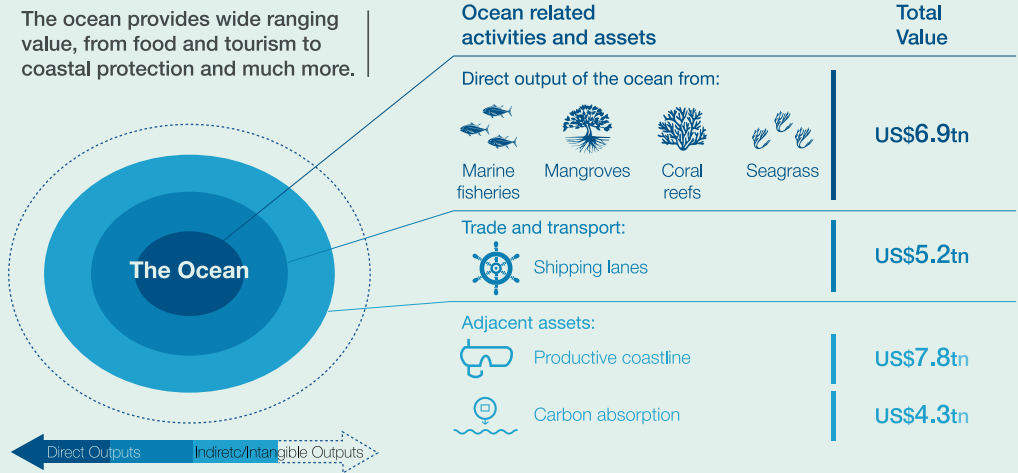


Sustainable maritime development and the achievement of Blue Economy under climate change fantasy in Bangladesh

Professor Dr Aftab Alam Khan

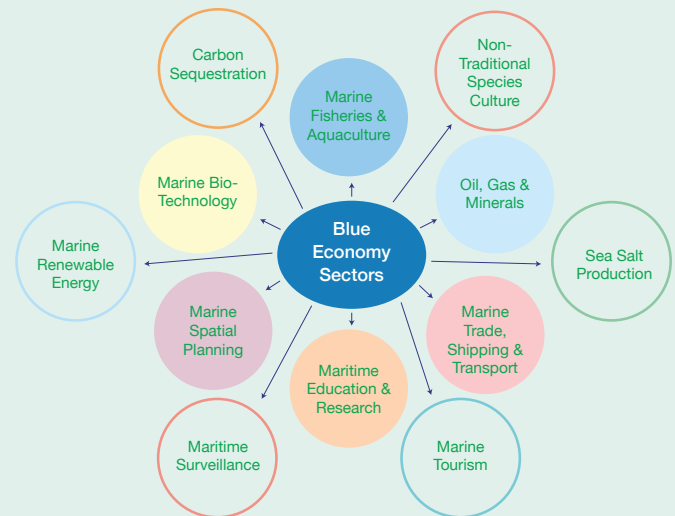
Sustainability of maritime development and blue economic achievement largely depends on the land-sea interaction. The land-sea interaction is influenced by multiple factors such as its security status, environmental status, pollution status, hazard status, governance status, management status and peoples' resilience status. Blue Economy stands for all economic activities related to ocean and sea. The sustainability of the Blue Economy within the framework of climate change has become a major challenge. The Blue Economy would sustain if the resources of the sea and ocean are exploited and utilised in its best form without any natural and anthropogenic hindrance. All the atmospheric hazards such as cyclone, storm surge and the coastal flooding, are the natural threats while, sea piracy, pollution and other hazardous impact caused by anthropogenic players are the man-made threats. All these factors will induce an adverse impact on the development and sustainability of the Blue Economy. The present global notion of climate change does not comply with these coastal hazards. Vulnerabilities of all the atmospheric hazards to the maritime sectors are the principal

challenges in sustainable maritime development and achievement of Blue Economy. There exists no reality of the so-called climate change impact with actual challenges of the littoral countries globally. If we fail to meet those challenges, the real disaster to mankind is imminent. A question arises how we can face these challenges truly. We must identify first the fundamental problems and the causes of the problems. As for the example, a friendly land-sea interaction depends on the congenial water-way connectivity for safety and security. But, the very friendly water way connectivity may emerge as the most insecure and hazardous one, both anthropogenic and natural, due to massive siltation deteriorating navigation route continuously. It is very clear that no climate change impact is implied for the deterioration of navigation routes. Hence, a mechanism must be evolved to prevent deterioration of the channel geometry and navigation route and not to use so-called climate change fantasy in advocating for the solution. Similarly, prior to issue alarm that millions of coastal population will face mass eviction as climate migrants due to sea level rise and coastal flooding, it is scientifically required to establish that sea level



The global asset value of Oceans

is rising and will rise further, which is not yet established. Further, saline water intrusions and encroachment due to cyclones and storm surges will greatly affect the biodiversity and ecosystem of the coastal region. If these events are related to climate change impact, it is needed to prove scientifically that cyclones and storm surges are the results of climate change impact. Definitely, cyclones and storm surges are the atmospheric events that will increase and decrease in frequency with the passage of anthropogenic time, but in no way these events are related to climate change. Weather is the way the atmosphere behaves, mainly with respect to its effects upon life and human activities. Weather is defined in terms of temperature, humidity, precipitation, cloudiness, brightness, visibility, wind, and atmospheric pressure, as in high and low pressure. Climate change is a solar cycle phenomenon that occurs in about 50,000 years' intervals between the glacial and inter-glacial periods. No global factors are responsible for climate change. Unless we understand the real science behind climate change, it is very difficult to do justice to the problem. The atmosphere serves to distribute the energy of solar radiation received by the Earth. Most of the radiant energy is converted into atmospheric heat energy before it is radiated back into space. Winds redistribute this energy, dissipating more of it in the process than by all other forces combined. Both the short-term fluctuations of the atmospheric system and the longer-term fluctuations of average weather are the important part of the history of the Earth. Hence,



Blue economy sectors

security status. Food, water and energy are the basic ingredients for human security, the soft part of the security, while, earthquake, tsunami, submarine mass avalanche, cyclone, storm surge, saline water encroachment are the hard part of the security. Development strategy needs to be evolved, simultaneously the exploitation of marine resources and safe guard the resources from various geological and atmospheric hazards need to be addressed with priority. Both international and domestic funds must be distributed for solving specific problems associated with the maritime development and Blue Economy achievement, totally avoiding the vaguest fund like 'Climate Fund'.

Fundamental Principles of the Blue Economy

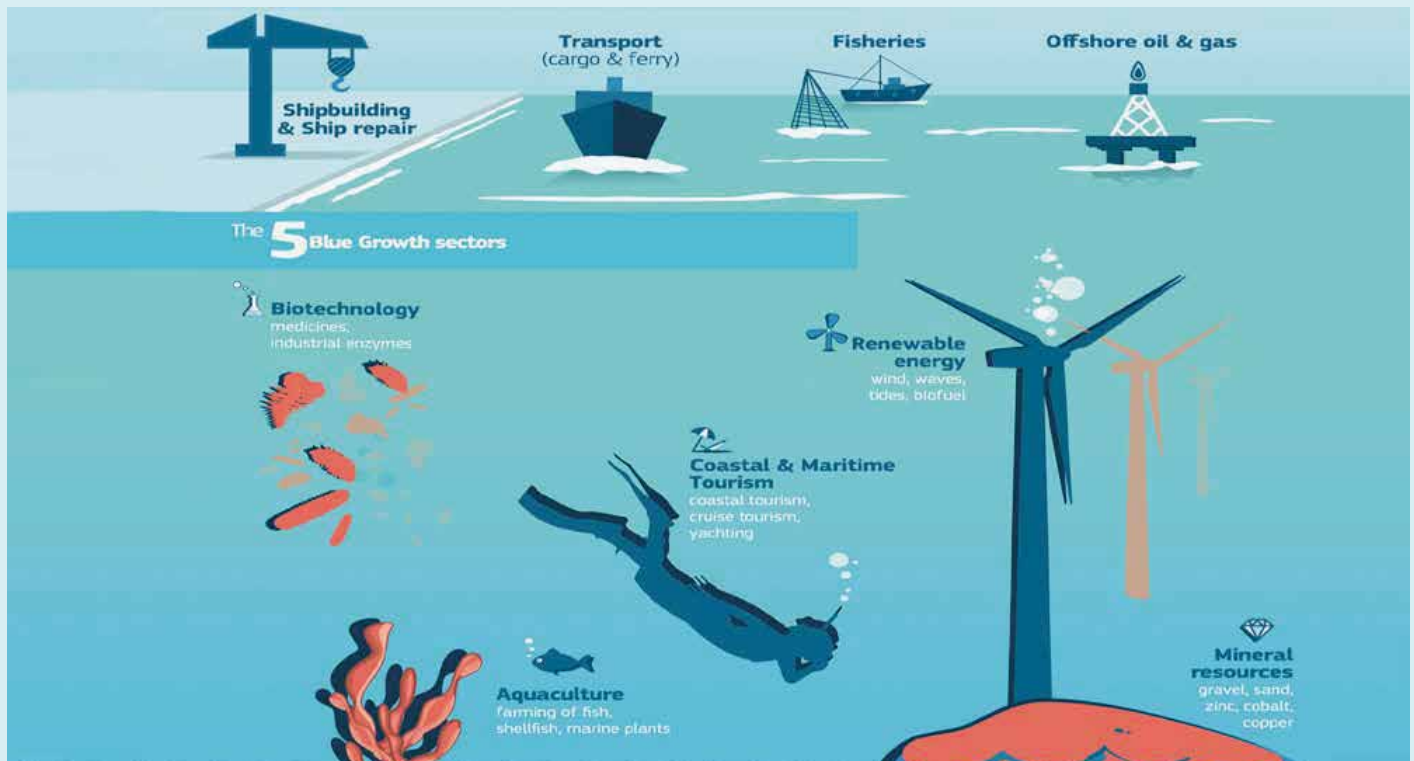
- Infrastructure Development
- Enhancing Exploration
- Setting Up Deep Sea port
- Establishing Maritime Institutions
- Enhancing Maritime Research
- Developing Authority for Cost and Marine
- Long Time Master Plan
- Actualising the Plan

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Blue Economy and sustainable growth of Bangladesh

Hamim Hossain Reaz



Blue Economy means sustainable extraction of ocean resources for the growth of an economy. Oceans cover 72% of the surface of our blue planet and constitute more than 95% of the biosphere. Life originated in the oceans and they continue to support all life today by generating oxygen, absorbing carbon dioxide, recycling nutrients and regulating global climate and temperature. Oceans provide a substantial portion of the global population with food and livelihoods and are the means of transport for 80% of global trade. The marine and coastal environment also constitute a key resource for the important global tourism industry and expanding domain of nature-based tourism. The seabed currently provides 32% of the global supply of hydrocarbons. Advancing technologies are opening new frontiers of marine resource development from bio-prospecting to the mining of seabed mineral resources. The sea also offers vast potential for renewable 'blue energy' production from wind, wave, tidal, thermal and biomass sources.

Blue Economy is the long term strategy to support sustainable growth in the marine and maritime sectors as a whole. It requires a balanced approach between conservation, development and utilisation of marine and coastal eco-system, all oceanic resources and services with a view to enhancing their value and generates decent employment, secure productive marine economy and healthy marine eco-system.

Recently, Bangladesh settled two maritime boundary cases with Myanmar (ITLOS: 2012) and India (PCA: 2014). With these settlements,

Bangladesh has gained about 118,813 sq. km. of territorial area, 200 nautical miles exclusive economic zone (EEZ) and 350 nautical-mile continental shelf from the coast. It is estimated that the resources from the sea of Bangladesh constitute 81% of the resources existing in its land territory.

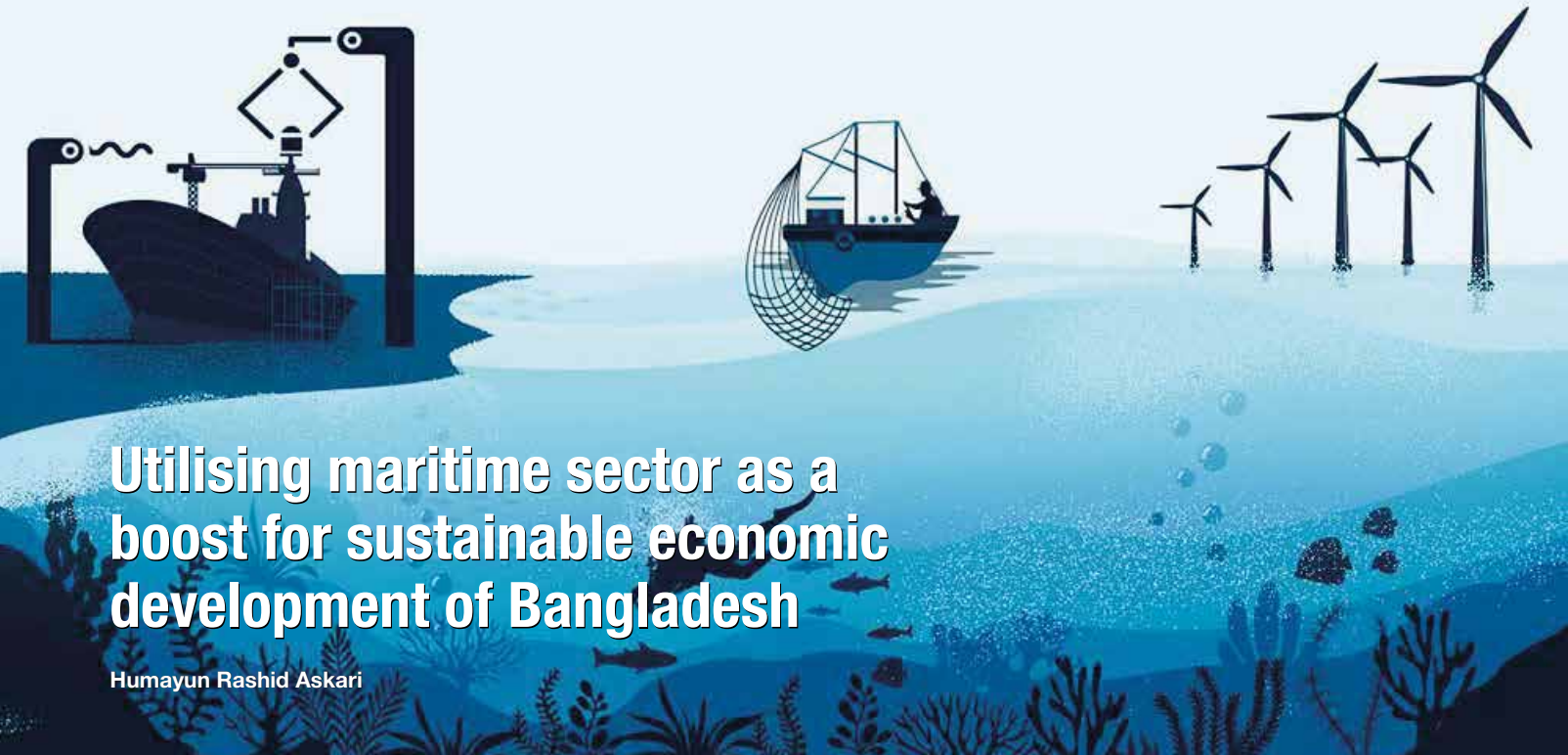
Hon'ble Prime Minister Sheikh Hasina, during a workshop, emphasised that Blue Economy could play an important role in the economic growth of the country in the context of poverty alleviation, ensuring food and nutrition security, combating climate change impacts. Underlining Blue Economy as a window of opportunity for development, the Prime Minister expressed her resolve to turn the Bay of Bengal into a hub of economic development and prosperity.

Blue Economy can be seen as a policy, a project, a framework, a system and an idea. Blue Economy is being viewed as a holistic development paradigm that propagates a growth process which stresses upon the optimum and efficient utilisation of marine resources without compromising the sustainability aspects.

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Utilising maritime sector as a boost for sustainable economic development of Bangladesh

Humayun Rashid Askari

Introduction

The concept of Blue Economy arises when the countries start to think about the prospect of utilising their marine resources. It opens a replacement opportunity for coastal countries' economic development to use their resources from the national level to the international levels.

For sustainable development, the concept of the maritime economy has become an important part. The only raw materials of the maritime economy are the sea-based resources. These resources also cover most of the earth's surface. It is high time for Bangladesh to take measurable steps for ensuring the effective and efficient use of the maritime resources.

At the RIO+20 United Nations (UN) Conference (2012) on sustainable development, held in Rio de Janeiro, the concept of 'Maritime Economy' also known as the Blue Economy, was first considered as the best source of energy utilisation is the sea ('Blue Economy Concept Paper'; 2012). At the current time, many nations are trying to ensure the sea's maximum utilisation for sustainable improvement. As their economy is now becoming an ocean-based economy, the ocean is blue, and the oceanic-based economy is mentioned as the Blue Economy.

A few years ago, through the settlement of sea dispute with India and Myanmar, Bangladesh had gained a large-scale area in the Bay of Bengal. This sea settlement has enriched Bangladesh with more regional territory and, most importantly, with more Exclusive Economic Zone (EEZ).

The settlement of the suit of involving more than 1,18,813 square kilometres of water, including 200 nautical miles, has opened an incredible door for our nation.

The Bay of Bengal can trigger a progressive source of the maritime Economy. Bangladesh can benefit from its oceanic assets like the

investigation of oil and gas, fisheries, shipbreaking, and shipbuilding, collecting minerals like salt, creating tourist zone, etc.

The world has been suffering from many crises, especially food, fuel, coal, natural gas, and economy-related ones. Maritime economy can bargain to overcome these crises. It is a unique method of regaining any sensible economy. Our planet is secured by over 70% by the sea. Around 90% of the world's import-export trade of goods is transported through the ocean. So doubtlessly, the maritime economy assumes a significant portion of our nation.

Blue Economy and Bangladesh

Nowadays, the term "Blue Economy" has become a buzz word. Recently it is also widely spoken in Bangladesh and the country is also learning about positive impact of Blue Economy. The interest has been sparked after gaining the huge maritime boundary with neighbouring country Myanmar (ITLOS; 2012) and India (PCA; 2014).

Bangladesh now has 121,110 square kilometres marine area together with Exclusive Economic Zone (EEZ) in the Bay of Bengal.

Recently the government is taking some major steps like planning to formulate policies and mobilising resources. To achieve sustainable development, effective and efficient use of the maritime resources is a very essential tool. Bangladesh is also a coastal and a riverine country, so she depends highly on the maritime resources and routes.

Future prospects of the maritime sector in Bangladesh

Bangladesh is prosperous not only in terms of its vast water areas, however conjointly in terms of the biological diversity. The geographical position and climatic condition of Bangladesh make the coastal area one of the highly productive areas of the planet. The

influence of the mangrove forests is one of the essential features of the coastal regions, which support a large number of fishes and other commercially valuable aquatic organisms.

Bangladesh has several trans-boundary rivers. The surroundings are; the Himalayan range in the North and the Bay of Bengal in the South. Bangladesh's 710-kilometer-long coastline extending from the tip of St. Martin's Island has various ecosystems with significant ecological and economic importance and potential.

Some major sectors are,

1) Shipping, maritime transport and port facilities

Shipping is one of the major factors which has a high impact on the international economy. In national economy and trade, ports are playing a very major role nowadays.

The maritime routes are also playing a significant role in the aspect of globalisation. Moreover, for Bangladesh, maritime transport is very essential for socio-economic prospects. Because, maritime transport is effective and efficient. Through this, various types and a large amount of goods can be from one place to another and it is cheaper than other transport options.

2) Fishery and aquaculture



Fishes that are of high export values and shrimp aquaculture have become a highly traded export-oriented industry nowadays. And from the aquaculture

sector we get a considerable amount of food and livelihood support. Fishery and livelihood can be ensured by harvesting, breeding, rearing of fish, algae and other organisms in various types of water environment. It is also known as aqua-farming.

3) Tourism



Tourism is a significant sector of global trade. It is focused on the marine and coastal environment. In the tourism sector, cruise tourism is the fastest growing among all. The sea-

side is visited by approximately one of every two tourists. Sustainable tourism is a very important sector for a developing country like Bangladesh. It will contribute highly to the national economy. Coastal tourism represents 5% of world GDP, globally. It is a vital part of the economy of Bangladesh as well.

4) Food

A large number of people depend on sea food as their primary protein. Bangladeshi people are also in it. A large number of people like seafood and on the other hand, the ocean is the largest source of food.

5) Production of Sea salt



Sea salt has been produced along coastline of Cox's Bazar for many years. The annual production here is 22MT but the Samut Sakhon

of Thailand can produce 43MT per year. The reason for this is, in Bangladesh, a large number of salt farmers are small-scaled. They usually use local equipment which are operated manually. These things should be changed and this sector should be focused on because it has a high impact.

6) Human Resource

For a developed country, skilled, well-trained, and educated human resources are very essential. They can also participate in the process of globalisation. Sustainable development is never possible without a skilled workforce. For the global market and industry requirement, marine science/oceanography, port and shipping management, maritime law and policy are necessary to introduce in the tertiary education system. Bangladesh is in the perfect position to generate skilled human resources in these sectors. A huge workforce of the maritime sector can come from a large number of professional oceanographers, coastal and offshore engineers, navigators, mariners, fisheries technologies, and biotechnologists and particularly from the port management and logistics graduates. The port management and logistics graduates can not only maintain the port and logistic sectors effectively and efficiently but also can bring necessary changes to be at par with the new global wind.



Maritime sectors of Bangladesh



BSMRMU

Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh, was established in 2013 to keep pace with and be a part of the developing world in maritime higher education and research, which is the first maritime university of the country. The university is currently at its growing stage. It has many plans to develop this university

as the highest seat of learning and research for the students who would aspire to explore the maritime world for the greater interest of humanity.

Other fields of maritime sector

There are also some other important fields under maritime sector. These fields can also add an enormous amount of value in the economy.

These are:

- Submarine Mining
- Marine aquatic products
- Marine-biotechnology and Medical Technology
- Renewable Marine Energy

Sustainable development

Sustainable development is the forming principle for meeting human improvement goals. At an equivalent time, it sustains the power of natural systems to supply the natural resources which the economy and society rely on.

While the modern thought of sustainable development is realised mostly from the 1987 Brundtland Report. As this concept developed and changed to focus more on economic development, social development, and environmental protection, it has been suggested by the term 'sustainability,' whereas 'sustainable development' refers to the temporal processes that lead us to the purpose of sustainability.

In the projected sustainable development goals, it targets some objectives, which are a lot relevant to the ocean's economy. Such as developing maritime rules, reduce overfishing, developing rules for marine bioprospecting, investing in research for marine and other renewable energy sources, investment in maritime research, also investing in coastal tourism, focusing on fishing and sustainable maritime resource management etc.

So, if Bangladesh focuses on the maritime sector and manages & utilises the resources properly, the economy of Bangladesh can surely achieve sustainable development.

Challenges

A key global challenge is the governance of the oceans and seas. International conventions and regional agreements make it very tough to ensure coastal countries' effective participation. Therefore, there is an urgent need for preparing a regulation strategy by striking a balance between the need for the ocean's natural resources and their sustainability. Oceans can face existential ecological risks that can negatively affect all countries' social and economic prospects, particularly poor countries that acutely rely on oceans.

Climate change, onward emissions of carbon dioxide, over-exploitation, and bad management of marine resources need to be considered seriously. Proper use of oceans is very important for poverty reduction. Renewable energy, marine wildlife watching, water treatment, and ecosystem conservation also should be considered properly. The pollution by ship-source oil is also a significant concern issue nowadays.

Indeed, the maritime economy is extremely sensitive as it is related to ecosystem services, food security, and human activity. We should focus on the challenges also.

Conclusion

Finally, it can be said that efficient management and effective utilisation of marine resources may help promote Bangladesh into a developed country even before the stipulated time. Bangladesh has enormous potential to enrich her economy with sea-based resources by striking a sustainable balance between protecting the marine ecosystem and marine resources. The Bay of Bengal is an important factor with a lot of marine resources to create huge job opportunities for Bangladesh. Our government should seek joint investment with private sector to ensure the proper use of marine resources. If Bangladesh can utilise her marine resources properly, she can achieve the desired goal.

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A beautiful sunset in Bangladesh Naval Academy

Masiat Alam Zubair

27th August, 2019 the day I can not forget in my whole life. The sunset view from Bangladesh Naval Academy was the most celestial view I had ever seen before. This day was the most pompous day in our whole field trip. Yes, we were on a beautiful trip which was organised by the university in Chattogram.

Bangladesh Naval Academy is one of the most restricted and secured places in Bangladesh. Not every general citizen is allowed to enter and feel the pleasing breath-taking scenario. In our 9 days trip we stayed at that lustful place about 4 days. Though the days were tough because of so many labs work, but whenever we saw the beauty of that place, we refreshed our whole soul and got energy for the next day.

Though we stayed there but it was not easy for us to access everywhere of the academy. But on that particular day we were invited to visit the most beautiful points of that academy by our Dean sir, Cdre Jashim Uddin. He took the responsibility to visit us the most gorgeous places.

The scenario from that place was really amazing. I have travelled many beautiful places in my country but didn't see these raw beauties. An interesting incident happens there. We all were excited

to click photos over there. Without knowing the rules, we had clicked some defence guns' photos. A note to know everybody that, Bangladesh Naval Academy is also a defence house where many guns and machines are loaded to defend Chattogram port. So, by mistake we clicked some photos of those guns. Later on, we have deleted those photos from our mobile.



// New Wave //

Our dean sir was really very cool and cold minded. He was so friendly and helpful. He personally took all of us with him and taught us about many things of that place. He carried a nautical map and gave us the practical lesson in front of the sea. That small class session I can't forget in my entire life.

By the end of the beautiful class, we all started to feel the raw beauty of that place. The sound of the waves and the blowing wind took us in another world. The sunset view from there were breath-taking. We also had a BBQ dinner over there which was arranged by our dean sir. A great tribute to him for his beautiful treat.



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Ocean Odyssey

Corals wear sunscreen

Warmer oceans, more acidic waters, pollution, and human intervention, according to scientists, are harming marine life all around the world.

Coral reefs are home to some of the most vulnerable sea creatures. Coral, on the other hand, has a natural defense mechanism: "sunscreen." According to a statement from the Commonwealth Scientific and Industrial Research Organisation (CSIRO), corals in Australia's Great Barrier Reef developed protective walls that let them survive in the sun over millions of years.

Scientists are already working on a way to replicate the corals' natural solar protection. According to the CSIRO statement, CSIRO scientists collaborated with skin care company Larissa Bright Australia to develop UVA/UVB sunscreen filters based on the sunscreen code of corals.



Hidden treasures

More than just marine life can indeed be found in the waters. According to NOAA's National Ocean Service, dissolved gold can be found in all oceans' water. But although the oceans hold nearly 20 million tons (18 million metric tons) of gold, it is so dilute that its concentration is on the order of parts per trillion.

Undissolved gold, on the other hand, can be found in and on the seafloor. Because there is currently no cost-effective technique to mine or extract gold from the ocean, mining for this gold — which is at least a mile or two underwater and buried in rock — may not be worthwhile. NOAA estimates that if all of the gold were extracted from the world's oceans, each person on Earth could have 9 lbs. (4 kilograms) of the precious metal.

Distribution of winter clothes among the destitute



BSMRMU authority distributed winter clothes on 10 January 2021, among the students of two madrasas in Mirpur near the temporary campus by maintaining proper social distancing. The Vice-Chancellor of the university, Rear Admiral M Khaled Iqbal (retd), was present on the occasion and distributed winter clothes and blankets. The Treasurer, Registrar, Deans and Officers were also present during the occasion. Winter clothing and blankets were distributed among a total of 400 students.

Celebration of Golden Jubilee of Independence



On March 26, 2021, BSMRMU celebrated Golden Jubilee of Independence in its campus by maintaining proper social distancing. As the chief guest, Rear Admiral M Khaled Iqbal (retd), the university's Vice-Chancellor, was present. The event was attended by the university's Treasurer, Registrar, Deans, selected Faculty Members, Officers and staff. It began with a theme song commemorating the birth centenary of Father of the Nation Bangabandhu Sheikh Mujibur Rahman, and was followed by a biographical documentary screening. In honour of the Golden Jubilee of country's independence, the BSMRMU Cultural Club hosted a cultural event via video conference. The event was broadcast live on the official Facebook page of BSMRMU.

Observing the Martyrs Day and International Mother Language Day-2021

On 21 February 2021, BSMRMU observed 'Martyrs Day' and 'International Mother Language Day-2021' at the Pallabi temporary campus by maintaining proper social distancing. At the start of the day, the Vice-Chancellor, Rear Admiral M Khaled Iqbal (retd), paid homage to the language martyrs at the Central Shaheed Minar. He was accompanied by the Treasurer and Registrar. Later on, essay competition and a cultural programme were also held online in memory and honour of the Language Movement and International Mother Language Day. The Vice-Chancellor graced the occasion as Chief Guest.



Historic 7th March observed

BSMRMU observed historic 7th March at its campus by maintaining proper social distancing. The Vice-Chancellor of the university, Rear Admiral M Khaled Iqbal (retd), graced the occasion as the chief guest. The Treasurer, Registrar, Deans, selected Faculty Members, Officers and staff of the university attended the function as well. The Vice-chancellor of Jagannath University, Professor Dr Mijanur Rahman graced the occasion as the Guest Speaker. Documentary screening as well as paintings and books on the life and work of Father of the Nation were exhibited during the occasion. Besides, in the spirit of 7th March, BSMRMU Cultural Club arranged a cultural event through video conference.



Celebration of Birth Centenary of Bangabandhu



The Birth Centenary of Father of the Nation Bangabandhu Sheikh Mujibur Rahman was celebrated at BSMRMU campus by maintaining proper social distancing on 17 March 2021. The Vice-Chancellor of the university, Rear Admiral M Khaled Iqbal (ret'd) graced the occasion as the Chief Guest and Professor Mahfuza Khanam, recipient of Ekushey Padak, was present as the Special Guest and Guest Speaker. The Treasurer, Registrar, Deans, Faculty Members, Officers and staffs of the BSMRMU attended the programme. Documentary screening and poem recitation on the life of the Father of the Nation were held during the occasion. At the end of the event, the Chief Guest

distributed prizes among the winners of the poetry reciting competition. The event was streamed live on BSMRMU's official Facebook page. To mark the day, foods were distributed among the destitute in Pallabi area.

Ocean Odyssey

Autonomous ship: A ship of the future

An autonomous ship means the ship will navigate its route without any crew. According to the International Maritime Organisation (IMO), Maritime Autonomous Ships or Maritime Autonomous Surface Ships (MASS) which can operate independently of human contact. IMO has divided the autonomy into four degrees. In the first degree, seafarers will be on board and control shipboard systems and functions. Some operations will be automated and seafarers will be able to take control if necessary. The ship will be operated remotely but the seafarers will be on board, it is said in the second degree. In the third degree, the ship will be operated remotely and the seafarers will not be on board. In the last and final degree, the ship will be able to move automatically by itself and make the necessary decisions on its own.



*Yara Birkeland, an autonomous container ship
(Source: Kongsberg)*

With the incredible advancement of science, we are constantly getting acquainted with new technologies. The shipping industry is no exception. Some shipping companies have already started working on autonomous ships. Yara Birkeland is one of them. It is an electric container vessel that is under construction and is expected to be fully autonomous by 2022. Now a very common question is why we should move towards the autonomous ship. One of the major reasons behind this is human error. Man can make mistakes, whereas a machine hardly does it. A study by Allianz found that about 75 to 95% of marine accidents are caused by human error. With the help of autonomous ships, it is hoped that this type of accident can be avoided. Also, the personnel cost of the ship depends on the number of crew. About 30% of the cost of a voyage is crew-related. The negative impact on the voyage during any kind of pandemic, like COVID-19 can be reduced by autonomous ship. One of the major problems in a voyage is pirates. Usually, pirates hold crews as hostages and demand ransom. Autonomous ships are expected to reduce pirate attacks.

Automating a complete system is an incredibly challenging job. Crews usually control the ship's complex system such as navigational equipment, propulsion system, cooling system. And therefore, it is a very thought-provoking task to maintain these systems regularly in an autonomous ship. Although researchers are constantly working on autonomous ships. Autonomous ships can face competitive and sustainable challenges in the near future. It is a long way to overcome these challenges. There are many milestones to be crossed to create a safe and secure medium indeed.

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Graduation parade at Marine Fisheries Academy

On March 15, 2021, 165 cadets graduated from the 39th and 40th batches of Bangladesh Marine Fisheries Academy. They are highly trained for proper extraction, conservation, and management of the marine fishery resources of Bangladesh. There were 63 cadets in the Nautical Department, 66 cadets in the Marine Engineering Department, and 36 cadets in the Marine Fisheries Department. Six female cadets in Marine Engineering and four female cadets in Marine Fisheries were among them. Hon'ble Minister for Fisheries and Livestock S M Rezaul Karim, MP was present at the occasion as the Chief Guest.

Continuous Discharge Certificates (CDC) were issued by the Department of Shipping in favour of a total of 121 cadets. The cadets who received CDC would be employed on merchant ships of China, Ukraine, Singapore, Nigeria and other countries like every year.



S M Rezaul Karim, MP Fisheries and Livestock Minister of Bangladesh handed over the Gold Medal award for best male cadet



Fisheries and Livestock Minister S M Rezaul Karim, MP handed over Gold Medal award for best female cadet



Graduation parade of 39th & 40th batch of Marine Fisheries Academy

50 years of independence

Maritime education, research and training

M. R. Ashikur

Background

We are now in the twenty-first century, and we are celebrating the country's golden jubilee of independence. During the language movement in 1952, Bangladesh first introduced herself to a training institute called "National Maritime Institute (NMI)" (previously known as Seamen's Training Center) (NMI, 2021). After six years, in 1958, "Bangladesh Institute of Marine Technology (BIMT)" was established for delivering training for diploma and trade courses (BIMT, 2021). On the other hand, though the government took initiative to establish a marine academy in Chattogram in 1952, the new-built "Bangladesh Marine Academy (BMA)" (at the initial stage it was known as Mercantile Marine Academy) went into functioning in 1962 (BMA, 2021). After the country's liberation in 1971, The Founder and the Father of Maritime Bangladesh, Bangabandhu Sheikh Mujibur Rahman, took every attempt to organise the country against all-out national and international obstruction and gave birth to Bangladesh. He had a deep concentration in all sectors, especially in the maritime sector in Bangladesh.

of the 'Chittagong Dry Dock', that was commissioned in 1983. Smaller ship construction up to 1,000 DWT was initiated in Khulna Shipyard Limited in 1972. Gas and oil exploration in the Bay of Bengal (BoB) and coastal area were undertaken in 1973 and he legislated the 'Petroleum Act 1974'. Besides in 1974, the "Territorial water and maritime zone Act 1974" was enacted to ensure maritime rights at the BoB. It is worth mentioning that the Mongla-Ghashikhali waterway was also opened under Bangabandhu's directives in 1974. By 1975, he procured nineteen ocean-going ships for almost no money from several friendly countries; later by 1983, he added another thirteen ships to the Bangladesh Shipping Corporation (BSC) fleet, including four brand new ships from Japan. Being the dreamer of Sonar Bangla, he made his all-out efforts to rebuild Bangladesh and laid a strong foundation in every sector of development, governance, education, training and research.

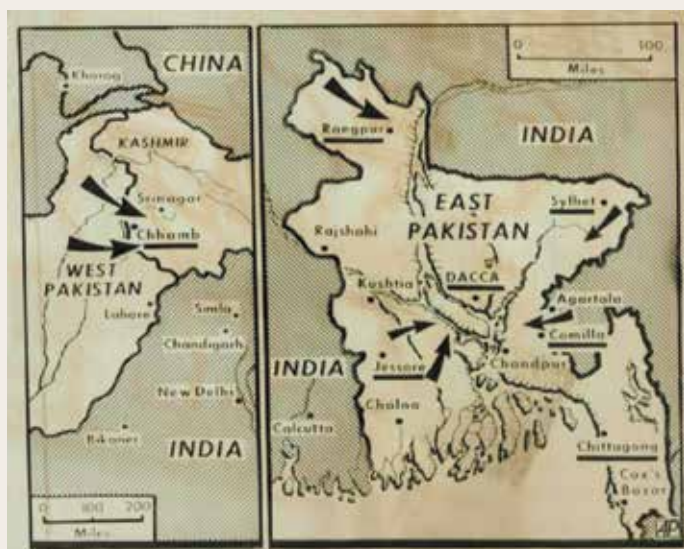


Figure 1: Administrative along with coastal area map of Bangladesh in 1971. The map shows the administrative boundary and the coastal area of the Bay of Bengal. (Source: <http://www.columbia.edu/itc/mealac/pritchett/00maplinks/modern/bangladesh/bangladesh.html>)

Initiatives taken during post-liberation Bangladesh

Bangabandhu Sheikh Mujibur Rahman laid the foundation stone for the new 'Bangladesh Marine Academy' and 'Marine Fisheries Academy' in 1973. He began the unfinished work of the development

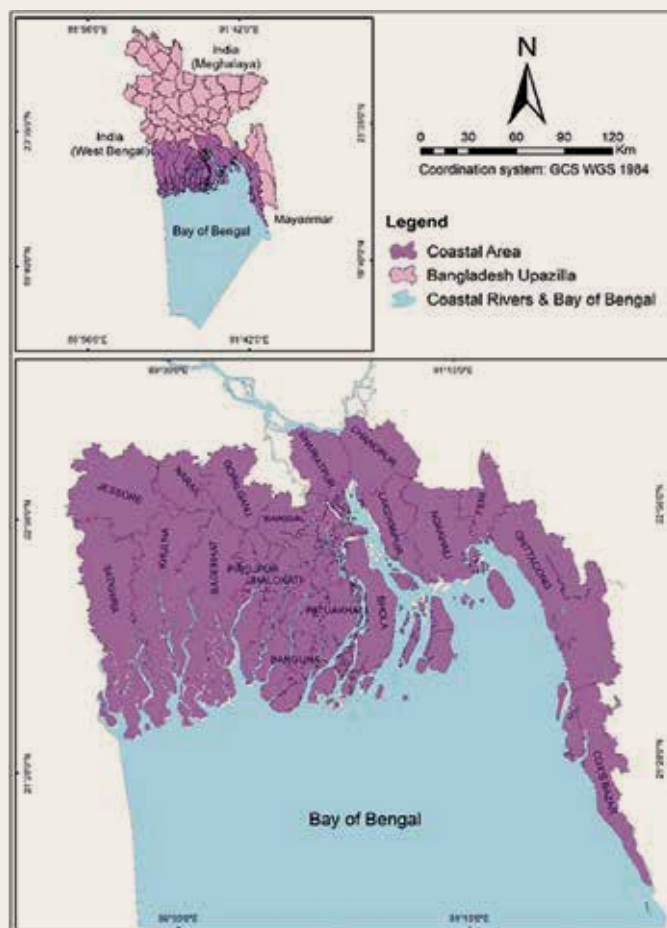


Figure 2: Administrative along with coastal area map of Bangladesh after the liberation war. The map shows 19 coastal districts along with the BoB.

Maritime region of Bangladesh

Maritime Region (MR) is composed of the sea and coastal areas and it is estimated that over 70% of the world area is enclosed by sea and 90% of global trade is managed over sea-routes. The MR of Bangladesh consists of 19 coastal districts and the BoB having about 1,10,000 km² exclusive economic zone (EEZ), about 712 km coastline and about 700 rivers. In the BoB, the EEZ area spans 1,64,000 km² and the shelf area covers roughly 66,440 km². The resources which are included within 200 nautical miles of EEZ and 354 nautical miles of the continental shelf are being explored. The MR of Bangladesh covers about 32% of the total area and serves 27 million people along its coastline and about 38.52 million people in the 19 coastal districts. Recently, Bangladesh has achieved the exclusive right to explore, exploit, conserve and manage maritime resources from India and Myanmar over a vast area of 118,813 km² of the BoB with an extended continental shelf of about 37,000 km² and depth up to 50 m. The new maritime boundaries give Bangladesh a potential source of natural resources, and to explore and exploit those resources, the country is developing human resources through maritime education, research and training.

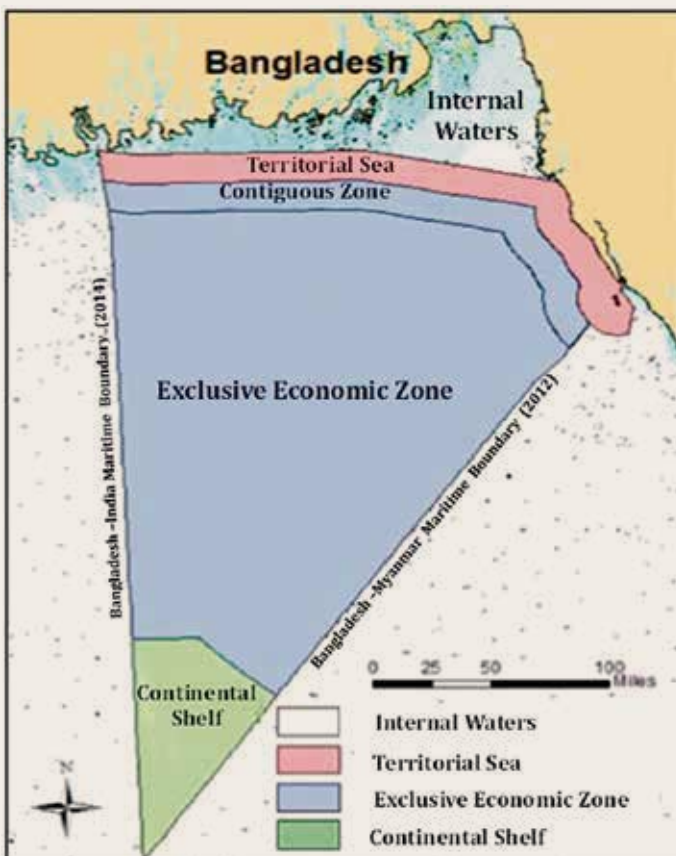


Figure 3: BoB area of Bangladesh. The map shows the Bangladesh-Myanmar and Bangladesh-India maritime boundary after the negotiation from international dispute.

Major initiatives taken in twenty-first century

I. Five years Plan (2021-2025) and SDG 2030

Any successful implementation of a plan/project depends on how thoroughly it is devised. The Government of Bangladesh (GoB) has held a number of consultations and workshops on the Blue Economy

since 2015. In addition, Bangladesh's Seventh Five Year Plan (7FYP) listed twelve steps for a sustainable Blue Economy, which includes fisheries, renewable energy, transshipment, tourism, human capital and climate change. The Blue Economy Cell of the Energy and Mineral Resource Division has already established 26 economic sectors that are directly or indirectly reliant on oceanic resources. Many of these fields are underdeveloped, underfunded, and unexplored. To explore the factors of Blue Economy and other related issues it has always planned to deliver training to the resource person for this proper utilisation. Besides, there is an option for higher education and research for each field. The government has planned Bangladesh Delta Plan-2100 for the next century as a Blue Economy project, with an emphasis on sustainable delta management, integrated water resource management, long-term land reclamation, and climate change adaptation. Furthermore, the goals of SDG 2030, especially SDG Target 14 (Life Below Water), are being implemented in Bangladesh through various maritime development agendas.

It is suggested for the 8th Five Year Plan (2021-2025) that Bangladesh should prioritise exploration and exploitation of maritime resources, the advanced curriculum in maritime education. The country should explore possibilities of domestic and international cooperation, use Blue Economy for poverty reduction, and create employment opportunities in this sector.

The main objective of the Eighth Five Year Plan should be to start the implementation of Perspective Plan 2021-2041 in a way that brings Bangladesh closer to the goals of achieving upper middle income country status by 2031 and attaining SDGs targets within 2030 through managing the challenges of LDC graduation in 2026, which will also help to eliminate extreme poverty by 2031.

II. Perspective Plan (2021-2041) and Vision-2041

Bangladesh aims to achieve high-income status by industrialisation as part of a twenty years perspective plan to be implemented between 2021 and 2041. Bangladesh will witness a rapid rate of change over the next two decades. It will have to adapt to rapid changes in agriculture, commerce, and industry, as well as in education and healthcare, transportation and communication, and the way we operate and conduct businesses. Rapid growth can be balanced by a focus on equal distribution of growth benefits to all, especially to the poor and vulnerable. Although these objectives are aggressively followed, the government can ensure that critical natural resources such as soil, water, forestry, natural environment, and air are used in a way that prevents depletion and degradation.

III. Bangladesh Delta Plan-2100 and Sundarbans Delta Vision-2050

The Bangladesh Sundarbans Delta Vision-2050 denotes that- "by 2050, the Sundarbans delta will be rich in biodiversity to deliver sustained ecological, economic, social and environmental benefits to the neighbouring communities, countries and beyond, for the upcoming generations under a changing climate scenario" The Bangladesh Sundarbans delta, which includes the mangrove forest and surrounding landscape, supports the most diverse range of life forms among similar ecosystems. However, over the last thirty years, the elevated rate of human entry into the mangrove, accompanied by the exponential growth of shrimp farming on the periphery, has wreaked havoc on the environment. The Vision-2050 emphasises enhancing the landscape of biodiversity, flourishing the ecosystem's health, conserving soil productivity and water quality so that the

Sundarbans deliver a good environment to the ecosystem as well as remain as a salutary delta for the upcoming generation.

Bangladesh Delta Plan-2100 is the initiative for proposing the country towards the end of the twenty-first century. Actually, BDP 2100 is the conjunction of long-term techniques and subsequent interventions for conforming long-term water and food security, environmental sustainability while effectively reducing vulnerability to natural disasters, economic growth and developing resilience to climate change and other delta issues through strong, adaptive, and integrated techniques, and equitable ocean governance. In this plan, it has sharply focused on climate change issues such as sea-level rise, temperature rise and erratic precipitation pattern etc. In BDP 2100, water has been taken into account the most important element for the sustainability of this delta, both for human beings and sustainable environment. This linkage supported by appropriate interventions and policy will be continued in the education, research and training for the upcoming 8th Five Year Plan (FYP) as well as the 2nd Perspective Plan (2021-41) in achieving Bangladesh's Vision for 2041.

Importance of maritime education, research and training

1. Maritime education, research and training play an important role in knowledge advancement in the field of different maritime sectors.
2. It delivers answers to practical and professional educational challenges using theoretical and scientific methods.
3. It requires new policy formulation and reformulation of the older for the improvement of the maritime education, research and training.
4. For the professional, students, faculties, researchers and other parties involved in the maritime sector, maritime education, research and training flourish learning, knowledge, skills, and understanding.
5. Maritime Education, Research and Training enhance teaching and learning methods by empowering someone with data to help his/her teach and lead more strategically and effectively.
6. Especially maritime education, research and training assist the students in applying their knowledge to practical situations.

Field of Maritime Education, Research and Training

After 50 years there are some remarkable maritime-related departments, research and training institutes in Bangladesh to keep pace with the global demand. The following departments of different universities in Bangladesh conduct oceanography, marine fisheries and related research subjects:

- a) Department of Oceanography at the University of Chattogram.
- b) School of Fisheries and Marine Resources Technology at Khulna University.
- c) Naval Architecture and Marine Engineering at Bangladesh University of Engineering and Technology.
- d) Department of Oceanography at University of Dhaka.
- e) Department of Naval Architecture and Marine Engineering at Military Institute of Science and Technology.
- f) Department of Oceanography and Hydrography, Department of Marine Fisheries and Department of Naval Architecture and Offshore

Engineering at Bangabandhu Sheikh Mujibur Rahman Maritime University (BSMRMU).

- g) Department of Marine Fisheries and Oceanography at Patuakhali Science and Technology University.
- h) Department of Coastal and Marine Fisheries at Sylhet Agricultural University.
- i) Department of Oceanography and Department of Fisheries and Marine Science at Noakhali Science and Technology University.
- j) Department of Oceanography at Shahjalal University of Science & Technology.

The following Institute also conduct some subjects on BoB and related research activities:

- a) Institute of Marine Sciences and Fisheries at the University of Chattogram.
- b) Institute of Bay of Bengal and Bangladesh Studies at BSMRMU.
- c) Bangladesh Oceanographic Research Institute at Ramu, Cox's Bazar.
- d) Bangladesh Institute of Maritime Research and Development at Bangladesh Navy HQ.

Along with Bangladesh marine academy Chattogram, 4 marine academies in Barishal, Pabna, Sylhet and Rangpur are established and their academic activities are going on. Besides, there are 18 private marine academies in Bangladesh for fulfilling the ongoing market demand of maritime professionals. For vocational and short course, Bangladesh Institute of Marine Technology (BIMT) is established in Narayanganj and there are five more Institute of Marine Technology (IMT) are established and their geographical locations are Faridpur, Bagerhat, Sirajganj, Munsiganj and Chandpur. Besides, Chattogram, Mongla and Payra port authorities conduct their in-house training programmes for their staffs. Bangladesh Inland Water Transport Authority (BIWTA) operates Deck and Engineering Personnel Training Centre at Narayanganj and Barishal respectively.

BSMRMU has been established to provide higher maritime education and to generate expertise in different maritime sectors through graduating and training the professionals who are envisioning for the maritime research to explore and exploit the untapped potential of the BoB and coastal area. BSMRMU upholds the "Centre of Maritime Excellence" for all maritime professionals, policymakers, marine spatial planners, oceanographers, maritime researchers, faculties and students in a common and collaborative platform to make Bangladesh a "Maritime Nation".

M. R. Ashikur

Research Officer, Institute of Bay Bengal and Bangladesh Studies (IBBBS)
BSMRMU

A ship docked for the first time at a private jetty in Chattogram port



On 30 March, for the first time, a cargo ship arrived at Chattogram port at the jetty of Karnaphuli Dry Dock Ltd., a ship repair company in Chattogram.

After docking at the jetty, pieces of old iron rods were unloaded from the ship. This is the first step taken by Chattogram port to reduce the turnaround time of ships carrying imported goods to private jetties.

On the south bank of the river Karnaphuli, there are two jetties at the Karnaphuli Dry Dock in Anwara. One is under construction and construction of the other one has been completed this month. As soon as construction was completed, a ship under the name 'MV Dina Ocean' was docked there for the first time. The 154-metre-long ship came from Japan with 15,221 tons of pieces of old iron.

M. A. Rashid, managing director at Karnaphuli Dry Dock Ltd., said, "The jetty under construction will be completed this month. Then two ships can be sailed together. This way 10-12 ships can dock at the jetty in a month. The jetty is being upgraded to allow a 170-metre-long vessels to dock there."

As the import of goods through the Chattogram port continues to increase, the queue of ships has also been increasing for several months. Because of this, the Chattogram Port Authority has taken an initiative make all the jetties of private and public organisations on both sides of the river Karnaphuli usable. As the first step of this initiative, a ship was docked at this jetty.

The ship, which docked at a private jetty, was carrying raw materials for the BSRM Group, a steel company.

Patenga Container Terminal will be operated under PPP



The government has given policy approval for the operation and maintenance of the Patenga Container Terminal of Chattogram Port to be carried out under Public-Private Partnership (PPP). This approval was given at a meeting of the Cabinet Committee on

financial matters on 3 March. There is a potential to invest USD 58 million on the project.

Chattogram port is the country's largest and busiest port. The port plays an important role in the economic growth of the country. The container terminal currently under construction at Patenga will increase the capacity of the port and increase the logistics efficiency of the port.

The project titled 'Equip, Operate and Maintenance of Patenga Container Terminal' is under the Ministry of Shipping. According to the pre-survey, the potential investment the project is estimated to receive is USD 58 million and the annual operating cost is USD 8 million.

Secretary of the Ministry of Shipping Mohammad Mezbah Uddin Chowdhury presented various aspects of the project at a meeting and proposed that approval be given to implement the project under PPP.

Sultana Afroz, CEO of PPP authority, said, "Under PPP, if the project is operated and maintained through public-private partnership, it will be possible to increase the output of this container terminal with modern technology, equipment, and skilled manpower."

It was presented at the meeting that similar PPP projects have been successfully implemented in different parts of the world including China, India, Thailand, Indonesia, Sri Lanka, and the Philippines. Many foreign investors have contacted the PPP authority and expressed their interests regarding this project.

At present, seven PPP projects under the Ministry of Shipping are in various stages of implementation.

Roads and shipping sectors account for 8% of GDP



The contribution of road and shipping sectors to the Gross Domestic Product (GDP) is 8.0% or BDT 1 lac 87 thousand 500 crore. Separately, the contribution of the road transport sector is BDT 1 lac 73 thousand 400 crore, and the contribution of the shipping sector is BDT 14 thousand 100 crore.

On 15 February, at the auditorium of Bangladesh Bureau of Statistics (BBS), there was an inauguration programme for a survey report conducted in 2019 on private, commercial mechanised and non-mechanised road and water transports. The survey was conducted by BBS under the 'Modernisation of National Accounts Statistics' project. The project director Tofayel Ahmed presented the survey at the event.

Secretary of Statistics and Information Management Department Mohammad Yamin Chowdhury was the chief guest at the programme, and the special

guest was the Chairman of Bangladesh Road Transport Nur Mohammad Majumder. BBS Director General Tajul Islam presided over the function.

Bangladesh now has new marine route for transporting goods



Construction of the first deep seaport of the country has started in Matarbari, and it will become operational in 2025. Already ships have started to arrive at the jetty built for the coal power plant beside the seaport. The ship “Venus Triumph” carrying

building materials docked at this jetty for the first time on 29 December. Then on 8 January, the second cargo ship SPM Bangkok docked at the jetty. The ship is embarking on a new route for shipping goods by sea in the country.

The ship is carrying goods from Malaysia’s ‘Port Kelang’ to the Matarbari Coal Power Plant jetty in Maheshkhali. Half the goods were unloaded there and on 13 January it docked at the Chattogram port’s jetty with the remaining goods. The SPM Bangkok ship is not a regular cargo service on this route, rather the ship only carries building materials for coal-fired power plants. Meanwhile, the ship has set a record for being the first ship to transport goods on the Kelang-Matarbari-Chattogram port route. At the same time, it opened new doors for the transportation of goods on this route.

Blue Economy has the potential to contribute 4% of GDP

Blue Economy – if utilised properly – has the potential to contribute around 4% of Bangladesh’s GDP by playing an important role in the country’s economic growth in terms of poverty alleviation, ensuring food and nutrition security, and combating the impacts of climate change.

The Blue Economy offers opportunities for a sustainable, clean and equitable blue growth in traditional and emerging local sectors, Rear Admiral Md. Khurshed Alam (retd), secretary at the Maritime Affairs Unit under the Ministry of Foreign Affairs, said at a seminar on 7 February 2021.

Presenting the keynote at the seminar titled “Bangabandhu’s Vision and Blue Economy” organised by the shipping ministry, Rear Admiral Md. Khurshed Alam (retd) said, “Fisheries, aquaculture and mariculture will contribute towards food security and nutrition, as well as employment of millions of people.

Speaking as the chief guest, International Affairs adviser to the Prime Minister Gowher Rizvi said, “The Blue Economy, which offers bountiful resources, has significant value and it is an enormous area of opportunity for Bangladesh.

“But we must be sure to utilise such resources in a sustainable way, otherwise it may evoke disaster. The people, who are earning their livelihood from the sea, have to be skilled and well equipped too.”

Gowher Rizvi also emphasised the need for well-trained, skilled and educated human resources – who are the driving force for a dynamic and sustainable development of an economy. “To achieve our Target 2041, we have to start working right now,” he concluded.

At the event, State Minister for Shipping Khalid Mahmud Chowdhury said, “We got 1.19 lakh square kilometres in the Bay of Bengal, and using this resource, we will eradicate poverty in Bangladesh by ensuring plenty of food and employment.” The shipping ministry is making a serious effort to build the infrastructure strong to cater the process, he added.

Meghna Group has launched two new cargo ships

Two new cargo ships have been launched by the Meghna Group on 10 March 2021. The two large ships are the MV Meghna Princess and the MV Meghna Adventure. Each ship is about 200 metres long and capable of carrying 62 thousand tons of goods. The Meghna Group invested USD 46 million or about BDT 391 crore on the new two ships. The Hong Kong and Shanghai Banking Corporation (HSBC) has also invested in these ships, which have employed 42 Bangladeshi sailors. As they are new, the two ships will be able to carry goods to any port in the world. The inaugural ceremony was held at the MV Meghna Princess, anchored at the outer anchorage area of Chattogram port.

During the programme, Shipping Deputy Minister Khalid Mahmud Chowdhury said, “Two ships will go from one port of the world to another, flying the flag of Bangladesh. Not only business, these two ships will work as ambassadors of Bangladesh in the ports around the world. People will get to know of Bangladesh. This is a matter of pride for us.”

“Entrepreneurs have come forward in the ship operational sector,” he said. We want to see 500 ships in our fleet in the next 5-10 years. Steps have been taken to overcome the limitations that still exist in this sector. The Prime Minister has opened the door to investments.”

Rear Admiral M. Shahjahan, chairman of the Chittagong Port Authority, said, “Shipping is the main sector of the maritime economy. The Meghna Group has taken a bold step by investing in the shipping sector. Others will follow Meghna and come forward to invest in this sector.” he said.

Mostafa Kamal, chairman of the Meghna Group, said, “During the global recession due to COVID-19, the Prime Minister has encouraged entrepreneurs to take opportunities to invest. Meghna has taken that opportunity. In addition to these two new ships, four more ships will be added next year. The building costs of these ships have decreased by 10%.”

With the new ships of Meghna, the number of sea-going ships in Bangladesh has now increased to 63.



ADB to finance Dhirashram container terminal



An Inland Container Depot (ICD) is being set up at Dhirashram in Gazipur to cut the uncertainty in investments, where containers will be brought directly from Chattogram port by rail. One of the three projects that has been put on the government's priority list to speed up the port is the ICD

at Dhirashram. The implementation of this project has been prioritised in the recent meeting held at the Prime Minister's Office. It was informed at that meeting that the Asian Development Bank (ADB) will finance in this important project. Confirming the matter, Additional Director General (Infrastructure) of Railways Dhirandranath Majumder said, "Although the plan was approved a long time ago, the project could not be implemented because there weren't investors. Now we have found investors. The ADB has also agreed to finance in the project. The Prime Minister's Office is prioritising the implementation of the project."

If the ICD is built at Dhirashram, trains carrying containers will be able to travel without entering the capital. If transit with India, Nepal, and Bhutan starts, the containers brought from those countries can be kept at this ICD. Besides, after the construction of Padma Bridge is complete, container trains will be able to operate on the Dhaka-Mongla route. There will be no need to enter Dhaka to transport containers from Chattogram or Mongla to the north. The ICD at Dhirashram will be an important container depot for the country in international trade.

Qatar Petroleum will supply LNG to Bangladesh



Bangladesh is set to become one of the largest LNG importers in Asia, like India and Pakistan, due to the depletion of domestic gas supply in Bangladesh. Qatar Petroleum has recently signed a long-term agreement with Vitol, the Dutch company responsible for constructing the world's largest deep-sea Liquefied Petroleum Gas (LPG) terminal. Under the agreement, Qatar Petroleum will supply 1,250,000 tons of Liquefied Natural Gas (LNG) annually to customers of Vitol in Bangladesh.

Bangladesh currently has two floating terminals and a Floating Storage and Regasification Unit (FSRU), which has the capacity to produce 28,000,000 cubic metres of gas daily and about 7,500,000 tons of gas per year.

GSP for Bangladesh will be extended until 2027: UK



Robert Chatterton Dickson, High Commissioner of the United Kingdom, hosted a briefing on the first ever trade and commerce conference between the two countries on 16 February. During that conference he said, Bangladesh would have a preferential market facility in the United Kingdom till 2027, even if it became a middle income country. Bangladeshi

products will get Generalised System of Preferences or GSP in the United Kingdom in two steps for three years each.

Robert Dickson said, "Business opportunities in Bangladesh are increasing for companies based in the United Kingdom, especially in the high-quality service sector. Duty and quota-free facilities are being provided as part of cooperation in the field of export-oriented economic development in Bangladesh. Even if Bangladesh becomes a middle income country, it will get GSP privileges in two steps for three years. In the first phase, GSP will be available till 2024 and in the second phase till 2027.

He added, "In order to attract the attention of foreign investors, it is important to address bureaucratic complexities, procedural uncertainties, implementing agreement clauses, and eliminating corruption as well as tax issues."

Turkey is looking to invest in Bangladesh

Mustafa Osman Turan, Turkey's ambassador to Bangladesh, said that due to the attractive facilities, the investors in Turkey are now interested to invest in the economic regions of Bangladesh. "Apart from increasing investments in Bangladesh, Turkey also wants to increase the volume of bilateral trade through diversification of trading goods," he said.

He made these remarks at a meeting with the senior employees at the Gulshan branch of EBL 20 January. The ambassador said, "Turkey is looking for ways to cooperate with Bangladesh in the fields of pharmaceutical manufacturing, IT, agriculture, light engineering, hospitality sector, tourism and health sectors." A memorandum of understanding (MoU) on bilateral cooperation between the FBCCI and the Foreign Economic Relations Board in Turkey is going to be signed soon.



COVID-19 ports worldwide and Chattogram port

Md. Mostafa Aziz Shaheen

Coronavirus disease 2019 (COVID-19) unveiled in a Chinese transport hub in Wuhan on 31st December 2019. China accounts for a global share of 16% GDP (29% manufacturing, 13% export and 18% manufactured exports) making the country world's major supplier of raw materials. Lockdown in China affected manufacturing activities across the globe. Due to the economic disruption caused by the pandemic, global trade is expected to fall from 13 to 33% in the current year as forecasted by a report of the World Trade Organisation. By March 2020, the virus spread over Europe and the rest of the world. Besides the public health crisis, a significant slowdown was experienced by not only the economy of China but also the global economy. The global supply chain was also disrupted as a consequence. Port is a key component of the supply chain. Port acts as an intermediate point to transfer goods from manufacturer to customer, be it raw material or finished goods, luxury or essential. Any disruption in cargo flow and service can hamper the overall supply chain.

International Association of Ports and Harbours (IAPH) and its World Ports Sustainability Programme (WPSP) jointly surveyed COVID-19 impacts on port economics by barometer survey. According to the IAPH-WPSP report, several factors lessened the vessel's call at the port of different regions worldwide. Container liner schedules were pushed back due to cargo volume shrinkage, which resulted in

port delays. Besides, some ports were adversely affected due to the closing of Asian and European destination ports. In addition, cruise ships stopped their operations and lay up their vessels at berth with the limited number of crew on-board. Full or partial lockdown in many nations affected not only consumer demand but also industries.

Consumer demand fell and industries were being closed as a result. A fall in demand caused a sharp decline in global oil prices. Consequently, liquid bulk traders stored oil in the hope of getting better prices in future putting pressure on storage capacity. The situation is similar when it comes to essential bulk goods such as rice, wheat etc. Besides, cross border restrictions, unavailability of the trucker and terminal operation disturbance adversely affect hinterland operation in and out of the port. Moreover, the shortage of port workers worsens the situation.

As the principal seaport, Chattogram port is recognised as the heart of the economy of Bangladesh. More than 90% of the nation's trade is performed through this port. Like the entire globe, the outbreak of Coronavirus negatively affected the country's prime seaport. Responding to the spread of COVID-19, the government announced 16 days general holiday from the 26th of March to the 11th of April in 2020. Factories were closed down. Accordingly, importers were reluctant to



release cargoes from the port. Moreover, customs and banking activities ran on a limited scale resulting in a record number of containers stranded at the port yard. At one point, port storage became full of its capacity (92%). Container discharge from vessels became slow. It prolonged the vessel's berth time (turnaround time) at the port as well as increased the vessel's waiting time for getting berth and congestion at the outer anchorage as well. Besides, the number of vessel calls fell significantly compared to a normal situation due to import-export cargo volume reduction. In addition, the number of vehicles has reduced significantly as the truckers are not keen to drive in fear of the coronavirus outbreak.

Chattogram port used to be operational round the clock. But the uncertainty slowed down the overall port operation. However, the CPA came up with time-bound solutions to keep the port operational. Inward bound foreign ships at the Chattogram port quarantined for 14 days to prevent the spread of coronavirus. Besides, vessels calling Chattogram port have to submit health/medical declaration forms as well as maintain mandatory COVID-19 health protocol. Most importantly, reducing container congestion, the National Board of Revenue (NBR) allowed the importer to transfer all types of import containers from Chattogram port to 19 private off docks till 30 June 2020. Furthermore, port employees are recognised as 'emergency workers' in the pandemic situation. Ensuring smooth operation, port practised work shifting in a format of 'one week on and two weeks off'. Besides, the port authority provided safety protective materials to keep workers safe. Moreover, within its premise, Chattogram Port Authority (CPA) placed a COVID-19 test booth and established a 70 bed COVID-19 ward within its hospital with a high flow oxygen supply facility. All these initiatives implemented by CPA rallied round to come out from this uncertain situation. However, COVID-19 experience in port operation will lend a hand in times of future needs.



The write up is prepared with the assistance of IAPH-WPSP COVID-19 port economic impact barometer, Bangladeshi daily newspaper, Chattogram port website, World Trade Organisation and World Health Organisation report.

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India will invest USD 82 billion in port projects by 2035, says Narendra Modi



Prime Minister of India, Narendra Modi, assured that India would invest USD 82 billion in the port project by 2035 boosting the share of clean renewable energy sources in the maritime sector along with developing waterways and promote tourism around lighthouses as a part of port-led development.

At Maritime India Summit, Indian Prime talked about the future investments of India in the maritime sector. He invited all the global investors to invest in Indian ports, shipyards, and waterways also.

During the speech, he informed that more than 574 projects costing USD 82 billion or Rs 6 lac crore have been recognised for implementation between 2015 and 2035 under the Sagarmala project. Even the Indian Government is seeking to operationalise around 23 waterways by 2030.

PM Modi further talked about the growing developments in the maritime sector and also emerging as a leading Blue Economy of the world. The Indian Government is also concentrating on the domestic shipbuilding and ship repair market and for promoting domestic shipbuilding, a Shipbuilding Financial Assistance Policy for Indian Shipyards has been approved.

The first ever ASEAN-India Hackathon centring on Blue economy, education and training

In February 2021, the Ministry of Education of India hosted an ASEAN-India Hackathon for the first time, in partnership with India's Ministry of External Affairs (MEA). The main goal of the event was to foster youth collaboration and digital connectivity between Indian and ASEAN youth.

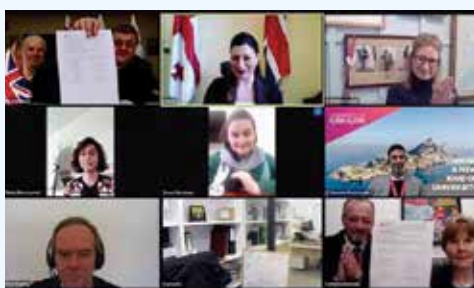
The main themes of the programme were — 'Blue Economy' and 'Education'. For India cooperation in the maritime domain is a priority under the ASEAN-India Strategic Partnership. And for this, development of coastal infrastructure, protection of marine ecosystems, sustainable harnessing of marine resources is of critical importance. For both ASEAN and India the focus is also on providing sustained and gainful livelihoods to coastal communities.

The four-day Hackathon from February 1-4, 2021 implemented by All India Council for Technical Education (AICTE), was supported by nodal agencies from all ten ASEAN countries, which included their Education Ministries and prominent universities.

The Hackathon promoted learning, understanding, and cooperation. And, also fostered a strong sense of ASEAN-India community among the youth and to become responsible stakeholders in the regional and global growth they were provided the necessary skill-sets.



Batumi State Maritime Academy and the University of Gibraltar have signed an agreement to establish educational links



Batumi State Maritime Academy and the University of Gibraltar have signed a memorandum of understanding on 11 March 2021 to strengthen educational ties between Georgia and Gibraltar.

In addition, the agreement aims to develop promising cooperation between the University of Gibraltar and Batumi State Maritime Academy, especially in the fields of maritime science and technology.

Cooperation with the University of Gibraltar was established during the first visit of Georgian Ambassador to the UK Sophie Katsarava to Gibraltar last year.

Founded in 2015, the University of Gibraltar has the same accreditation as any other higher education institution in the United Kingdom offering students a unique and diverse educational programmes and exceptional prospects for professional development.

All-women crew of MT Swarna Krishna makes history



The Shipping Corporation of India, as a part of its ongoing Diamond Jubilee celebrations and also to commemorate the International Women's Day on March 8, 2021, achieved another feat when Mansukh Mandaviya, Minister of State (Independent Charge) for Ports, Shipping & Waterways, virtually flagged off the 'All Women Officers' Sailing' on MT Swarna Krishna – SCI's product carrier from JNPT Liquid Berth Jetty on 6 March 2021.

This is the first time in the world maritime history that a ship is being sailed by all women officers. Mr Mandaviya acknowledged the contribution and sacrifice of the women seafarers who acted as the Indian ambassadors to the global maritime community.

The move demonstrated the gradual shift in the perception of seafaring as a male-oriented profession and the principles of Diversity & Inclusion that SCI upholds. SCI has been a pioneer in employing women seafarers onboard its vessels and has implemented various initiatives including age relaxations and fee concessions to aspiring female cadets through its Maritime Training Institute to promote their integration into the maritime sector.

Kenya withdraws from ICJ maritime border case with Somalia

The government of Kenya revealed on 14 March 2021 that it had pulled out of the maritime border case with Somalia just a few hours before the scheduled virtual hearing in the International Court of Justice (ICJ) in The Hague, Netherlands.

In a letter to the ICJ, Kenya's Attorney General argued that the COVID-19 pandemic struck right after Kenya had recruited the new legal team therefore the new legal team was deprived of the opportunity to hold necessary preparatory meetings and engagements

On March 9, the ICJ announced that it would hold public hearings in the case concerning maritime delimitations in the Indian Ocean from 15 March 15 to 24 March 2021. Kenya's maritime area was determined through the parallel latitudes in 1979. This claim over the exclusive economic zone was recognised by Somalia for 35 years. However, Somalia filed a case before the ICJ in 2014 disagreeing with Kenya on the nature of the line of the maritime boundary. Somalia argues that the maritime frontier should follow in the same direction as the land border while Kenya argues that it has always been taken in a horizontal line from the point where the two countries meet at the coast. The disputed area has four oil blocks.

Nautilus Federation unions call for global seafarer vaccination programme

The Nautilus Federation, a group of 22 leading trade unions representing seafarers and inland waterways workers, has issued a statement calling on governments and global organisations to coordinate a worldwide vaccination programme for seafarers and Inland Waterways Transport crew.

The Federation Unions believe that the current Crew Change Crisis could be mitigated by an international response to vaccination of maritime and shipping professionals. There are fears that the nature of their work is likely to cause seafarers to be away from home when invited to take part in vaccination schemes in their own country, as national programmes continue to be rolled out.

It has been well documented that seafarers have struggled to receive medical attention ashore due to COVID-19 protocols in various countries, and an international response will also assist in resolving such failures.

The joint statement notes that vaccination policies and authorisations by government agencies differ in many jurisdictions and calls for seafarers receiving a vaccine outside of their country of domicile only to receive a vaccine authorised by the regulatory body of their home country. The statement also reflects on the importance of seafarers receiving information on the vaccination they receive in English and in their own language.

AAPA, IAMPE forge new education & training agreement



The American Association of Port Authorities (AAPA)—the unified and recognised voice of seaports in the

Americas—and the International Association of Maritime Port Executives (IAMPE) – the worldwide association focused on port and maritime industry workforce training and professional development – have signed a Memorandum of Understanding (MOU) to collaborate on providing mutually-beneficial educational and career development programming for port industry professionals.

Both AAPA and IAMPE have in place professional development and training certification programmes based on a well-established and highly regarded industry training framework. Each association's programmes provide port and marine transportation personnel with a professional credential documenting their successful completion.

SANAA wins international competition to design the the Shenzhen Maritime Museum



The International Competition for the Shenzhen Maritime Museum has selected SANAA of Japan, co-founded by Pritzker Prize winners Kazuyo Sejima and Ryue Nishizawa, for the design of the cultural hub. Attracting initially 88 top design teams representing over 170 design firms from 20 countries and regions, only 15 groups were selected to proceed to the competition and submit their featured solutions. Launched by the Planning and Natural Resources Bureau of Shenzhen Municipality (Municipal Ocean and Fisheries Bureau) and Bureau of Public Works of Shenzhen Municipality, the contest sought to find the best design for a leading maritime culture facility embedded in nature.

The winning proposal by SANAA imagined a floating white “cloud” emerging from the ocean. Fitting into the context of mountains and sea in the Dapeng area, the museum interprets fluid and dynamic building spaces through systematic and pure design vocabularies. Located in Dapeng New Area, the site enjoys superior geographic location and natural environments.

The world-class facility aims to create a comprehensive maritime museum including a collection and exhibition centre of marine resources, an education centre for maritime culture, a research centre for marine science, creating a new cultural icon in Shenzhen. Integrated within its urban context consisting of the Maritime University, the theme parks, Dapeng Fortress and Jiaochangwei Beach, the project will develop a vibrant international ecological and cultural coastal area.

AltaSea & Flying Lion launch scientific and educational partnership to develop an “Unmanned Aircraft System Centre of Excellence”

AltaSea at the Port of Los Angeles and Flying Lion, Inc. (FLI) have announced a multi-faceted partnership to develop a world-class Unmanned Aircraft System (UAS) Center of Excellence, which will provide maritime research support, STEM education, job training, and commercial services on AltaSea’s 35-acre site at the port.

“The synergy between AltaSea’s campus and Flying Lion UAS expertise creates an optimal environment to jointly develop breakthrough ocean-related research and discovery solutions to environmental problems,” said Flying Lion CEO Barry Brennan.

AltaSea at the Port of Los Angeles is dedicated to accelerating scientific collaboration, advancing an emerging Blue Economy through business innovation and job creation, and inspiring the next generation, all for a more sustainable, just, and equitable world.

Flying Lion, Inc. (FLI) is a Los Angeles-based training organisation and drone service provider to Public Safety Agencies, Community Colleges, School Districts and Municipalities. One specialty is providing on-demand rapid aerial assessment and imaging services to Law Enforcement and Emergency Service Departments utilising drones with built-in high definition and infrared cameras.



Abu Dhabi Maritime Academy, ADU to support career requirements of students across Emirates



Abu Dhabi Maritime Academy, the training and development hub of Abu Dhabi Ports, and Abu Dhabi University (ADU) have signed a Memorandum of Understanding on bilateral cooperation.

The MoU will support the education and career requirements of students across the Emirates of Abu Dhabi.

Signed by Dr Yasser Al Wahedi, Director, Abu Dhabi Maritime Academy, and Prof Waqar Ahmad, Chancellor of the Abu Dhabi University, the agreement will act as a blueprint for both institutions to work more closely together in developing advanced instructional content such as print and digital publications, and providing students with more credit transfer options, enhanced learning resources, and augmented social programmes.

The MoU sets out a framework to discover new dimensions regarding student exchanges, internships, and knowledge-sharing initiatives. It outlines how both organisations can co-operate further in relation to seminars, conferences, and training programmes.

Malta emerges as a centre of excellence in the maritime sector at a global level



Melita Marine Group of Malta recently announced an investment of Euro 5 million in its operation, in order to strengthen the highest quality service it offers in maritime and engineering sector.

Minister for Transport, Infrastructure and Capital Projects of Malta Ian Borg and Minister for the Economy and Industry of Malta Silvio Schembri, visited the company's shipyard in Paola.

Borg said, "All this further strengthens Malta's position as a major jurisdiction for yacht services. It is an honour for us to have a Maltese shipyard which is considered as one of the best shipyards in the world."

The company's Euro 5 million investment consists of:

1. Manufacture of generator sets in Malta – Euro 800,000;
2. Extension of Bulebel facilities – Euro 1.8 million;
3. Investments in hydroponics and renewables such as microgrid and fuel-cell technology – Euro 1 million;
4. Planning of a 10,000kw dynamometer in Greece available for commercial use – Euro 1.1 million.

The Melita Marina Group has served as a maintenance site for 32 years for hundreds of ships. It offers many other services, such as surveys, repairs, conversions, retrofitting and ship repair. Having gained vast experience and knowledge of the Maltese yacht market, Melita Marine operates in Europe, Africa, the Middle East and the Caribbean and has a shipyard base in Spain.

Today, they have become exclusive distributors for Rolls Royce Power Systems/MTU with facilities in Malta, Greece, Cyprus and Libya, and are recognised as one of the best superyacht yard facilities in the Mediterranean.

After a five-year hiatus, Turkey and Greece are resuming discussions on maritime disputes



Turkey and Greece resumed talks aimed at addressing long-standing maritime disputes on 25 January 2021 after months of tension in the eastern Mediterranean.

The neighbouring countries, which are both members of the NATO military alliance, made little progress in 60 rounds of talks from 2002 to 2016.

Plans for resuming discussions foundered last year over Turkey's deployment of a survey vessel in contested Mediterranean waters and disagreements over which topics to cover.

Ankara and Athens agreed this month to resume talks in Istanbul, in a test of Turkey's hopes of improving its relations with the European Union, which has supported EU-member Greece and threatened sanctions on Turkey.

Kenya plans to train more youth in Blue Economy push



The Kenyan government is seeking to boost the contribution of the maritime sector to the economy by employing more trained personnel. It is to assist young people in pursuing maritime studies so that they can work both at home and abroad.

"We are creating a very strong pillar for the development of the Blue Economy and the maritime sector," said Ms Karigithu at the Kenya Maritime Authority (KMA) headquarters.

The latest plan to encourage youth to undertake maritime training is the rollout of a dedicated fund that will see students get loans to finance their education.

Three government institutions have signed a service contract to set up a Maritime Education and Training (MET) financial support programme that will help finance education of beneficiaries.

The partnership between the Department for Maritime and Shipping Affairs through the Kenya Maritime Authority and the Higher Education Loans Board (HELB) adds to Kenya's efforts to tap the unexploited potential of the Blue Economy.

Under the financing deal, HELB will provide loans which will in turn become a revolving fund for learners at the Bandari Maritime Academy.

President Uhuru Kenyatta founded the Bandari Maritime Academy in 2019 to provide international-standard training to enable Kenyan youths to be hired by shipping lines abroad.

The school is anticipated to create at least 2,000 young people per year for jobs that will help the country gain foreign currency, according to the government.

Kenya has been developing ways to capitalise on the Blue Economy's promise. The Blue Economy, if effectively harnessed, could infuse up to 10% of GDP into the economy while also producing 52,000 jobs over the next ten years.



Colours and nature of the economy

Captain W H Kutubuddin, BN and Nayeema Rashid

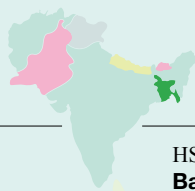
Introduction

The economy of a country indicates poverty, life standard, growth, and development. Throughout the world, there are numerous types of economic activities. The economy also has colours, not less, a total of seven colours. Notably, different scholars classified the economy in various classes according to their characteristics. Among the various types of classification, the economy has also been classified in different colours based on their individuality.

Being the 2nd largest economy in South Asia, Bangladesh is not far from these seven economic colours. It is significant considering that the World Economic League Table of London estimated in early 2020 that it would be the 29th largest economy by 2029 (Figure 1). The appearance of these seven types of economies is also different according to their nature. There is good in it, and there is evil. These seven colours of the economy are red, green, blue, brown, grey, black, and purple, which are also involved with our way of life in this country. While discussing different economic challenges the world is facing today, one more issue that comes to attention is the nature of the economy: Linear or Circular. Red, Green, and Blue economic models are becoming more and more relevant considering the unfolding economic progress of the world in coming years. It all started when Countries invested money in the 'brown economy' (e.g., fossil fuels), leading to many global crises connected with climate change, food, energy, and economics. Moreover, the colours of the economy are an appealing approach to help us position our role in the value system when buying or looking for a job. Thus, we must learn and understand the colours and nature of the economy in the context of Bangladesh.


WORLD ECONOMIC LEAGUE TABLE 2020

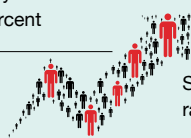
Bangladesh 40th largest economy in the world and 2nd in south Asia



Bangladesh will be the 26th largest economy by 2029

Bangladesh's average economic growth in last 5 years was **7.39** percent

HSBC  projected **Bangladesh's** real GDP will grow by **7.1** percent per annum up to 2030



Since 2014, **Bangladesh's** population growth rate has been measured by **1** percent

Figure 1: World Economic League Table 2020 (Source: Center for economics and business research)

Red Economy

The Red Economy is the byproduct of Fordism (named after Henry Ford), which favours mass production considering environmental resources to be limitless. According to many authors, the red economy refers to the communist-leaning economies where the state takes hold of production and distribution. It is a linear business model that

uses up resources and produces waste. The core business concept of the Red Economy is based on low production costs relying on a globalised economy, without the social or environmental concerns.

Blue Economy

The 'Blue Economy' is ocean-based. Whatever is extracted from the sea, if added to the country's economy, will fall into the category of the Blue Economy such as ocean fisheries and biodiversity, shipping, harnessing renewable energy, resources, and coastal ecosystem, etc.

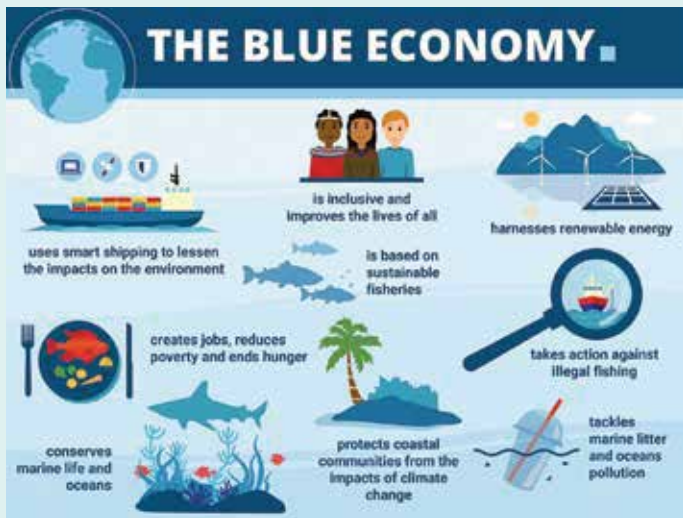


Figure 2: A sustainable economic example

The ocean is the largest asset on earth, covering about 70%, representing about 90% of the earth's living volume. The ocean acts as the largest ecosystem, water container, factor of climate change. As shown in Figure 2, the ocean provides us food, oxygen, a source of hundreds of million jobs, natural resources, sources of energy, and ways of transport and encourages developing economies like Bangladesh to embrace Blue Economy as a sustainable economic concept.

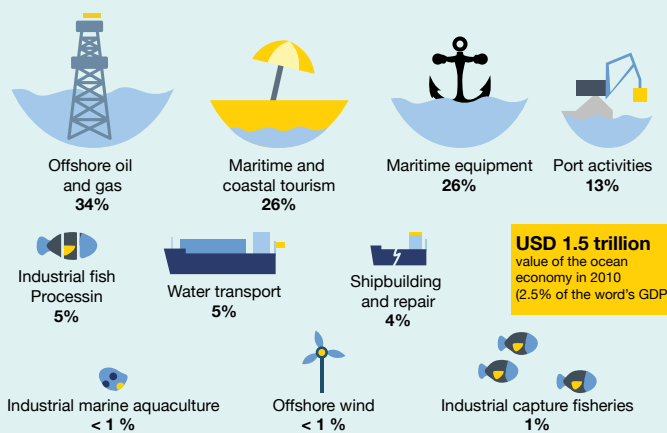


Figure 3: Value of ocean economy

Figure 3 shows the percentage of value exploited or consumed from the ocean utilising offshore oil and gas, maritime and coastal tourism, marine equipment, sports activities, etc. After the settlement of boundary disputes with Myanmar in 2012 and with India in 2014, the total maritime area of Bangladesh is now more than 1,18,613

square kilometres. Bangladesh now has a 200-nautical-mile exclusive economic zone and sovereign rights over all kinds of living and non-living resources within that area. Even in the holy Quran, Allah indicated the resources we collect from the oceans and the importance of trade and commerce through the sea. Therefore, the Blue Economy may provide us scopes for sustainable economic development.

Grey Economy

The Grey Economy is a part of a country's economic activity that is not counted in official statistics to evade taxes, which is also known as the informal or underground economy. It is the various economic activities, including jobs, workers, and enterprises, that are not regulated or protected by the country.

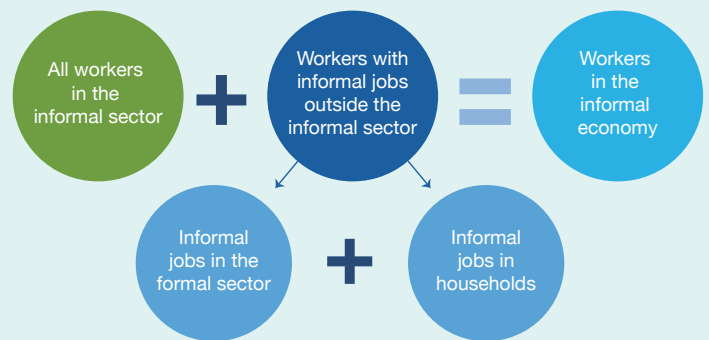


Figure 4: Grey Economy

Activities of the informal economy are not incorporated in the Gross National Product (GNP) and Gross Domestic Product (GDP) of a country. The Grey Economy is present in formal and informal economic sectors, such as some household jobs: housemaids, small home-based economy, etc., as depicted in Figure 4. So, it is a particularly popular activity in developing countries, such as street vendors and unregistered factory workers.

According to the International Labour Organisation (ILO), the informal economy in South Asia accounts for 80 to 90% of the labour force. According to the Labour Force Survey (LFS) 2016-17, 85.1% of the labour force in Bangladesh is employed in the informal economy (ILO). The people in Bangladesh are natural innovators in many different ways; we need to understand that and help them make the most of it. The government must realise but take advantage of the hidden potential of the Grey Economy to truly change the living conditions of the populations of Bangladesh.

Green Economy

A Green Economy is a term that came into attention at the Earth Summit held in Rio de Janeiro, Brazil, in 1992. The United Nations calls for the exclusion of annual environmental expenditures from national income to determine proper growth. The concept can be called 'green national income.'

A Green Economy can be an option for growth and development; in people's lives in ways reliable with sustainable development. It upholds a triple bottom line: sustaining and advancing economic, environmental, and social welfare in an environment-friendly way. We can say that green national income accounts for the net accounts after deducting the reduction in natural resources.

Various environmental movements and conferences have brought before us one eco-friendly model after another throughout the twentieth century. Among these models, the Green Economy model was at the centre of the discussion that consumes less carbon; the progress that goes hand in hand with environment-nature-biodiversity is called Green Growth (Figure 5). The use of solar radiation, wind



Figure 5: Scope for Green Growth

flow is the effective way of green energy production. Green Economy, green growth, and green development are also being discussed in Bangladesh. A recent statistic shows that about 60% of the world's ecosystem services are degraded or used unsustainably. Green Economy aims to reduce environmental risks and ecological insufficiency and aim for sustainable development without degrading the environment.

Brown Economy

The Brown Economy means the industries that cause high pollution and gas emissions, such as cement, iron smelting, quarrying, coal mining, and coal-using production facilities. In Brown Economy, economic growth depends only on fossil fuel such as coal, petroleum, and natural gas, releasing great amounts of carbon dioxide and soot into the atmosphere. Here, economic development depends on limited resources, while environmental pollution is severe. In the last 50 years, huge investments have been made in waste disposal of these industries and the creation of smoke emission processes, most importantly to make the discarded things of the factory reusable. In such leather industries, Central Effluent Treatment Plant (CETP) is constructed (Prothm Alo).

Black Economy

Almost everyone has an idea about the 'Black Economy' as it is the hidden economy or the shadow economy. This economy has underground markets or transactions, which are law-breaking. Austrian economist Frederick Schneider worked on the Black Economy for 30 years. According to his study, the amount of black money in Bangladesh is equal to 30 to 33% of the Gross Domestic Product (GDP).

Purple Economy

The Purple Economy refers to cultural aspects in economics. It is an economy that adjusts to human diversity in globalisation. It includes

care activities and services, such as education, healthcare, and women empowerment, supporting the disabled and the elderly, communication, and others. It promotes the artistic potential of goods and services and contributes to sustainable development. The Purple Economy is diverse; it enriches all goods and services by capitalising on the cultural dimension inherent to every sector. It differs from the cultural economy and sector-based economy.

Nature of Economy

After discussing the colours of the economy, let's turn our attention to the nature of the economy. So far, our economy has been 'linear' for a long period. The Linear Economy generally means that from raw materials products are produced, and after depletion of its use, it becomes waste, and it is thrown away. A Circular Economy is an economy based on recycling, materials are reused, and producing less waste as much as possible (Figure 6).

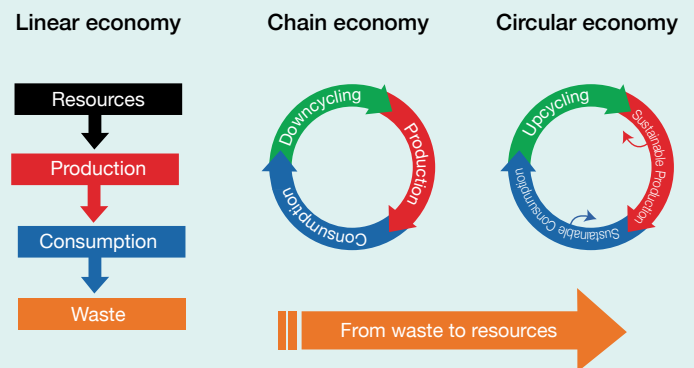


Figure 6: Linear economy, chain economy, circular economy

The circular economic model promotes taking discarded materials and remake them for resale by refurbishing used parts or melting down products to turn back into their raw material form. In a Circular Economy, we close the cycles of all these raw materials by reusing and upcycling the materials by steps like manufacturing, distribution, use, collection, and reuse as a cycle. The eight steps in the processes of Circular Economy are shown in Figure 7.

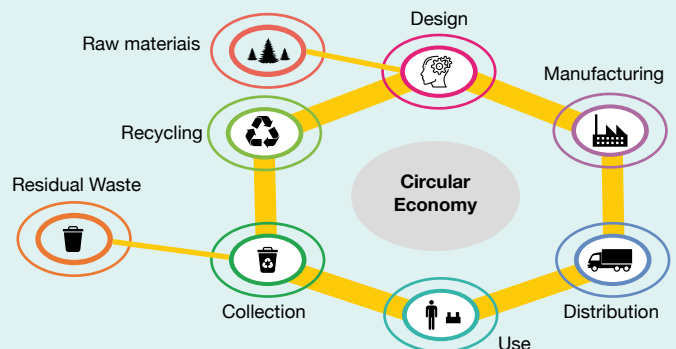


Figure 7: Processes in Circular Economy

A Circular Economy is different from a Linear Economy in terms of reusing materials. To put it simply, in a Linear Economy, we mine raw materials then process them into a product that is thrown away as waste after production. Now, the World Bank suggests that global waste generation could increase by 70% by 2050, which is a cause

of concern for a country like Bangladesh where waste is not managed properly and instead dumped or openly burned. According to World Bank, global waste is expected to grow to 3.40 billion tons by 2050, more than double population growth over the same period (Figure 8). This rate of waste growth will have serious implications for the environment, health, and economy; thus, we need to focus on the Circular Economy for sustainable development.

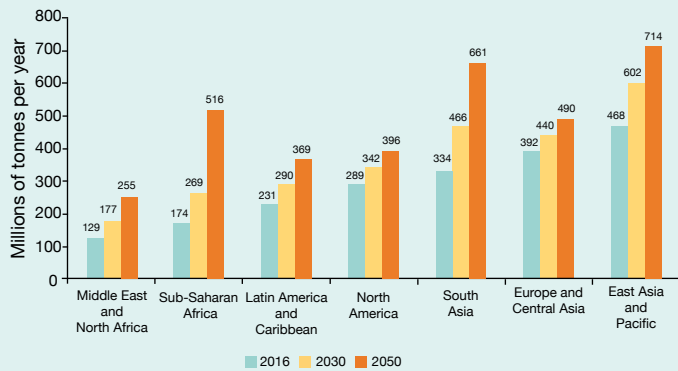


Figure 8: Projected waste generation by region (Millions of Tons/Per Year)

Corona and Economy of Bangladesh

In addition to the above, the economic damage from the global coronavirus pandemic is uncertain. Throughout the world, economists agree that it will have severe negative impacts on the global economy. Nevertheless, the IMF (Figure 9) has indicated that Bangladesh is in the top five economies, evading COVID-19.

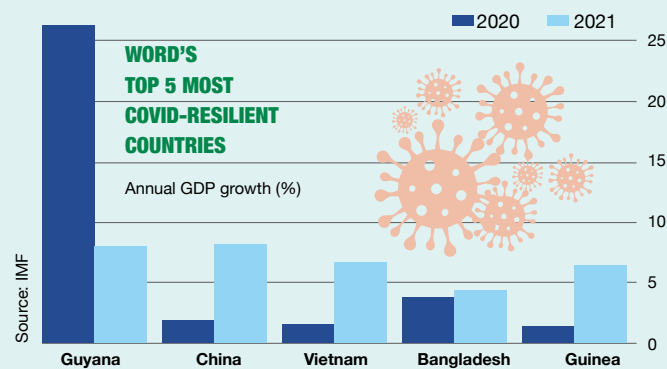


Figure 9: World's top 5 COVID-resilient Annual GDP growth

Many estimated that most major economies would lose at least 2.9% of their Gross Domestic Product (GDP) over 2020 after the global pandemic. This estimate was already restated to a GDP loss of 4.5% where global GDP was estimated at around 87.55 trillion US dollars in 2019. Now that the world is preparing to emerge from the most violent economic shock due to pandemics, experts warn that policymakers and strategic planners need to take three of these colours into careful consideration; green, blue, and purple. We should rethink what kind of economy we need to address wealth inequality, environmental unsustainability, and lack of democracy. While the world has been quite aware of the importance of the Green and Blue economies, very few voices have been weighing in favour of the Purple Economy due to

climate change and the scarcity of resources. Due to its connection to various sectors, as it serves to support and highlight the importance of the human capital of each industry, the purple economy can help to balance the different sides of the economy so that we can show a higher sense of resilience in the face of potential disasters feared in the future. On the other hand, the recent warnings about waste generation and shortage of natural resources should encourage Bangladesh to opt to develop a Circular Economy.

Conclusion

The 2nd wave of COVID-19 has left national economies and businesses taking the fall, as governments are fighting back with new lockdown measures to tackle the spread of the virus. Though there are developments of new vaccines, there are still uncertainties about what the economic recovery could look like. From history, we find that science and the experimental method among the Muslims that have helped shape the European revolution are also included in their efforts in seeking the bounty of Allah in the ocean, what we now call the Blue Economy. They had pursued science and focused on trade and commerce through trade routes in Figure 10.

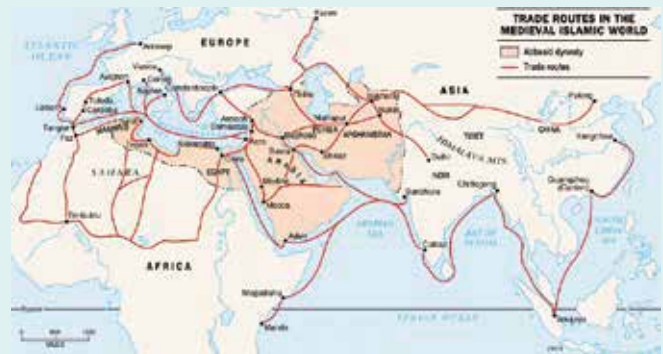


Figure 10: Trade route in the medieval Islamic world

Though the meaning of Blue Economy varies according to the organisation, in general, it aims at a sustainable ocean-based economy. In the context of our country with its vast population to feed, it is high time we concentrate on exploring the scope of the Blue Economy and eliminate the major challenges of our economy. To sustain the economy, policymakers and investors need to pay more attention to projects that help alleviate the quality of life for individuals, make sure better working conditions, better pay, and a higher standard of gender equality by implementing a Circular Economy. It would ensure environmental protection, reduce waste and decrease dependence on raw materials, water, and energy.

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