



ISSN 2708-1338

OCTOBER 2020, VOL 03, ISSUE 04

MARITIME CAMPUS

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

**Bangabandhu-the man behind
the identity of Bangladesh**

MSP and sustainable Blue Economy for Bangladesh



Drivers of revenue generation in the Blue Economy

Prospects for maritime business expansion

Wave energy for energy-efficient shipping



CLIMATE CHANGE

OCEAN TEMPERATURE INCREASE



As climate change has warmed the Earth, oceans have been increasing their temperature.

OCEAN ACIDIFICATION



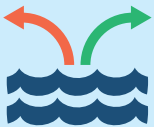
Increasing amounts of carbon dioxide (CO₂) in the oceans combined with seawater produces carbonic acid, increasing the acidity of the water.

SEA LEVEL RISE



Climate change is causing the oceans to heat up, melting polar glaciers, resulting in rising sea levels.

CHANGES IN OCEAN CURRENTS



Increasing ocean temperatures and significant amounts of melting fresh water may result in a slowing of the ocean conveyor belt, altering oceanic current patterns, changing global weather conditions and disrupting marine food webs.

EXTREME WEATHER EVENTS

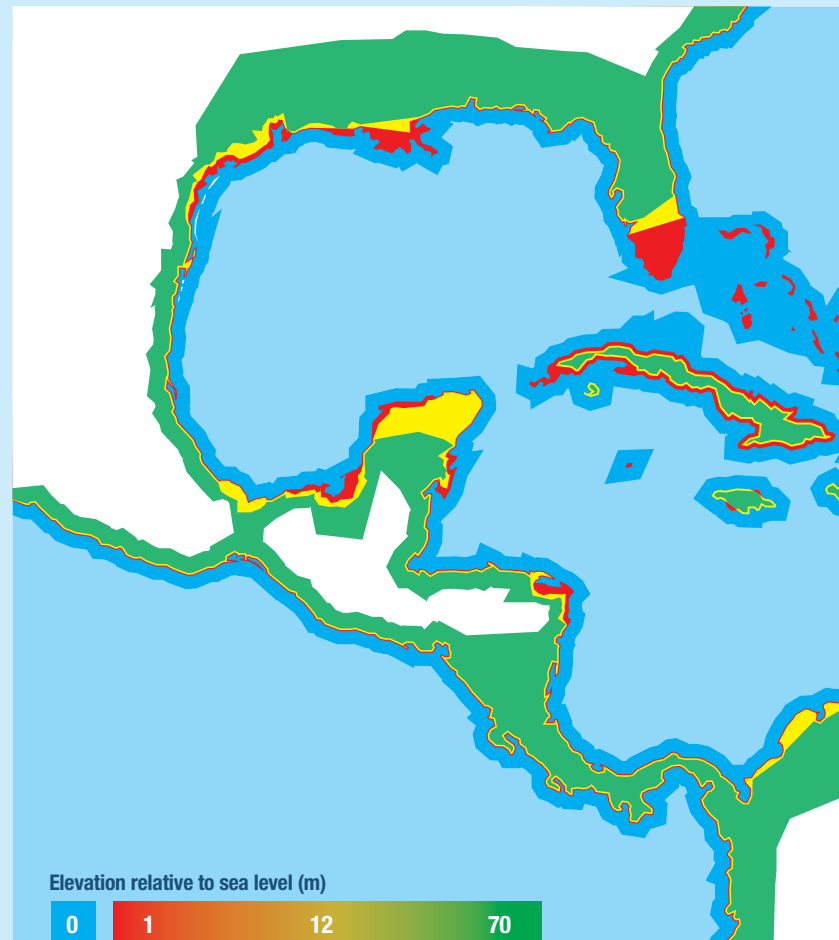
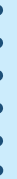


The rise of sea surface temperatures increases evaporation and atmospheric moisture, creating and facilitating environmental conditions for ocean storms to escalate into larger and more powerful systems.

EFFECTS ON MARINE BIODIVERSITY AND LOCAL COMMUNITIES

Climate change is affecting the world's oceans to modify their temperature, nutrient supply, water chemistry, wind systems, and ocean currents, dramatically impacting marine biodiversity.

VULNERABILITY TO SEA LEVEL RISE



Climate change is exacerbating anthropogenic (e.g., water pollution, land run off, overfishing) and natural (e.g., storms, coral disease)

Numerous model predictions foresee a sea level rise of 1 additional metre by 2100, which would displace millions of people and would cause billionaire losses in infrastructure.

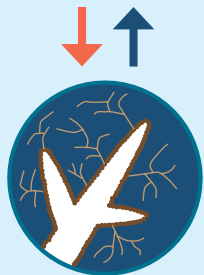
CORAL BLEACHING



Healthy coral: Healthy coral with zooxanthellae in coral tissue.



CORAL BLEACHING: coral expels zooxanthellae from tissue caused by thermal stress.



Dead corals are not able to recover its zooxanthellae starving to death.

IMPACTS ON BIODIVERSITY

MANGROVES



- Redistribution of mangroves due to increases in temperature and rising seas.
- Damage and loss of mangrove forests by wave action and strong winds, previously sheltered by coral reefs.

SEA GRASS BEDS



- Alteration of growth rates due to increasing sea surface temperature.
- Redistribution of sea grasses caused by rising seas, increasing sea water temperature, salinity and fresh water regime changes.
- Reduction in plant productivity as a result of increased water depth, limiting the amount of light, water motion and tidal circulation.

CORAL REEFS



- Coral bleaching and mortality promoted by increasing sea surface temperatures.
- Coral loss due to the skeleton weakening and reduced growth rate of their calcium carbonate skeleton caused by ocean acidification.
- Degradation of reefs caused by an increase in the severity and frequency of storms and hurricanes.

MARINE TURTLES



- Reduction and lack of nesting habitats due to sea level rise and beach erosion.
- Higher sand temperature can skew hatching sex ratios favoring females, compromising species survival, as sand temperature plays a critical role in defining sea turtle sex.
- Reduction of foraging sites and prey availability as a result of coral bleaching and sea grass mortality.

SHARKS



- Lack of food sources may induce sharks to change their geographical distribution and migration patterns, increasing their interactions with humans.
- Degradation and loss of mating, nursery and foraging areas (mangroves, sea grasses, coral reefs) critical for sharks survival and development.

**Chief Patron**

Rear Admiral M Khaled Iqbal, BSP, ndc, psc
Vice-Chancellor

Advisory Board

Cdre A M Quamrul Huq, (ND), NGP, ndc, afwc, psc, BN
Treasurer

Cdre A Z M Jalal Uddin, (C), PCGM, ndc, psc, BN
Registrar

Cdre Anisur Rahman Mollah, (L), NUP, psc, BN
Dean, FMBS

Inst Cdre M Jashim Uddin, (H1), BN
Dean, FEOS

Cdre M Ziauddin Alamgir, (L), NGP, ndc, psc, BN (retd)
Dean, FMGP

Professor Dr Altaf Hussain
Academic Adviser

Editor

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

Assistant Editors

Lt Cdr Sushil Barua, BN (retd)
Deputy Controller of Examinations

Raju Ahmmed
Lecturer, Department of English

Ahammad Karim
Asst. Computer Programmer

Md. Salman Sadekin Choyan
Public Relation Officer

Content Development, Writing, Editing, Design & Publication:

ENLIGHTEN | VIBES

House 04, Road 7/B, Sector 03
Uttara, Dhaka-1230, Bangladesh.
Tel: +02 48956748
Email: enlightenvibes@gmail.com

Editorial Communique

Plot# 14/06-14/23, Pallabi Mirpur-12, Dhaka-1216
Tel: +880 9666776868, +88 02 58051010,
+8801769721010
Fax: +02 58051010
Email: info@bsmrmu.edu.bd
Web: www.bsmrmu.edu.bd

Editorial

MSP to accelerate implementing national policies for the benefits of Blue Economy

Bangladesh has a number of national policies relating to Blue Economy activities, which look for sustainable use of the ocean resources, protection of the marine environment and conservation of biodiversity. It has a great chance of mainstreaming Blue Economy through the implementation of those national policies. However, there are a number of challenges in implementing the national policies and boosting up Blue Economy benefits for Bangladesh. Marine Spatial Planning (MSP) may be an effective tool to accelerate implementation of those national policies for the benefits of Blue Economy. Our lead story analyses the current national policies concerning Blue Economy sectors of Bangladesh. The objective of the article is to explore how MSP may accelerate the implementation of those national policies to achieve the benefits of the Blue Economy for Bangladesh.

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 his return to the war-torn but newly-born country and his strives to introduce Bangladesh into the world stage. Besides, the horror of 15 August 1975, that assassinated him with most of his family members, is also highlighted.

There are few other potential sectors that may become a major driver of revenue in the Blue Economy. Those are marine aquaculture, marine biotechnology, maritime safety and surveillance etc. Bangladesh should work on enhancing the service of its industries based on maritime resources which will eventually contribute to the Blue Economy. To increase the revenue and to get the highest benefit of the Blue Economy, the government and private sector should work together. We have included an article on drivers of revenue generation in the Blue Economy of Bangladesh.

As more than 70% of the earth's surface is covered by ocean, it is theoretically estimated that the ocean holds energy resources about four times the global electricity demand. In this context, the energy-efficient shipping idea incorporated with renewable energy comes to focus. Since wave energy idea, as a green energy source is still in fledgeling condition, less work has been conducted on wave energy research and application on seagoing vessels. In this regard, our 'Panorama' section presents an article on wave energy for energy efficient shipping.

Additionally, the 'Campus Canvas', 'Maritime Bangladesh' and 'Around the World' sections will inform you about all the important maritime events and developments that happened during the third quarter of 2020.

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 the 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 the 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





06

LEAD STORY

A policy analysis: MSP and sustainable Blue Economy for Bangladesh

Bangladesh as a coastal state of the Bay of Bengal has a high opportunity of Blue Economy. In Bangladesh, the Blue Economy activities started after two judicial pronouncements delimitating maritime boundary among Bangladesh, Myanmar and India respectively. The settled and demarcated maritime zone has definitely paved the way for Bangladesh gaining access to mineral resources in the maritime zone peacefully, which will accelerate its economic development with proper Maritime Spatial Planning (MSP).

02

INFOGRAPHICS

About the ocean and the world

37

PANORAMA

Wave energy for energy efficient shipping

As more than 70% of the earth's surface is covered by ocean, it is theoretically estimated that the ocean holds energy resources about four times the global electricity demand. In this context, the energy-efficient shipping idea incorporated with renewable energy comes to focus.

22

PERSPECTIVE

Prospects for maritime business expansion in Bangladesh

The government is a big player in the maritime industry. Without the government's interest and proper initiatives, it is very difficult for a maritime business to survive in the long run. Stakeholders believe that government patronises new business models that encourage development and subsidisation in those newly formed businesses will nurture overall sustainability.

20

INFO BYTES

Anecdotes, information and points to ponder form the vast maritime world

28

CAMPUS CANVAS

News on BSMRMU events and developments

33

AROUND THE WORLD

Notable news from the global maritime sphere

14

HORIZON

Unearthing a blue mine

With the National Ocean Service claiming that only 5% of our oceans have been explored; in reality, we haven't even begun to comprehend the values that our surface water-bodies may contain. According to a commonwealth survey, average revenue of 1.5 trillion USD per year is already being generated from the maritime sector along with an incorporation of 500 million jobs.

29

MARITIME BANGLADESH

News on maritime progress and activities in Bangladesh

18

NEW WAVES

Underwater robotics - a groundbreaking discovery in science

Country that touches the ocean

13

FOCUS

Bangabandhu- the man behind the identity of Bangladesh

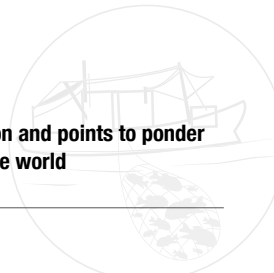
By becoming the 136th member of the United Nations on 17 September 1974, Bangladesh gained worldwide recognition. Father of the Nation Bangabandhu Sheikh Mujibur Rahman delivered the first ever Bengali speech at the UN at the 29th General Assembly of the United Nations, held on 25 September 1974.

25

ACADEMIA

Drivers of revenue generation in the Blue Economy of Bangladesh

The major drivers of revenue generation of Blue Economy are living resources, minerals, energy and transport and trade at the seaports. There are some promising areas for generating revenue from the sea port's operation which needs focus. Firstly, there are varieties of operating expenses that reduce the profitability of the seaport operation. The management should be more efficient to reduce the expenses. The efficiency can be availed by training and other skill development programmes. Secondly, in a Blue Economy, the major contribution comes from natural gas (liquid) extraction and marine capture of fisheries. These sectors should be empowered along with other promising sectors like marine living resources, maritime transport etc.



// Lead Story //

A policy analysis

MSP and sustainable Blue Economy for Bangladesh

Dr Asrafal Alam

Overview

From time immemorial, oceans have been contributing significantly to the development of the coastal nations and providing an inherently fluid nature to the harmonisation of economic activities. Bangladesh as a coastal state of the Bay of Bengal is blessed with enormous benefits from the ocean. The Bay of Bengal is significant for hydrocarbon reserve and fisheries resources. The ocean resource and seaborne trade have been estimated over 90% and recent globalisation pushed this trend towards further ahead for Bangladesh. Bangladesh has a high prospect of economic development through the utilisation of the ocean resources within its national maritime boundary. The demarcated maritime boundary with the neighbouring countries, India and Myanmar, and the concept of Blue Economy have sparked out this prospect. The concept of Blue economy is conceptualised to achieve the goal of sustainable use, with the objectives of economic growth and environmental protection. Bangladesh has a number of national policies relating to Blue Economy activities, which look for sustainable use of the ocean resources, protection of the marine environment and conservation of biodiversity. It has a great chance of mainstreaming Blue Economy through the implementation of those national policies. However, there are a number of challenges in implementing the national policies and boosting up Blue Economy benefits for Bangladesh. Marine Spatial Planning (MSP) may be an effective tool to accelerate implementation of those national policies for the benefits of Blue Economy.

Blue Economy

The concept of “Oceans Economy” or “Blue Economy” was originated from the United Nations Conference on Sustainable Development held in Rio de Janeiro in 2012. The Conference focused on two themes; Framework for sustainable development and advancement of ‘Green Economy’. The Conference was concluded on the decision that sustainable development would be achieved through the sustainable use of blue resources. Consequently, the importance of oceans for sustainable development was included in the UNCED process, in Agenda 21, the Johannesburg Plan of Implementation and reaffirmed in the outcome document of the Rio+20 Conference. Generally, Blue Economy means the economy based on the utilisation and sustainable use of ocean resources. Sustainable use is confirmed when economic activity is in a balance with the long-term capacity of the ocean ecosystem and marine environment to support this activity and remain resilient and healthy.

Bangladesh as a coastal state of the Bay of Bengal has a high opportunity of Blue Economy. In Bangladesh, the Blue Economy activities started after two judicial pronouncements delimitating maritime boundary among Bangladesh, Myanmar and India respectively. The settled and demarcated maritime zone has definitely paved the way for Bangladesh to gain access to mineral resources in the maritime zone peacefully, which will accelerate its economic development. The pronouncements allowed Bangladesh’s sovereign

rights over the living and non-living resources of the Bay of Bengal. The marine fisheries; shipping and international trade; oil, gas and renewable energy; and tourism are the major Blue Economy sectors in Bangladesh. Moreover, protection of the marine environment is an important aspect of Blue Economy. Bangladesh can get the optimal benefit of Blue Economy if the resources are managed by the principles of the protection of the oceans, including biodiversity, ecological function and sustaining environmental services.

Marine Spatial Planning (MSP)

MSP is an implementation tool for Ecosystem-Based Management (EBM), which “seeks to broaden the scope of traditional resource management so that it considers a wider range of ecological, environmental and human factors in the exploitation of the marine resources”. MSP is the tool for managing human activities at sea and to assist in decision making for marine resource access and use by considering their cumulative impact on the natural environment. MSP provides an integrated planning framework that informs the spatial distribution of activities in and on the ocean in order to support current and future uses of ocean ecosystems and maintain the delivery of valuable ecosystem services for future generations in a way that meets ecological, economic and social objectives.

MSP relates to an improved planning and management system for protecting marine ecosystem health and service. MSP is generally recognised as serving two overarching goals of allocating space to different marine activities to mediate and reconcile different uses; and of ensuring that marine activities do not undermine the ability of the marine environment to continue to deliver the ecosystem services. MSP is the tool that the coastal states are searching for providing a real and practical basis for achieving sustainable development in the context of the oceans. MSP enables quantification and communication of trade-offs between objectives, so that managers and stakeholders understand the full range of management options, and avoid false trade-offs and conflict when win-win opportunities are possible. Thus, MSP is a tool that seeks to combine the aims of economic growth with environmental protection.

National policies for the Blue Economy in Bangladesh

Bangladesh has many national policies concerning Blue Economy sectors. Although the policies were adopted before the flourishing the concept of Blue Economy, they cover significant aspects of Blue Economy. The relevant national policies concerning Blue Economy sectors in Bangladesh are National Fisheries Policy 1998, National Shipping Policy 2000, National Energy Policy 2008, National Tourism Policy 2010 and National Environment Policy 1992. The Policies are analysed below.

a) National Fisheries Policy 1998

The Ministry of Fisheries and Livestock adopted the National Fisheries Policy 1998. The objectives of the Policy are; to enhance the fisheries production, to achieve economic growth; and to maintain ecological balance and conservation of biodiversity. The Policy provides for exploitation as well as conservation of marine fisheries resources. The Policy requires a number of policies to be adopted in order to ensure proper management of marine fisheries. The goal of the proper management is the sustainable use of marine fisheries. Para 9 of the Policy mentions:

“..... following policies will be adopted in order to ensure proper management of marine fisheries resources and harvest marine fish at a sustainable level.”

The Policy suggests analysis and utilisation of the previous survey for proper management of marine fisheries. The Policy requires the Government to analyse the previous surveys to formulate specific recommendations to measure the nature and availability of the marine resources and extend the results of the analysis to the owners of the trawlers, mechanised boats and fishermen communities in more practical ways. The Policy also looks for fisheries survey in new fields to prepare recommendation on the situation, improvement of gear technology, conservation of the marine fisheries and mitigation of pollution.

The Policy also provides for undertaking project for fishing in the Exclusive Economic Zone (EEZ) and deep sea. Para 9.1 of the Policy documents:

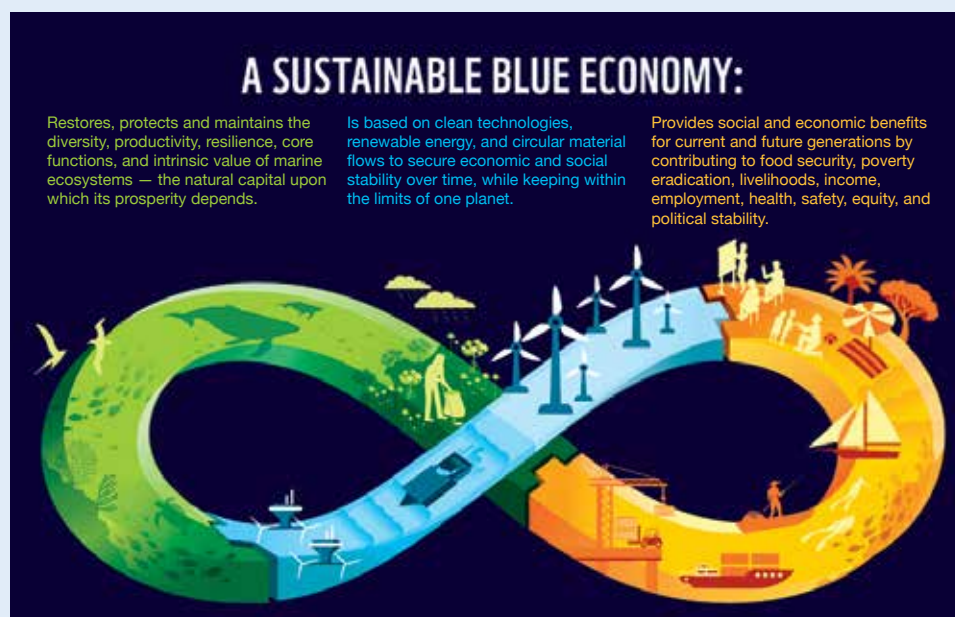
“Project will be undertaken regarding the presence and abundance of pelagic fish, like tuna, mackerel, etc. in the exclusive economic zone.”

Moreover, the Policy mentions:

“Considering the fisheries resources in the deep sea, joint venture activities with the foreign countries will be established.”

However, the Policy imposes restriction on fishing in the shallow coastal areas. The Policy reads: “Harvest of fish and shrimp by the trawlers in the shallow coastal areas (within 40- metre depth) will be banned.”

The Policy also prescribes for the conservation of marine biological





The National Fisheries Policy 1998 provides for exploitation as well as conservation of marine fisheries resources.

resources. Para 9.2 of the Policy acknowledges that the quantity of exploitable fish and shrimp has achieved at its maximum level. Under these circumstances, strict decisions will be taken against increases of mechanised or non-mechanised boats engaged in fish harvest in the marine zones.

The Policy specially mentions:

“Bans will be imposed to Harvest bagda, chaka and harina shrimps from their breeding grounds and migration routes during the breeding season.”

The Policy also provides that practical approaches will be extended to harvest, collect and utilise trash fish. Appropriate preventive measures will be taken against dumping of hazardous chemicals and atomic wastes into the sea. The Policy pays considerable attention to the social interest of the coastal community.

The Policy acknowledges that fish production has declined due to improper management. The Policy reads:

“Fish production has declined due to environmental imbalances, adverse environmental impact, can be expected due to improper implementation of fish culture and management programmes.”

The Policy provides for the following policies to prevent adverse environmental impact and to confirm proper management:

- “Shrimp and fish culture will not be expanded to the areas which damage mangrove forest in the coastal region.
- Biodiversity will be maintained in all-natural water bodies and in the marine environment.
- Control measures will be taken against activities that have a negative impact on fisheries, resources and vice-versa.”

The Policy prescribes that the Ministry of Fisheries and Livestock will control all development, conservation distribution and other management aspects of fisheries resource, and respected ministries and/or departments will be rearranged and strengthened to develop a

meaningful national plan for fisheries development, evaluation and coordination.

The Policy states:

“Co-ordination will be established in different government, autonomous, private and voluntary organisations.”

The Policy entrusts power to Department of Fisheries to issue and cancel license of fishing vessels to ensure proper management of marine fisheries.

The Policy documents:

“Department of Fisheries will be the authority to issue, cancel or renew licenses for fishing vessels and other Implements for the proper management of marine fisheries resources.”

Finally, the Policy provides the implementation strategy, where the primary focus is the estimation of marine fisheries resources by survey.

b) National Shipping Policy 2000

The main objective of the National Shipping Policy is to assist in and encourage for the overall economic development through rendering most business helping transportation service keeping shipping security and environmental matters under due consideration. The Policy imposes responsibility upon the Government for the proper management of Port. The Policy acknowledges the importance of protection of port and coastal water from pollution, where the responsibility is entrusted to the Port Authority.

The Policy mentions:

“Coastal water area, entrance of the port and ‘kharis’ are important national resource of Bangladesh. This water area should be protected from pollution.”

The Policy further provides that there are sufficient experience, rules and regulations in the international level regarding pollution control in the water area of the Sea. The government is responsible to ensure an effective system regarding pollution problem in the sea and coastal water area according to the international rules and regulations.

The Policy requires the government to undertake the following steps:

- “Preparation of an environmental management strategy for the port and coastal water area keeping conformity with international oceanic pollution convention.
- Innovation of rules and regulations, monitoring and management system to ensure control and removal of environmental pollution effectively in the port and ocean area.”

The Policy contains the issue of Ship Breaking Industry which is mainly responsible for pollution in the coastal area of Chattogram port. The Policy mentions:

“Though there is reason of remaining sufficient uneasiness in respect of procedural security and industrial management in the work field of this industry. Location of this industry is near Chattogram port. So sometimes it creates different problems in the activities of the port and it hampers security. Besides, importance may be given on adverse implication on the environment.”

The Policy further provides:

“...in order to encourage, consolidate, environment balanced and technology dependent of this industry, Ministry of Shipping, Ministry of Industry and Ministry of Labour will prepare policy Jointly.”

The Policy also contains the issue of environmental management. The Policy states the Government is under promise of keeping highest standard regarding environment in conformity of national development.

The Policy mention:

“Considering existing rules and regulations, policy of industrial management, technological progress, demand of consumers and expectation of the people government will try to improve management system and environment.”

Moreover, the Policy documents:

“In order to stop environmental pollution for ship movement, shipbuilding, ship repair and breaking activities concerning international conventions, protocols etc will be introduced and applied.”

c) National Energy Policy 2008

The main objectives of the National Energy Policy are to harness the potential of renewable energy resources and dissemination of renewable energy technologies, and to achieve the targets for developing renewable energy resources to meet 5% of the total power demand by 2015 and 10 % by 2020.

The Policy identifies Wind Energy as one of the major sources of renewable energy. Para 1.3.2 of the Policy provides for the prospect of wind energy.

The Policy mentions that:

“Wind Energy has also made some inroads but its potential is mainly in coastal areas, and offshore islands with strong wind regimes. These coastal settings afford good opportunities for wind-powered pumping and electricity generation.”

The Policy suggests for other renewable energy sources including bio-fuels, gasohol, geothermal, river current, wave and tidal energy.

Potentialities of these sources are yet to be explored. Energy from wave and tide of the ocean may be a significant source of renewable energy for Bangladesh. The Policy requires exploring these sources of renewable energy. Apart from the targets and sources, the Policy also provides the institutional arrangement for promoting renewable energy. Para 3.1 of the Policy provides that Sustainable Energy Development Agency (SEDA), shall be established as a focal point for sustainable energy development and promotion, ‘sustainable energy’ comprising renewable energy and energy efficiency. The main responsibilities of SEDA are: coordination of sustainable energy planning, including action plans linking together the activities of several agencies or organisations; enabling systematic development of renewable energy projects and opportunities through energy audits; and implementing policies for mitigation of environmental issues arising out of use of Renewable Energy.

d) National Tourism Policy 2010

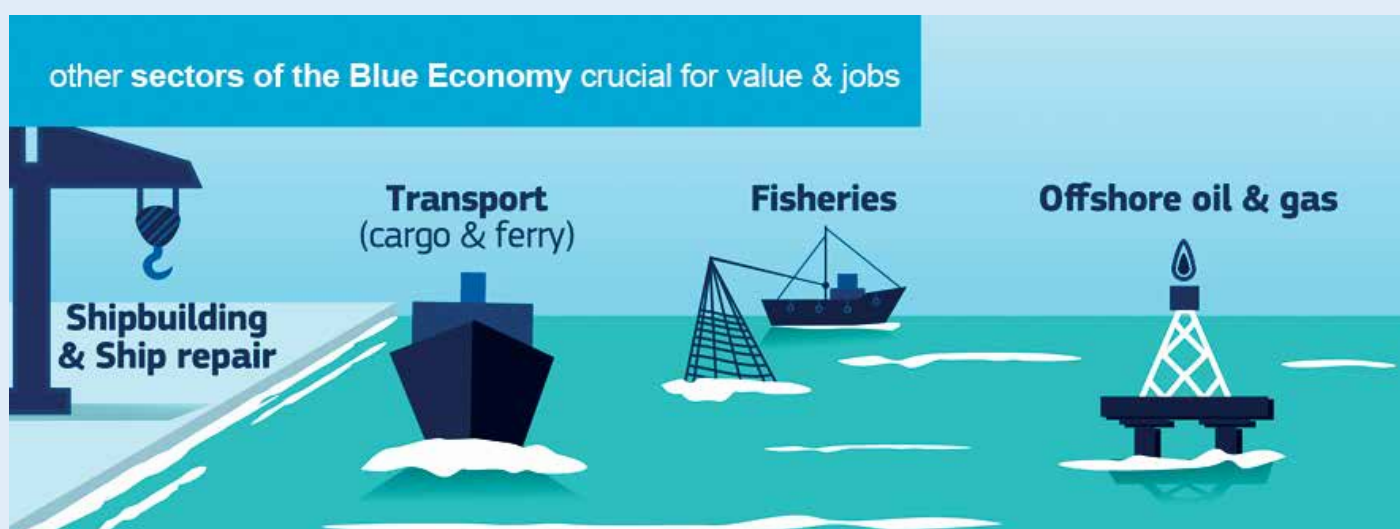
The main objectives of the National Tourism Policy are to promote and develop tourism sector to create employment, to engage local and ethnic people for socio-economic development, to maintain balance in the protection of environment and conservation of biodiversity for sustainable development in Bangladesh.

The Policy mentions that:

“Government will establish Ideal Holiday-making destination in the largest Sea beach of the world Cox’s Bazar and other beaches at Koakata, Teknaf, St Martin, Sonadia Island and other Beaches. In order to facilitate more recreational opportunities, beach football, beach volleyball, surfing, cultural centres, club, and resorts of international standard will be provided in the sea beaches. Picnic and tourism spots in the beach will be explored. Marine drive from Cox’s Bazar to Teknaf and other communication through rail, air and land will be developed.”

Moreover, the Policy provides that:

“The Government will establish eco-tourism spots, and provide facilities of eco-lodge, Watch tower, ropeway, walkway, night hiking and other facilities to ensure eco-tourism in the surrounding areas of Sundarbans, the largest mangrove forest of the world. The Government will identify more tourism spots there around and bring under its control for development.”



The Policy requires Government to adopt and coordinate long time national policy, adequate investment, economic and technical assistance, establishment of infrastructure, conservation of historical monuments, identification of possible tourism spots and protection, development of fine arts activities, simplifying the traveling process for foreign traveller, conservation of forest and biodiversity, development of Airport, advertisement and circulation of the tourism attraction. The Policy requires the government to coordinate among the relevant ministries to develop tourism and specially protect the coastal area of Bangladesh.

The Policy reads that:

“To make coordination among the relevant Ministries to develop tourism by eco-tourism, and to declare ecologically critical area in the coastal area of Bangladesh.”

The coordination should be made among Ministry of Environment and Forest, Ministry of Culture, Ministry of Communication and transport, Ministry of Land, Ministry concerning Hill Tracks, Ministry of Information, Ministry of Shipping, Ministry of Foreign Affairs, Ministry of Education, Home Ministry, Ministry of Religion, Ministry of Local Government, Ministry of Sports, Ministry of Industries, Ministry of Freedom Fight and other related Ministries.

In further, the Policy provides that:

“The Government will take action plan to establish institutional body and coordinate among the inter Ministries Agencies, investment, Public-Private partnership, adoption of necessary legislation, identification of tourism attraction, classification.”

e) National Environment Policy 1992

The preamble of the National Environment Policy mentions that it is essential to take necessary action to control environmental pollution and degradation in Bangladesh as nature, environment and natural resources of Bangladesh are directly connected to the international and regional environment. The policy identifies 15 sectors to achieve the objectives. Protection of the coastal and marine environment is one of those sectors. The Policy requires the government to take policy for the conservation of the coastal and marine area and natural resources of Bangladesh.

Renewable energy sources like windmills can positively contribute to the nation's energy need.



The Policy requires the government to take all preventive actions to prevent the activities which are liable for causing pollution in the coastal and marine environment.

The Policy reads:

“Prevention of all types of polluting activities either internal or outer at the coastal and marine area of Bangladesh.”

The Policy also requires taking necessary action for the sustainable use of fisheries resources.

The Policy provides for a legislative framework for the protection of environment and natural resources.

The Policy mentions:

“The government will take steps for the modification of all legislation relevant to the protection of environment and natural resources and prevent environmental pollution and degradation.”

The Policy also mentions:

“The government should adopt new legislation for the control of activities which cause environmental pollution and degradation.”

The Policy further provides that:

“The government should have accession to relevant international convention and implementation into the national legislation.”

The Policy also includes guidelines for an institutional framework. The Ministry of Environment and Forest will coordinate in the implementation of this Policy.

In further, the Policy mentions:

“A national Environment Committee will be formed to give guidelines in the implementation of this policy.”

National Policies and Marine Spatial Planning for Bangladesh

Blue Economy has revealed a new dimension in ocean management. It recognises that diverse ocean uses, marine environment and ocean ecosystem are interconnected, and additional value can be gained from managing these uses and services by a comprehensive policy. The current national policies in Bangladesh contain almost all aspects of Blue Economy. The relevancies of MSP under the current national policies are discussed below.

a) National Fisheries Policy and MSP

The National Fisheries Policy aims for enhancing fisheries production for economic growth by maintaining ecological balance and conservation of marine fisheries resources. The Policy suggests for proper management of marine fisheries to keep at a sustainable level. The Policy provides for a number of actions for proper management of marine fisheries. MSP is an essential tool to achieve these objectives of enhancing economic growth and conservation of marine fisheries. MSP is an implementation tool which makes a balance between environmental protection and economic interest and confirms a ‘win-win situation’ for the coastal state.

The Policy contains the specific suggestion for the conservation of marine biological resources. It prohibits harvest of fish and shrimp in the shallow coastal areas. The Policy prohibits fishing where the quantity of exploitation has achieved at maximum level to prevent overexploitation of fisheries resources. The Policy also forbids using any means of fishing, which are destructive to fish. The Policy expressly suggests for the conservation of spawning grounds and migration routes during the breeding session. Furthermore, the Policy suggests for appropriate preventive measures against dumping of trash fish, hazardous chemicals and atomic wastes into the sea, and Policy requires special measures to limit uncontrolled fish harvest to reduce the spoilage of fish. In this context, MSP is the appropriate tool for the sustainable use and conservation of marine fisheries.

Conservation of marine biological resources and prevention of marine pollution is the priority target of MSP. MSP prohibits over exploitation of ocean resource and provides 'No take zone' for the conservation biologically significant species. MSP prohibits all types of dumping into sea, which may cause marine pollution.

The Policy also provides for the institutional arrangement for management of fisheries resources. The Policy entrusts responsibility to the Ministry of Fisheries and Livestock for the development and the Department of Fisheries is entrusted to control fishing by issuing and cancelling fishing vessel. The implementation strategy of the Policy requires management of marine fisheries by coordination among the relevant Ministries and Departments, which MSP offers best integrated and coordinated institutional framework for the management of marine resources. The introduction and implementation of MSP confirm an integrated institutional framework. The integrated institution coordinates among the relevant stakeholders to take common objectives and implement strategic policy.

b) National Shipping Policy and MSP

The National Shipping Policy aims for overall economic development by rendering transportation with due consideration to environmental matters. The Policy suggests for the prevention of polluting activities in ports and coastal water. The policy entrusts responsibility on the government to ensure effective system to prevent pollution in the sea and coastal area. In this context, the Policy prescribes to implement international legal provisions for pollution control. The Policy suggests two types of actions to control pollution in the sea; preparation of environmental management strategy; and adoption of rules, regulation and management mechanism to ensure control and removal of environmental pollution in Port and coastal area. MSP can ensure better maintenance of shipping navigational line and port to prevent pollution from all types of dumping at sea.

The Policy provides for an effective management plan for the Ship breaking industry which is deemed to cause severe environmental degradation in the coastal water in Chattogram. The Policy requires a joint plan by Ministry of Shipping, Ministry of Industries and Ministry of Labour. Finally, the Policy guides to implement the international regulation in order to stop environmental pollution from ship movement, shipbuilding, Ship repair and Ship-breaking activities. The introduction of MSP in Bangladesh will find out the best possible space for ship breaking industry to minimise the adverse environmental impact. In this case, MSP may be guided by the Hongkong International Convention for the Safe and Environmentally Sound Recycling of Ships 2009.



MSP can ensure better maintenance of shipping navigational line and port to prevent pollution from all types of dumping at sea.

c) National Energy Policy and MSP

The main objective of the National Energy Policy is to harness the potential of renewable energy resources. The Policy identifies wind energy from coastal areas one of the major sources of renewable energy. The policy also provides for the production of renewable energy from wave and tide of the ocean. Bangladesh has a great opportunity to produce renewable energy from coastal wind, wave and tide. The Policy establishes Sustainable Energy Development Agency to develop and promote renewable energy. The Agency is liable for coordinating sustainable renewable energy planning, policy, enabling systematic development of renewable energy projects and implementing policies for mitigating of environmental issues arising out of use of renewable energy. In this context, MSP can play a vital role in demarcating the locations where the development of renewable energy would be most appropriate.

d) National Tourism Policy and MSP

The main objective of the National Tourism Policy is to promote and developed tourism sector by maintaining balance in the mainstreaming tourism sector and protection of the environment. The Policy contains guidelines as to marine tourism in sea beaches and the coastal areas including Sundarbans. The policy requires exploring new tourism spot and facility in the coastal area. The Policy also suggests for allocating eco-tourism spot around the Sundarbans and taking effective control to prevent any damage to the environment. The Policy requires the government to take effective measures for the protection of biodiversity. The Policy also provides for the coordinated institutional arrangement among the relevant ministries for the development of tourism sector. MSP confirms all of these objectives. MSP considers both economic development and protection of the environment. MSP involves all the sectors of economic use and environmental protection in the development process. MSP allocate marine tourism zone on consideration of the adverse impact by the disturbing human activities around the zone.

e) National Environment Policy and MSP

The objective of the National Environment Policy is to maintain a balance between economic development and protection of the environment. The Policy requires identifying and controlling all activities which cause pollution and degradation to ensure environmentally friendly development and sustainable use of the national resources. The Policy suggests the government take all preventive actions to prevent the activities which are liable for causing pollution in the coastal and marine environment. The Policy also requires taking necessary action for the sustainable use of marine fisheries. MSP is a perfect tool to adopt preventive actions to prevent the activities which are liable for marine pollution. MSP confirms the rational distribution, as well as providing sustainable activity in utilising marine resources in terms of the ecosystem. One of the primary appeals of MSP lies in its ability to harmonise and coordinate the fragmented management regimes that regulate sea uses such as fisheries, navigation and environmental protection.

The Policy suggests for new legislation as per the international conventions for the control of activities which cause environmental pollution and degradation. The Policy mentions that the Ministry of Environment and Forest will coordinate in the implementation of this Policy; and a national Environment Committee will be formed to give guidelines in the implementation of this Policy. MSP is the most applicable tool to make legislative consistency and institutional integrity. It aims to balance the development of maritime activities and increase cross-border cooperation through transparency, clearer legislation, better coordination between administrations, and the early identification of impacts that can arise from the multiple uses of marine space.

Conclusion and Recommendation

There are many national policies concerning the major Blue Economy sectors in Bangladesh. The Policies look for mainstreaming national economy without jeopardising any damage to marine environment and coastal water. The National Fisheries Policy aims for enhancing marine fisheries to the EEZ and deep sea while suggesting for

the conservation of marine fisheries from any overexploitation and destructive activities to keep at a sustainable level. The Shipping Policy aims for the development of the national economy by rendering shipping service and international trade by proper management of Port to prevent any environmental pollution by port operation and dumping at sea, particularly, by ship breaking industry. The Energy Policy identifies wind energy as a major source of renewable energy and suggests for further exploration of renewable energy from wave and tide. The Tourism Policy aims for promoting tourism sector in sea beaches and coastal area without causing an adverse impact on the environment. The Environment Policy looks for sustainable development through environment-friendly use of natural resources by taking effective preventive actions to protect the marine and coastal environment from any type of pollution. All of the Policies look for boosting economic interest as well as environmental protection. The Policies suggest for proper management mechanism; consistent legislation according to international rules and regulation; and coordinated and integrated institutional framework for sustainable use and conservation of biodiversity. MSP confirms all of these objectives. MSP reconciles and maintains a balance between economic growth and environmental protection. Sustainable use and conservation of biodiversity are the first priority of MSP. MSP process starts with strategic policies, consistent legislation and integrated institutional arrangement. Therefore, MSP may be an appropriate tool to implement the national policies concerning Blue Economy sectors in Bangladesh to achieve the benefits of Blue Economy.

Dr Asrafal Alam

Faculty Member
Department of Maritime Law & Policy
BSMRMU

Concepts and analysis of this article are taken from the PhD project of the Author



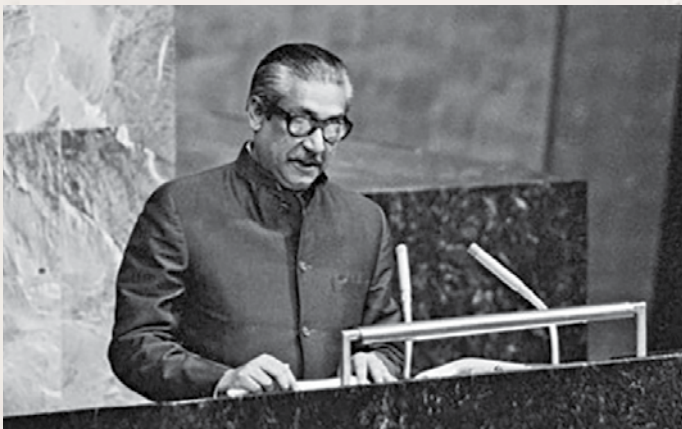
Bangabandhu- the man behind the identity of Bangladesh

Maritime Campus Desk

The quarterly campus magazine of BSMRMU, the Maritime Campus, took an initiative to publish four articles in four issues about the Father of the Nation Bangabandhu Sheikh Mujibur Rahman on the occasion of his birth centenary celebration. This article is the fourth and last one of a four-part series. In the first issue, we tried to focus on his early life as a teenager, his political orientation and activities till the 1947 partition. In the second article, we discussed the political struggles as a young and unbending politician of the then East Pakistan and portrayed his articulation to set the political destiny for Bengalis. There is the depiction of Bangabandhu in the third article as an uncompromised revolutionary leader, who gave birth to a new nation for the Bengalis after nine months of armed struggle. In this final article, we have articulated his grand return to the country, his steps to build a golden Bangladesh and his activities seeking global recognition for the newly born country. A light has been shed on the dark chapter of his gruesome assassination in which most of his family members were killed.



Bangabandhu Sheikh Mujibur Rahman speaks at a press conference at London's Claridge's Hotel after his arrival in London on 8 January 1972.



Bangabandhu Sheikh Mujibur Rahman addresses the United Nations General Assembly at New York in BANGLA.

There was enormous international pressure for the government of Pakistan to release Bangabandhu Sheikh Mujibur Rahman after the liberation of Bangladesh. Pakistan released him on 8 January 1972. On that very day, on his way to Dhaka, Bangabandhu Sheikh Mujibur Rahman travelled to London. There, he talked to the world press at a packed press conference in his hotel. He met then-British Prime Minister Edward Heath on 9 January 1972.

Bangabandhu Sheikh Mujibur Rahman stopped over in Delhi prior to returning to Dhaka, where he was welcomed by Indian President V V Giri and Prime Minister Indira Gandhi. When, on 10 January 1972, the Father of the Nation entered Dhaka, he was greeted with open arms by millions of proud people. He went straight from the airport to the Maidan race course, now called Suhrawardy Udyan, where, for the first time, he addressed the people of independent Bangladesh. On 12 January 1972, as Prime Minister of the Government of Bangladesh, Bangabandhu Sheikh Mujibur Rahman took charge and began rebuilding

the war-ravaged country. Bangabandhu laid the foundations of the new Republic within three and a half years by introducing many steps, including the rehabilitation of 10 million Bengali refugees, the withdrawal of all Allied powers within three months of victory, the establishment of the constituent assembly and the constitution of the new state within ten months, the recognition of Bangladesh by more than one hundred nations. He also ensured the membership of Bangladesh in major international bodies such as the Commonwealth of Nations, the United Nations, the NAM, and the OIC, as well as the enactment of the laws of the International Crimes Tribunal.

On 7 March 1973, the first general election was held in independent Bangladesh, in which the Awami League, led Bangabandhu Sheikh Mujibur Rahman, won 293 seats out of 300 in Parliament. The World Peace Council awarded Bangabandhu Sheikh Mujibur Rahman the Julio Curie Peace Prize on 23 May 1973 for his contribution to world peace. On 6 September 1973, Bangabandhu set off for Algeria to participate in the Non-Aligned Movement (NAM) Summit. He held bilateral talks with several world leaders on the side-lines of the summit. By becoming the 136th member of the United Nations on 17 September 1974, Bangladesh gained worldwide recognition. Father of the Nation Bangabandhu Sheikh Mujibur Rahman delivered the first ever Bengali speech at the UN at the 29th General Assembly of the United Nations, held on 25 September 1974.

On the fateful night of 15 August 1975, the founder of Bangladesh, Father of the Nation Bangabandhu Sheikh Mujibur Rahman, was assassinated by a handful of military renegades as part of a broader national and foreign political conspiracy hatched by anti-liberation forces. Every member of his family was killed in cold blood except his daughters, Sheikh Hasina, who is now the Honourable Prime Minister of Bangladesh, and Sheikh Rehana, the younger daughter of Bangabandhu, who, luckily, had been abroad at that time. Through his spirit, philosophy, bravery and affection for the people of his country, Bangladesh observes 15 August as the National Mourning Day and recalls the noblest and greatest Bengali who ever lived.

Unearthing a blue mine

Naveed Anjum

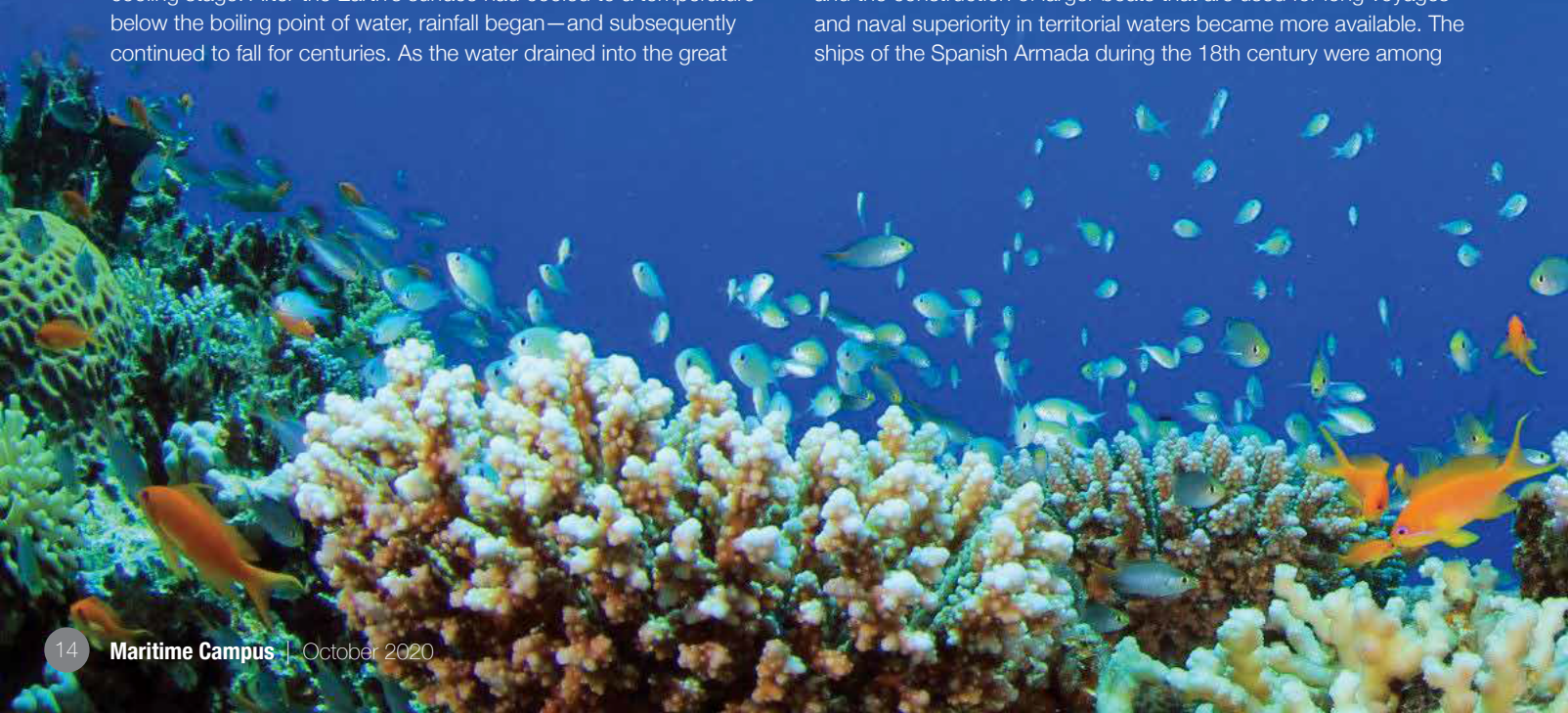
While the debate continues how old our world is, it is a certainty that the oldest witness of all the events that have transpired along the way has been our oceans. Their existence has remained constant throughout history and has played key parts in the formation of both facts and fiction. Though there may be skeptics about the existence of certain civilizations, entities, and life-forms, they all agree that our oceans and water-bodies are the only remnants that can confirm the truth. Hence, it is no secret that our oceans hold a hoard of riches and mysteries. With the National Ocean Service claiming that only 5% of our Oceans have been explored; in reality, we haven't even begun to comprehend the values that our surface water-bodies may contain. According to a commonwealth survey, the average revenue of 1.5 Trillion USD/year is already being generated from the maritime sector along with the incorporation of 500 Million jobs. Thus, the blue sector is already blessing us with opportunities, from just scratching its surface. What happens if we dig further?

The Creation of the universe has always been a hot topic for discussion throughout the ages. Whether you're a firm religious believer or an atheist believing solid scientific facts, every piece of evidence shows that the oceans have always existed. The significance of Oceans and seas in religions are adamant and filled to the brim. But since that is not everyone's cup of tea, science has more than a fair share of its interpretations.

The most widely accepted explanation is that our primitive oceans formed over vast periods. The water remained as gas until the Earth cooled below 212 degrees Fahrenheit. At around this period (about 3.8 billion years ago), the water condensed into rain which filled the basins that are now observed as our oceans. Most scientists agree that the atmosphere and the oceans accumulated gradually over millions and millions of years with the continual 'degassing' within the Earth's interior. According to this theory, the ocean formed from the escape of water vapor and other gases from the molten rocks of the Earth and its core to the atmosphere surrounding the planet in its cooling stage. After the Earth's surface had cooled to a temperature below the boiling point of water, rainfall began—and subsequently continued to fall for centuries. As the water drained into the great

hollows on the Earth's surface, our primaeval oceans came into existence. The forces of gravity prevented the water from leaving the planet's surface. Nothing remains constant and time tends to take its toll on everything. But what we see today are the same creations that have graced the earth for so long. The only difference is that it is now richer with many more stories and secrets.

Since our oceans have been around for so long it is no surprise that travelling by sea is considered the oldest form of traversing the earth. According to some historians, travelling by sea and waterways began as early as 3000 B. C. An Abydos boat of Ancient Egypt is currently the oldest ship in existence. It was uncovered from Abydos and is approximately 5000 years old. The hull of this boat was observed to be made from planks sewn together and stuffed with reeds or grass to seal the seams. It is believed to have been a ship that was part of the fleets of ancient pharaohs Khasekhemwy and Aha. As the years went by, boats were designed to become faster and be larger in capacity. Naval architecture started to take shape and the construction of larger boats that are used for long voyages and naval superiority in territorial waters became more available. The ships of the Spanish Armada during the 18th century were among



the more developed category of ships during the expeditions of the New World and the far east, which greatly influenced the future of exploration and discovery as we have come to know. But to even further advancements, building a faster sea craft was the next step in the future development of sea transportation. From sails and oars, boats began using steam engines. Steamships became widely popular during the 19th century. A decade later, steamships would be superseded by much faster and efficient diesel-driven ships.

The British colonization period is probably the most-well accounted sea-based Empire Regime of modern history. Great Britain made its first tentative efforts to establish overseas settlements in the 16th century. The expansion of the maritime system, driven by commercial ambitions and through competition with France, accelerated in the 17th century and resulting in the establishment of settlements in North America and the West Indies. By 1670, there were British American colonies in New England, Virginia, and Maryland and settlements in the Bermudas, Honduras, Antigua, Barbados, and Nova Scotia. Jamaica was obtained by conquest in 1655, and the Hudson's Bay Company had established itself in what later became northwestern Canada from the 1670s onwards. The East India Company began establishing trading posts in India in 1600, and the Straits Settlements' (Penang, Singapore, Malacca, and Labuan) came under the British rule through an extension of that company's activities.

The first permanent British settlement on the African continent was made at James' Island on the Gambia River in 1661. Slave trading began earlier in Sierra Leone, but that region did not become a British possession until 1787. Britain then acquired the Cape of Good Hope (now in South Africa) in 1806, and the South African interior was opened up by Boer and British pioneers under British control. Their influence had grown so much that, at one point they virtually ruled over the world and became the prime dictators. It was all due to their utilization of the Marine resources.

But even the British couldn't fully exploit the extent to which the resources could have been developed and converted, as their reign came to an inevitable end. This has left a huge opportunity for others to come in and apply their own newer and more distinct approaches toward uncovering the seas.

At present Bangladesh has been identified as one of the most notable nations that could capture that Maritime dream. Few countries are as intimately linked with maritime transport as Bangladesh, and only a few countries are in greater need of deploying the maritime sector



To keep the offshore bio-diversity intact, we must rely on science and technology.

more efficiently and productively to raise the level of its national economy. A group of marine specialists who are determined to spur this growth are linked in the common cause through the Institute of Marine Engineering Science and Technology. The Bangladesh branch is one of 47 IMarEST branches globally and one of the most active. As Bangladesh is sited on the world's largest delta, for obvious reasons more than 90% of its trade is transported by its sea and rivers. About 10,000 square kilometers (3,900 sq mi) of the total area of Bangladesh is covered with water which is why shipping and seafarers are always considered to be the most important factor for the development of the national economy here. And, due to the ongoing focus on the Blue Economy, the following points get more highlighted;

- In Ship-breaking, through the last three decades, Bangladesh has emerged as a leading country and in terms of larger ships, it is top and in terms of numbers, second only to India.
- Recovery of minerals from the sea bed and our knowledge of new sources of marine minerals like polymetallic nodules, cobalt-rich



crust, polymetallic massive sulphides, have developed rapidly during recent decades. In recent times, another important resource has been discovered from the ocean bottom, known as 'oil shale'. Oil shale is a fine-grained sedimentary rock containing organic matter from which shale oil may be produced. The organic matter which we derive mainly from aquatic organisms is called kerogen. Oil shale and tar sands are strategically vital domestic sources of energy that need to be developed to reduce the nation's growing dependence on oil.

- Globally, fishes provide about 3 billion people with almost 20 per cent of their average per capita intake of animal protein. Over 90% of small-scale fisheries come primarily from developing countries like Bangladesh. An effective Aquaculture and Marine Science implementation could result in better outcomes and production values for Bangladesh and its Economy.
- In 2009, offshore fields accounted for 32% of worldwide crude oil production and this has been projected to rise to around 34% in 2025. Bangladesh a relatively new initiator of their offshore projects has a brighter scope to exploit this opportunity while learning from past global successes.
- There are only 74 registered (as per 2014) Bangladeshi merchant ships which are not sufficient to carry even a fraction of our cargo.

Fisheries is the prime source of protein for Bangladesh.



Considering that the average import growth rate is 15.79% (last 10 years) and the export growth rate is 15.43% (last 10 years), the projected value of freights in the next ten years would be around USD 435 billion. To retain even parts of that USD 400 billion in the country, over an extensive period (10 years), Bangladesh must facilitate local shipping companies to add more ships to its existing fleet and, freight operators to establish firmer freight services including container liner services for carrying goods to/from Bangladesh using our own, as well as chartered ships and freighters.

- The shipbuilding industry contributes to the function of advancements by providing the necessary equipment, which not only covers ships but also the marine pieces of equipment in which our industries can play an important role and flourish. There are more than 300 shipyards and workshops in Bangladesh and almost 100% requirement of inland vessels, fast patrol boats, dredging barges, passenger vessels, landing craft, tug, supply barges, deck loading barges, speed boat, cargo coasters, troop-carrying vessels, hydrographic survey vessels, survey boat, pilot boats, water taxi, pontoons, and the water taxi is being built by these yards. Shipbuilding yards are constructing 10,000 DWT sea-going ships for export and are expected to upgrade their capacity to 25000 DWT. Pre-Covid, in the Dry docks of Bangladesh about 15 ships were being repaired annually earning foreign exchange. The Shipbuilding industry not only earns foreign exchange but also saves a huge sum; whereas in road and rail transportation about 100% of transport vehicles/rolling stocks need to be imported from abroad. It needs to be promoted and nurtured in all possible ways, including its horizontally and vertically linked businesses, while giving opportunities and incentives for growth and expansion in the long run. Etc.

These are just some key highlights from the broader concept for our nation. The Honorable Prime Minister Sheikh Hasina has emphasized that the Blue Economy could play an important role in the economic upliftment of the country in the context of poverty alleviation, ensuring food and nutrition security, while also combating climate change impacts and setting SDG's (Sustainable Development Goals). Underlining Blue Economy as a window of opportunity for development, the Prime Minister also expressed her resolve to turn the Bay of Bengal into a hub of economic development and prosperity; and observed that marine resources and services could





- 1 SEA ICE MONITORING
- 2 MARINE CONSERVATION & POLICIES
- 3 SCIENCE & CLIMATE
- 4 NATURAL RESOURCES & ENERGY
- 5 WATER QUALITY
- 6 SEA ICE MONITORING
- 7 SOCIETY & EDUCATION
- 8 MARINE FOOD
- 9 MARINE NAVIGATION
- 10 SAFETY & DISASTER

Ten sectors of Blue Economy management

significantly contribute to the development of other potential sectors like pharmaceuticals and agro-based industry, while also enhancing foreign trade and foreign exchange. This along with the Governments' involvement in procuring the best results from this sector only shines a light towards better things for the Country's Future.

The objective of the Blue economy initiative is to promote smart, sustainable, and inclusive growth with employment opportunities in Bangladesh's core maritime economic activities in the short, medium, and long-term time frames. The Blue economy initiative distinctly aims to promote synergies and foster framework conditions that support the national maritime economic activities and their enchain values. The fact remains that due to its longevity, our oceans and seas have documented countless events and phenomena. Though most pieces of evidence have been swept away by time, we may be able to recover some of those mysteries if we dive deeper into the waters. These have created endless opportunities for mariners and

corporations involved with this sector to identify and reinvent our ways to procure maximum results and subsequently solve our crisis that looms over our heads. Since Bangladesh is only beginning to unearth its side in marine history, it is a strong possibility that the scope for its blue success is higher than ever. The question remains on how deep can we dig and tread, establishes a more sustainable future for the coming generations.

Naveed Anjum

Student
Department of Naval Architecture & Offshore Engineering
BSMRMU



Country that touches the ocean

Saif Khan Sunny

Did we know that there are 44 countries around the world which have no direct contact with the sea? As a citizen of Bangladesh, we are very lucky that we are none of them and we have our own sea Bay of Bengal. After the maritime boundary delimitation with India and Myanmar, we have achieved an area of 118,813 sq km. Being a maritime country, we have more facilities and opportunities than a landlocked country. Landlocked countries are deprived of marine fishing, shipbuilding, maritime transportation, marine hydrocarbon, minerals and marine tourism. Seas are being used as a medium of transportation from very early in human history. So, landlocked country has to pay double or more for the transportation of goods. We have all these resources and 90% of our export and import is done by the sea.

We are also renowned for the shipbuilding industry. During the 17th century, the shipyards of Chattogram and Sandwip used to build warships for the Sultan of Turkey. Now shipbuilding industries are playing an important role to revive the past glory. To utilise the resource within 118,813 sq km area, the country needs maritime experts. Recently, Bangladesh has opened a specialised university for maritime education and research. It is Bangabandhu Sheikh Mujibur Rahman Maritime University (BSMRMU)- 37th public university of

Bangladesh and 12th maritime university of the world. Bangabandhu Sheikh Mujibur Rahman Maritime University is conducting various maritime related programmes to create valuable human resources for the maritime sector. If they are utilised by creating various marine and maritime related sectors both from government and private organisations, the country will be highly benefitted economically. With the increasing population and decreasing land resources, we have to depend on the sea for food, energy and economic progress and stability. To materialise our vision to become a developed country, we have to utilise our manpower vastly for the maritime sector. If the educated and trained experts in our maritime sector are not utilised properly, it will not bring any benefit to the nation. Since we are bestowed with abundant maritime resources, we have to take the offers of Blue Economy.

Saif Khan Sunny

Student
Department of Oceanography & Hydrography
BSMRMU

Underwater robotics - a groundbreaking discovery in science

Md Jobayer Mia

Building underwater mobile robots was a dream for scientists for a long time. However, it was very difficult to invent underwater mobile robots as the sea depth averages 3600 metres since people have only been able to go hundreds of metres underwater. Even the sunlight never reaches the bottom of the deep sea. So, the temperature is very low and at the same time water pressure is immense. We do not know what kind of creatures live in the depths of the ocean under extreme pressure. Besides, we should know the amount and location of untapped mineral resources including oil and gas under the sea bed. Moreover, there are reserves of some much-needed minerals under the sea. Hence robots are the safest mode for research and exploration.

The history of underwater transport is very old. Aristotle was probably the first person who built an underwater vehicle called the "Boatman". Then, in the 1820s, a Dutch engineer named Drebel built a submarine that could be used to run underwater. This vessel received a special response at that time. As the vehicle was safe from hazards such as storms, winds, pirates, etc. With the development of science, people have made it possible to explore the sea and go deep in the sea. Many types of robots are effective or under research for exploring underwater. However, all these robots can be divided into two parts. These are:

1) ROV: The name implies that these robots are operated by remote. These are usually connected to the user by cable. The driver or user

manages these vehicles remotely. These robots have a low level of intelligence.

2) AUV: These are underwater automated robots. These robots may or may not communicate wirelessly with the driver. However, they can perform various tasks by following software programmes on their own. The level of intelligence of these robots is higher than ROV.

With the help of these robots, scientists are doing many types of surveys. Many species are being discovered. Different types of seismic surveys are being conducted. Recently Queensland University of Technology (QUT) team led by Southern Cross University's Professor Peter Harrison has developed the "LarvalBot" underwater robot that, for the first time, has succeeded in reseeding damaged areas of Australia's Great Barrier Reef with heat-tolerant baby coral polyps to help combat the effects of predators and climate change. So, by using underwater robotics the new horizon of ocean science is being opened indeed.

Md. Jobayer Mia

Student
Department of Naval Architecture & Offshore Engineering
BSMRMU



Boundaries of the five oceans

As the oceans' water surface encircles our continents across the globe, the ocean boundaries are a concept that has evolved over time. For a long time there were four oceans recognised, only in the year 2000 the boundaries of the Southern Ocean were established and agreed upon.

- The Southern Ocean is located around the South Pole across the Antarctic circle in the Southern Hemisphere off the Antarctica coast. It extends up to 60° latitude and then borders the Atlantic, Pacific and Indian Oceans.
- The official border of the Atlantic Ocean and Indian Ocean is at Cape Agulhas/South Africa.
- The Arctic Ocean lies to the North of Greenland, Norway, Russia, Alaska and Canada.
- The Indian Ocean meets the Pacific Ocean off the islands in Indonesia and to the South of Tasmania/Australia.
- The Pacific Ocean meets the Atlantic waters south of Cape Horn which is the southernmost tip of Tierra del Fuego/South America.

Ocean with most islands

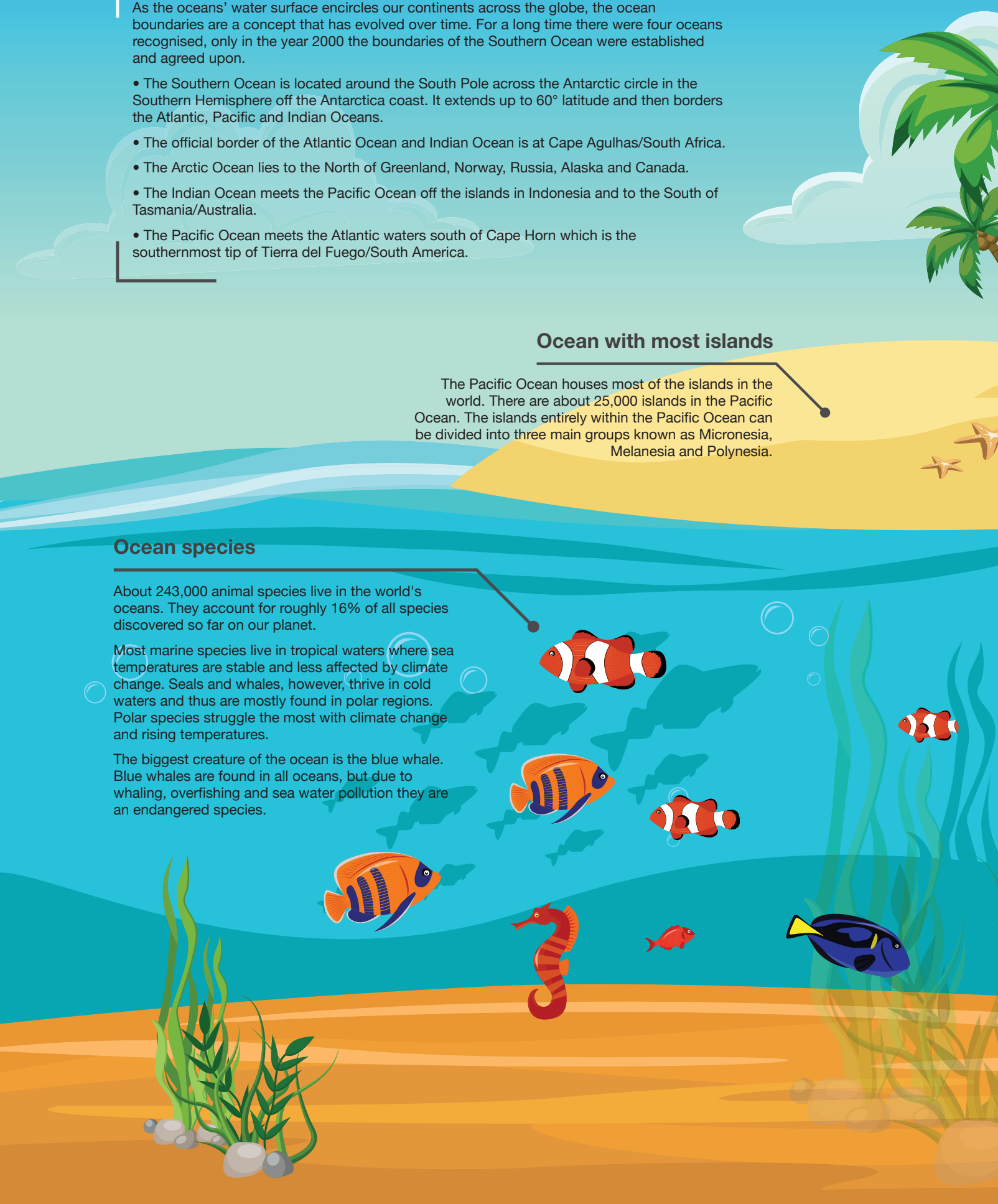
The Pacific Ocean houses most of the islands in the world. There are about 25,000 islands in the Pacific Ocean. The islands entirely within the Pacific Ocean can be divided into three main groups known as Micronesia, Melanesia and Polynesia.

Ocean species

About 243,000 animal species live in the world's oceans. They account for roughly 16% of all species discovered so far on our planet.

Most marine species live in tropical waters where sea temperatures are stable and less affected by climate change. Seals and whales, however, thrive in cold waters and thus are mostly found in polar regions. Polar species struggle the most with climate change and rising temperatures.

The biggest creature of the ocean is the blue whale. Blue whales are found in all oceans, but due to whaling, overfishing and sea water pollution they are an endangered species.



Ode to the ocean

Ocean currents

Ocean currents are movements of water in the oceans due to the gravity and rotation of the earth which is called 'coriolis effect'. Ocean currents are important in controlling our climate as they distribute the heat from the equator to the poles. They are important to sea life as they carry nutrients and food. Ocean water moves clockwise in the northern hemisphere and anti-clockwise in the southern hemisphere. Warm ocean currents flow away from the equator and cold currents flow from the poles towards the equator.

Depth of oceans

The average depth of the oceans is about 3,500 m/ 11,482 ft. However, the depth of the oceans varies widely depending on the location on the tectonic plates. Ocean trenches are deep depressions on the ocean floor that are found in all ocean basins and the places where tectonic plates meet. In general, the deepest ocean is the Pacific Ocean.

The deepest ocean area is found in the Mariana Trench in the western Pacific Ocean near Guam.

Mariana Trench is about 2,250 km/1,398 miles long and 69 km/42 miles wide. Challenger Deep, as the deepest point of Mariana Trench is called, has a depth of 10,920 m or 35,827 ft!

The longest underwater mountain range is the Mid-Atlantic Ridge and it spreads from Iceland to Antarctica beneath the Atlantic Ocean.

What is Deep Sea?

The Deep Sea starts about below 200 metres/656 ft below sea level where the sunlight fades away. The twilight zone ends about 1,000 m/3,280 ft below sea level.

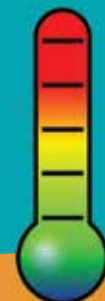
No light reaches deeper and it is dark there. To survive in the deep ocean, marine life has to adapt and there are some fascinating creatures as jellyfish.

About 84% of all ocean water is part of the Deep Sea. It is estimated that 50% of all our marine waters are deeper than 3,000 m/9,842 ft.

Ocean temperature

The temperatures in the world's oceans range widely. From $-2^{\circ}\text{C}/28^{\circ}\text{F}$ in the Arctic and Antarctic waters up to $28^{\circ}\text{C}/82^{\circ}\text{F}$ in the Tropics. In general, ocean water is warmer closer to the shore and near hydrothermal vents.

Due to climate change, ocean water temperatures rise is experienced and this will inevitably also lead to sea level rise. Warm and cold ocean currents also influence the temperature of the ocean waters.



Prospects for maritime business expansion in Bangladesh

Md. Akramuzzaman Shaikh

Although maritime business is not a new concept in the global arena, most of the world's maritime nations are not capable of fully benefiting from the knowledge and techniques of the field. Due to the scarcity of knowledge about the nature of maritime businesses, niche market analysis, and competitive advantage analysis, most developing countries, such as Bangladesh, are lagging in maritime business. Nowadays, entrepreneurs are more interested in the expansion of such types of businesses in developing maritime countries such as Bangladesh. As a developing country, Bangladesh has become more concerned with the development of the maritime business since this area can make significant contributions to the national economy. Maritime business refers to any type of financial activity related to seaborne trade. Business activities that are directly or indirectly involved in the sea can be defined as Maritime Business. The expansion in maritime business has been providing Bangladesh with an opportunity to turn itself from a developing country to a developed one.

Maritime businesses are classified businesses deal with economic, commercial, legal, and operational areas of marine trades. It is essential for a complete and effective realisation of global shipping and its interrelated entities like port logistics, supply chains, and other maritime service sectors. Developing countries are very enthusiastic about the expansion of maritime business due to some beneficial indicators. Stakeholders opine that maritime business in the country can be expanded very swiftly if the government of Bangladesh takes prompt action. The government of Bangladesh has taken a great interest in the expansion of maritime business, as well as in maritime research to help develop infrastructure and techniques that will enable the country to realise its maritime potential.

In Bangladesh, three categories of maritime businesses are considered to have potential. The first category is on-shore based maritime business, the second category is off-shore based maritime business and the third one is combined maritime business [Figure -1]. Based on the above three categories the major maritime business areas are as follows:

On-shore

- Shipbuilding
- Shipping agency
- C&F agency
- Terminal operator
- Crew manning agency
- Shipping line
- Off-docks
- Chartering and brokering
- Ship provision supply

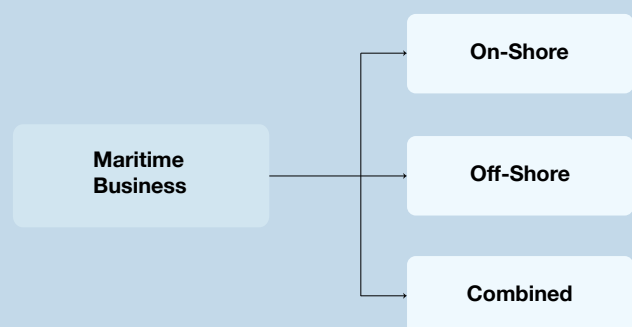
Off-shore

- Ship bunkering
- Marine fisheries
- Sea food industry
- Maintenance of submarine cables
- Maritime search and rescue facility business
- Seabed inspection
- IWT shipping business supply

Combined maritime business

- Stevedoring company
- Marine insurance
- 3PL (3rd Party Logistics)
- Classification society
- Open registration is under the combined maritime business

Figure -1



As a densely populated maritime country, Bangladesh is fortunate enough to have a large swathe of territorial waters covering a surface area about 1.5 times larger than its land area. The coastal zone comprises an area of about 36,000 sq km; equivalent to nearly 25% of the country's total land surface. The continental shelf is about 37,000 sq km and the area of the Exclusive Economic Zone (EEZ) is about 164,000 sq km. There are more than 400 rivers all across the country, comprising a total length of about 22,155 km and occupying about 11% of the country's total area. Various economic activities have linkage to the maritime sector, making it integral to the economic growth of Bangladesh.

Though the maritime business has a bright future from a perspective of Bangladesh, there are some present challenges. The largest challenge in the maritime business sector is the need for investment and infrastructure. As it is very little in the way of current, up-to-date, maritime infrastructure in Bangladesh, entrepreneurs sometimes feel insecure in the expansion of new maritime businesses that would require following new business models. Due to this, some gallant efforts have failed due to the challenges of doing business in such an environment.

Bangladesh has a number of emerging maritime experts as maritime-related education is growing rapidly. Emerging maritime experts are establishing new business models and they are also trying to reengineer the existing business models used in the country. In this way, the country is directly or indirectly moving to explore maritime business in global aspects. It is hoped that these business models will provide the chance for maritime business to succeed in Bangladesh. As an example of an Asian country which has successfully implemented new maritime business models, Singapore is becoming more developed from the basis of maritime business expansion across the country. One of its initiatives in this department was the development of the country as a transit port. A developing country



Bangladesh exports processed fish to Asian Continent including China, Vietnam, Thailand, Singapore, Hong Kong, Sri Lanka, Myanmar etc.

like Bangladesh, despite its new class of maritime intellectuals, has not got the proper guidance from the government in order to carry out such changes in the field of maritime business. There are also problems in that the work environment and level of wages are not conducive to Bangladeshis partaking in the maritime sector. The country is thus suffering from brain drain as many maritime experts are moving to developed countries where these models are already prevalent.

If the Bangladeshi work environment was one that encouraged a competitive market for maritime experts to work in, as well as focused facilities for research and experimentation, the country may have the potential to become a maritime powerhouse.

Figure - 2



Bangladesh enjoys many geographical boons [Figure - 2] that should propel it towards a regional leader in the maritime business sector. Neighbouring countries like India, Myanmar, Sri Lanka, Pakistan, Maldives and landlocked countries Nepal as well as Bhutan are very attractive to Bangladesh because of the opportunities to take advantage of transit facilities. China and India are keen foreign investors and seek to expand the maritime influence and potential of Bangladesh in order to benefit their own nations.

The maritime business is a widespread and attractive business which requires a lot of investment. Due to its high profitability, it demands large and long-term investments. Local investors are hesitant to

// Perspective //

invest in a high-risk industry, but discrete foreign investors look for niche markets to ensure handsome profits. For this reason, if the government allows foreign investors for such kinds of projects in the field of maritime business, both the country and investors will experience benefits.

Maritime business requires a huge labour force in various segments. The labour force defines the profitability of the venture. Like any other developing country, Bangladesh has a workforce that is relatively cheap. If any country can utilise this cheap workforce properly, there will surely be a benefit to the economy. Maritime nations always try to expand business in terms of marine-related issues. There are a lot of organisations and entities at home and abroad, which are continuously looking for cheap labour. There is a lot of scopes to identify, explore, reorganise, and establish a maritime business in countries where the labour force is inexpensive. Sometimes, the government takes incentive programmes to explore new thoughts and knowledge regarding ways to fully take advantage of the labour force.

Bangladesh's government is careful about the expansion of business. The maritime business is potentially very profitable; however, the government of Bangladesh is lagging in encouraging competition or innovation. Due to this, a huge barrier to developing the maritime industry in Bangladesh is a lack of investment. If the local investors do not fund projects sufficiently, the government of Bangladesh should look abroad to pursue its dreams of becoming a maritime power.

Maritime businesses are considered as high risk due to its capital intensiveness, but these risks can be reduced by taking some wise and timely actions. For this reason, discrete entrepreneurs are benefiting more and more from this area. Obviously, the government is a big player in the maritime industry. Without the government's interest and proper initiatives, it is very difficult for a maritime business to survive in the long run. Stakeholders believe that government patronises new business models that encourage development and subsidisation in those newly formed businesses will nurture overall sustainability. Therefore, subsidisation will not only benefit the development of those new businesses but also the growth of the national economy. Through the expansion of maritime business, Bangladesh can attain sustained economic growth. Ultimately, both the country and investors will have benefits from the expansion of maritime business.

Md. Akramuzzaman Shaikh

Student
Department of Port & Shipping Management
BSMRMU

Shipbuilding is a growing industry in Bangladesh with great potentials.





Drivers of revenue generation in the Blue Economy of Bangladesh

Fakir Tajul Islam

Introduction

It is not long before when Blue Economy was little known in the context of Bangladesh's growth trajectory. Now it's reality and has emerged as a blessing for our economic development, especially after achieving a new maritime boundary. Proper planning and policies along with its execution can expedite the economic development utilizing ocean resources.

Chattogram Sea Port (CSP) has been contributing to the Blue Economy of Bangladesh. The major drivers of revenue generation are living resources, minerals, energy and transport and trade at the seaports. CSP generates most of its revenues from the export-import, containers and vessel management. Expenditure control can also enhance the revenue of CSP.

Concept of Blue Economy

The 'Blue Economy' is an emerging concept which encourages better stewardship of our ocean or 'blue' resources. According to World Bank, Blue Economy is a set of policies to enhance the sustainable development of ocean resources. This concept strengthens the economic growth by accelerating the aggregate natural capital and by conserving the ecological balance also. The core of the "Blue Economy" concept is ensuring the socio-economic development with cautions of environment degradation.

Blue Economy is a very recent concept to explore and varieties of research are done on different aspects of it so far. According to the

findings of the Blue Economy concept paper, the total area of our blue planet covered by the ocean is 72% and it holds 95% of the total biosphere. The life started in the ocean has contributed in a variety of ways in human life and in the economy as well. Similar to the 'Green Economy', the Blue Economy model aims at the improvement of human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities.

Blue Economy in the context of Bangladesh

The maritime border dispute between Bangladesh and India officially ended on July 7, 2014. On the same day, the United Nations decided to expand the territorial waters of Bangladesh. Now the new maritime boundary gives Bangladesh a broader area of Blue Economy which includes gas and oil reserves, tourism, shipbuilding etc. The shipbuilding industry has been growing moderately since the last decade. The coastal and marine tourism is expected to grow by 9% per year.

Bangladesh has a very lucrative geographic location where West meets Asia, and it is in the middle of a region that will build a prominent economy to generate USD 100 trillion by 2030. Despite having a blessing of the sea waterways and panorama of Blue Economy, the country may face different types of obstacles. To overcome all the obstacles, every economy must secure its revenue and retain it for further development. This article focuses on those drivers of revenue generation in the Blue Economy of Bangladesh keeping Chattogram Sea Port (CSP) at its centre.

Development is still in its infancy

The size of Blue Economy is very promising, as it's valued at around USD 1.5 trillion per year, covering 80% of worldwide trading. 350 million jobs are strongly linked with fisheries. Aquaculture is the fastest-growing business in the world which supplies about 50% fish for human consumption. In addition to that, Blue Economy also entails many promising sectors including renewable energy, aquaculture, seabed extractive activities and marine biotechnology and bio prospecting. The size of Blue Economy is very promising, as it's valued at around USD 1.5 trillion per year, covering 80% of worldwide trading. 350 million jobs are strongly linked with fisheries. Aquaculture is the fastest-growing business in the world which supplies about 50% fish for human consumption. In addition to that, Blue Economy also entails many promising sectors including renewable energy, aquaculture, seabed extractive activities and marine biotechnology and bio prospecting. According to World Bank, Blue Economy aims for a balance between economic opportunities and the environmental limitations of using the ocean to generate wealth.

European Commission studied on EU Blue Economy practices. Their study revealed that the Blue Economy has several sectors and sub-sectors for doing business and for generating revenue. According to them there are six established sectors in the Blue Economy namely Coastal tourism, Marine living resources (Extraction and commercialization of marine living resources), Marine non-living resources (Marine extraction of minerals, oil, and gas), Port activities (Ports, ware housing and construction of water projects), Shipbuilding and repair and Maritime transport.

These sectors in the Blue Economy and their subsectors as identified by the European are not explored well in Bangladesh and are still under development. The port activities are major concern in developing the Blue Economy in Bangladesh in a sustainable manner. Blue Economy has gained significance in the post-2015 Sustainable Development Goals (SDGs) declared by the United Nations. The goal 14 of SDGs, the United Nations says, "Conserve and sustainably use the oceans, seas and marine resources for sustainable development." Furthermore, the government of Bangladesh has been trying to advance its status of a middle-income country by 2021 and to become a developed country by 2041. It is analyzed and opined that to achieve these SDGs and to make the dreams to be true,

Bangladesh has to focus heavily on Blue Economy, by targeting the entire coastal belt of India.

Major drivers for revenue generation

The drivers for revenue generation in the Blue Economy of Bangladesh are mainly export and import operations as well as revenues from containers and vessels. Apart from these functions, CSP may increase its revenue by reducing its expenses, so the expenditure accounts are also being a driving factor for income generation.

CSP is one of the oldest ports in the region. In this part of the study, the drivers for revenue generation for CSP are identified along with the global practices and potentiality of sources. According to the data collected from different websites and research articles, the higher revenue generated by the CSP was BDT 2,661.76 crore in 2017-18 fiscal years. It is noticed that the minimum revenue was BDT 1,529.92 crore. Considering the number of containers and vessels, the maximum figure is 2,705,909 (containers), 3,664 (vessels). Besides the income-generating sector, expenses are also important to increase revenue. In the following table, the descriptive statistics show the minimum and maximum value observed in the last seven years.

The revenue of this port has been increasing since the fiscal year 2011-12. The trend of net surplus after tax is also upward moving and growing over the last seven years. Operating expenses and administrative and general expenses are the major drivers for boosting revenue.

If the expenses can be reduced, it will augment the revenue. The CSP has three major types of expenses which are operational expenses, administrative and general expenses. These expenses can be minimized by employing skilled and trained employees. Currently, the scope of training facilities and frequency of skill development programs are not adequate to expedite the growth of seaport operations in Bangladesh.

Handling of containers and vessels are also the important source of revenue for the port and the numbers are increasing over the years. According to the CSP annual report, in 2017-18 fiscal year CSP handled 2705909 TEUS container which is well above the volume of containers handled in previous fiscal. CSP handled 3664 vessels in FY 2017-18 whereas 3092 vessels were handled in FY 2016-17.

Descriptive statistics of drivers of revenue generation at CSP

	Minimum	Maximum	Mean	Std. Deviation
Total Revenue of CSP	1529.92	2661.76	1958.58	437.30
Operating Expenses	469.04	1117.87	752.7329	259.48979
Admin& Gen. Expenses	181.18	288.45	238.8543	44.73
Import (MT)	36,184,936	78,050,447	52,605,436.85	15,667,952
Export (MT)	4,716,374	6,997,465	5,804,747.85	839,440
Container (Tues)	1,343,408	2,705,909	1,945,645.85	510,028
Vessels	2265	3664	2754	497

Ocean economy industry/service (Nominal USD Millions)	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Marine capture fisheries	664.00	777.00	786.23	907.49	1,037.49	1,167.79
Marine aquaculture and shell fish farming (shrimps and crabs)	78.65	92.48	99.76	122.05	144.99	163.20
Sea salt production	123.20	124.11	145.51	184.35	195.45	197.88
Crude petroleum extraction	22.42	23.65	23.69	25.16	26.40	30.55
Natural gas (liquid) extraction	971.13	948.92	919.94	986.25	1,041.87	1,174.58
Maritime freight transportation	307.90	319.55	295.81	300.33	327.15	375.58
Maritime passenger transportation	617.61	659.27	606.66	663.14	720.69	788.35
Port and harbour operations	104.95	103.29	135.57	145.32	172.37	202.17
Shipbuilding and repairing	110.32	114.77	106.68	109.58	108.59	387.06
Ship breaking	127.39	130.80	134.27	136.83	138.31	138.21

Annual gross value added from Bangladesh's Blue Economy

In the last few years, Bangladesh has found a variety of sectors of Blue Economy, which may add to the national income. Most of the income of the Blue Economy usually comes from the ports in Bangladesh. The most important and biggest port of Bangladesh is Chattogram Sea Port (CSP). In the following table, the annual gross value added by the Blue Economy for the year 2009 to 2015 is shown.

The major contribution of Blue Economy sectors comes from natural gas (liquid) extraction and marine capture of fisheries. From 2009 to 2015, most revenues in the form of value addition come from these two major sectors of Blue Economy. Natural gas (liquid) extraction and marine capture of fisheries sectors are always the top contributors for value addition in Bangladesh's Blue Economy. Besides these two sectors, maritime passenger transportation, shipbuilding, and repairing, maritime freight transportation are also encouraging. Apart from these sectors, marine aquaculture, marine biotechnology, maritime safety and surveillance may become more promising and revenue-generating sectors in the Blue Economy of Bangladesh.

Recommendations on revenue-generating drivers at CSP

There are some promising areas for generating revenue from the sea port's operation which needs focus. Firstly, there are varieties of operating expenses that reduce the profitability of the seaport operation. The management should be more efficient to reduce the expenses. The efficiency can be availed by training and other skill development programs.

Secondly, In a Blue Economy, the major contribution comes from natural gas (liquid) extraction and marine capture of fisheries. These sectors should be empowered along with other promising sectors like marine living resources, maritime transport etc.

Conclusion

CSP has now a few regular sectors for revenue generation, such as maritime passenger transportation, maritime freight transportation, export-import of goods and commodities, etc. There are few other potential sectors that may become a major driver of revenue in the Blue Economy. Those are marine aquaculture, marine biotechnology, maritime safety and surveillance etc. Bangladesh should work on enhancing the service of its industries based on maritime resources which will eventually be contributed to the Blue Economy. To increase the revenue and to get the highest benefit of the Blue Economy, the government and private sector should work together. This effort may enforce rules and regulations for the effective use of ocean resources in Bangladesh. Expenditure control can also enhance the revenue of CSP. Proper planning and policies can expedite the growth of the Blue Economy in Bangladesh. The effort should balance between proper planning and effective execution.

Fakir Tajul Islam

Head in-charge
South Asia School of Business at University of South Asia,
Bangladesh

BSMRMU observes 'National Mourning Day 2020'



A delegation of BSMRMU led by Vice-Chancellor Rear Admiral M Khaled Iqbal paid homage to the Father of the Nation Bangabandhu Sheikh Mujibur Rahman on 15 August 2020 by placing floral wreaths at the portrait of Bangabandhu in front of Bangabandhu Memorial Museum in Dhaka's Dhanmondi to observe 45th anniversary of Bangabandhu's martyrdom and National Mourning Day-2020. After placing the wreath, the team stood there in solemn silence for a few minutes to show their deep respect for the great leader. Also, essay readout and discussions on the life of Father of the Nation were organised at the university auditorium of Pallabi campus maintaining proper social distancing. The Vice-Chancellor, Rear Admiral M Khaled Iqbal, delivered his speech gracing the occasion as the Chief Guest. Professor Dr Zeenat Huda of Social Science Department, University of Dhaka attended the program as the special guest and guest speaker. Faculty members, officers and staff of the university were present on this occasion. A special prayer was offered for the eternal peace of Bangabandhu and other members of his family martyred on 15 August 1975. Food items were distributed among the poor throughout the following week to mark the National Mourning Day.

Inauguration of Annex Building and KIOSK



On 5 July 2020, the Vice-Chancellor of BSMRMU, Rear Admiral M Khaled Iqbal, inaugurated the annex namely Padma Building close to the main building of temporary campus and the KIOSK set at the entrance point of the main building. Officers, teachers and staff were present during the inauguration maintaining proper social distancing. Later, prayers were sought for the future prosperity of BSMRMU and the country. The KIOSK was installed to provide all information about the university and it has an interactive screen that anyone can access. Any information related to BSMRMU and the website is accessible from the KIOSK. The annex building includes all kinds of lab facilities and classrooms, which are situated to ensure ample space for the students of different departments.

BSMRMU Project team planted saplings to mark the Mujib Borsho



On 28 July 2020, the project team of BSMRMU permanent campus planted saplings on the campus premises in Chattogram as a part of nationwide one crore sapling plantation programme of the Government to mark the Mujib Borsho, the birth centenary of Father of the Nation Bangabandhu Sheikh Mujibur Rahman. Saplings were planted to make the campus naturally green and environment friendly.

Trial run begins for transshipment of Indian goods through waterways of Bangladesh



In a first, a container cargo from Kolkata via Chattogram port in Bangladesh reached Tripura's capital Agartala on 23 July 2020. This transshipment will reduce the distance and time taken in the transportation of goods for India particularly the north-eastern states and enhance business services and revenue generation in Bangladesh.

The movement of container cargo happened after the agreement on the use of

Chattogram and Mongla Ports for the movement of India's transit cargo through Bangladesh. The Standard Operating Procedure (SOP) for this was finalised in October 2019 when the Hon'ble Prime Minister Sheikh Hasina made a visit to India.

According to the SOP, goods that reach Chattogram and Mongla sea ports will be transported on four road, rail, and water routes to: Agartala (Tripura) via Akhaura; Dawki (Meghalaya) via Tamabil; Sutarkandi (Assam) via Sheola, and Srimantpur (Tripura) via Bibirbazar.

It allows the landlocked Assam, Meghalaya and Tripura states to access open sea trade routes through the Chattogram and Mongla ports.

New container line opens between Chattogram and Kolkata ports

A new container line has started operating between Chattogram and Kolkata seaports in a significant move to boost Indo-Bangladesh trade.

The vessel, Harmann Schepper, left the Chattogram port on 2 July 2020 while another vessel, Asiatic Moon, a Singapore flag carrier, left Kolkata port for Chattogram port on 2 July 2020.

Asiatic Moon left from Syamaee Port (SMP), erstwhile Kolkata Port Trust, carrying 300 TEUs (20-foot equivalent units) of containers.

These are the biggest vessels by size operating between the two ports till date. The vessels can carry up to 600 TEUs in a single voyage.

The vessels are now carrying chemicals, iron materials, including billets, and yarns from the Indian part. On the other hand, some clothing items and empty containers occupied most part of the vessel left from the Chattogram port.

Currently, two international shipping lines are operating on the route. Those are Singapore-based Seacon and the Hong Kong-based Gold Star Line. The distance between Chattogram and Kolkata is around 200 nautical miles and the journey time is nearly two days.

Earlier, only small barges with carrying capacity of about 80-100 containers were operational on this route through a protocol signed between India and Bangladesh.



BSC to buy six more ships



Bangladesh Shipping Corporation (BSC) will procure six more ships for bringing dynamism in its services.

The BSC initiated the move to procure two bulk carriers and four crude oil tankers following the directives of the Ministry of Shipping (MoS).

The capacity of each bulk carrier ship will be 80,000 tons and the capacity of each of the two crude oil tankers is 114,000 tons while 80,000 tons each of the other two tankers.

State minister for shipping Khalid Mahmud Chowdhury urged the officials of BSC to work sincerely and with utmost dedication aiming to fulfil the organisation's goals.

According to Executive Director (Technical) of the BSC Md Yousuf, those ships will be procured from China under Chinese loan.

Established by Father of the Nation Bangabandhu Sheikh Mujibur Rahman in 1972, the BSC is a state-owned autonomous corporation of the country.

It has eight ships and oil tankers that are engaged in providing shipping services to the local exporters, importers and business houses.

Admiral M Shaheen Iqbal assumed the command of Bangladesh Navy as 16th Chief of Naval Staff



Admiral M Shaheen Iqbal, NBP, NUP, ndc, afwc, psc assumed the command of Bangladesh Navy as the 16th Chief of Naval Staff on 25 July 2020. Prior to his appointment, Admiral Shaheen was serving as Assistant Chief of Naval Staff (Operations) at Naval Headquarters. Throughout his long and illustrious 40-year career, he has demonstrated exemplary military acumen and has commanded all major Navy ships, establishments and HQ appointments with utmost sincerity. He is highly regarded for his dedication, professionalism and honesty amongst officers and sailors at all levels.

The Admiral received numerous Commendations from the Chief of Naval Staff and Administrative Authorities in recognition of his outstanding professional excellence in Bangladesh Navy. Admiral Shaheen has attained extensive education and training in military strategies, combat and tactics both at home and abroad.

The Admiral, a passionate seafarer, proved himself worthy of being entrusted with the command responsibilities from the very early stage of his career in the Navy. He has successfully commanded ships of all sizes including Frigates, Offshore Patrol Vessel (OPV), Large Patrol Craft (LPC), Minesweeper, Patrol Craft (PC), Fast Attack Crafts including - Missile and Torpedo Boats. On behalf of Bangladesh Navy, Admiral Shaheen spearheaded the entire Bhasan Char project to rehabilitate Forcibly Displaced Myanmar Nationals (FDMNs) during their influx in 2017 and played an instrumental role in its implementation. Besides, he also played a significant role in facilitating the overall visit of the Permanent Court of Arbitration (PCA) delegation regarding maritime boundary delimitation in 2013.

Admiral Shaheen has extensively represented Bangladesh Navy (BN) overseas, including several international seminars. He led many high-level operational and training delegations. He has also led the BN delegation during several international naval exercises and headed the BN team during the ship acceptance of Corvettes and Frigates. He is a proud "Blue Flag" bearer as a member of the UN in Iraq.

Chattogram port ranks 58th among world's top 100 busiest container ports



Chattogram Port, the country's gateway of overseas trade, has advanced 6 steps in terms of annual handling of containers in this year's Lloyd's List, world's oldest journal on port and shipping.

The Port secured the 58th position among the 100 busiest container handling ports of the world in 2020. In 2019, the port was on the 64th position in the list of 'One Hundred Ports', prepared by Lloyd's List, the famous maritime journal.

Shanghai Port of China secured the top position in the list of 2020. It also topped the list in the two previous years.

As per Lloyd's List of 2019 the Chattogram port handled 3,088,187 TEUs of containers and in 2018 the Chattogram port handled 2,93,996 TEUs of containers. The growth rate was annual 6.3% container handling.

Increased foreign trade in recent years has been hailed by the port users for such growth in transport of containers through the port.

The Chattogram port entered the list first time in 2009 securing 98th position

Bangladesh to get USD 3.15 billion Japanese loan

Japan confirmed largest ever loan package of USD 3.15 billion for Bangladesh to bankroll seven development projects in the country. Under the 41st Official Development Assistance (ODA) package, the Japanese donor JICA would provide the loan to Bangladesh government.

Mr ITO Naoki, Ambassador of Japan to Bangladesh and Ms Fatima Yasmin, Secretary, Economic Relations Division (ERD) signed Exchange of Notes of the 41st ODA in Dhaka on 12 August 2020.

Japan Embassy in a statement said this year's loan package comprises assistance of seven projects amounting to JPY338.247 billion (approximately USD 3.14 billion), the largest ever loan package since its inception in 1974. Based on this agreement between the two countries, Mr HAYAKAWA Yuho, Chief Representative of JICA Bangladesh Office and Ms Fatima Yasmin signed a relevant loan agreement.

Japan has been the single largest bilateral donor for Bangladesh since 2012, and the total amount of its aid as Yen Loan has reached USD 22 billion. Under the 41st ODA package, the Japan will JPY89.016 billion for the Jamuna Railway Bridge Construction Project (II), JPY 80 billion for the Hazrat Shahjalal International Airport Expansion Project (II), JPY72.194 billion for Dhaka Mass Rapid Transit Development Project (IV), JPY55.696 billion for the Dhaka Mass Rapid Transit Development Project (Line 5 Northern Route) (I), JPY1.906 billion for the Chattogram – Cox's Bazar Highway Improvement Project (E/S), JPY11.218 billion for the Food Value Chain Improvement Project and JPY 28.217 billion for Urban Development and City Governance Project.

Bangladesh will have to repay the loan at 0.65% interest rate in 30 years where 10 years grace period will be available.

Ports in Bangladesh, Vietnam and China to be connected by new shipping service



The Bay Bengal Express 2 Service (BBX2)—a new shipping service connecting the ports of Bangladesh, Vietnam and China—began operations 22 August 2020, expediting shipments of exports between the three countries and the US.

Launched by French shipping service CMA-CGM, the new route will use Vietnam as a pit stop as opposed to traditional routes through Singapore, significantly accelerating Bangladeshi exports to China and the US by a factor of ten days.

Bangladeshi exports currently take approximately one month to arrive at US destinations.

As China remains Bangladesh's largest trade partner—with bilateral trade expected to reach \$18 billion by 2021—this faster exchange of raw materials will boost lead time and amplify access for nascent Bangladeshi industries.

Effective COVID-19 management of Beijing and Dhaka—as well as their rapid economic re-opening—will likely make them keen to capitalise on this express service and offer quick shipments before another economic downturn, thereby accelerating pandemic recovery efforts.

Matarbari deep sea port will be operational by 2025



Bangladesh's first ever deep sea port, Matarbari port will be made functional by 2025, said the officials at the contract signing ceremony for the Consultancy Services of Matarbari Port Development Project held at Hotel Intercontinental, Dhaka on 23 September 2020.

Planning Minister MA Mannan MP and State Minister for Shipping Khalid Mahmud Chowdhury virtually joined the ceremony as chief guest and special guest respectively. Mohammed Mezbah

Uddin Chowdhury, secretary of the Shipping Ministry chaired the programme.

Senior officials from the government, Japan International Cooperation Agency (JICA), and the Embassy of Japan were present on the occasion.

Two contracts were signed between Chattogram Port Authority with the Nippon Koei JV and Roads and Highways Department (RHD) with Oriental Consultants Global Company Ltd.

Matarbari Port Development Project is an important Fast Track Project of the Government of Bangladesh. This project is an outcome of the concept of "BIG - B" (The Bay of Bengal Industrial Growth Belt) jointly announced by the premiers of Bangladesh and Japan in September 2014.

The objective of the project is to develop a reliable and low - cost logistic network for seaborne cargo/freight handling and transporting facilities to maintain competitiveness of Bangladeshi products in the global market.

In order to achieve these objectives, a new commercial port and a port connecting road with national highway (N1) at Matarbari, Moheshkhali and Chakoria area in Chattogram Division will be constructed, thereby contributing to create facilities with neighbouring countries.

The government of Bangladesh received a loan amount not exceeding 2,655,000,000 yen from Japan International Cooperation Agency (JICA) for the implementation of Matarbari Port Development Project.

First shipment of low-sulphur fuel reaches Chattogram



The first consignment of environment-friendly low-sulphur fuel arrived in Chattogram on 14 September 2020.

The Chairman of Bangladesh Petroleum Corporation (BPC), Md Shamsur Rahman and other high officials were present when an oil tanker named 'MT TMN Pride,' carrying 15,000 tons of furnace oil from Singapore, took berth at Dolphin Jetty No 5 of Meghna Oil Company at Patenga.

Previously, BPC announced the import of low-sulphur fuel to reduce marine pollution.

This is the first time BPC has imported marine fuel containing 0.5% sulphur. The International Maritime Organisation (IMO) made it mandatory to use marine fuel with 0.5% sulphur from 1 January 2020.

In its 2019 guideline, IMO — the United Nations agency responsible for the safety and security of shipping and the prevention of marine and atmospheric pollution — recommended banning ships from using fuel containing more than 0.5% sulphur to reduce marine pollution.

Before the introduction of the new guideline, ships all over the world, including 35 in Bangladesh, used furnace oil containing 3.5% sulphur content.

95% of shipping companies worldwide have switched over to low-sulphur fuel to comply with the environment-friendly recommendation.

Bangladesh's work on climate front an example for world: UK



The UK's International Environment Minister Lord Zac Goldsmith has said that developing countries like Bangladesh are the hardest hit by climate change and Bangladesh's effort on climate front is an example for the world to follow.

"The work taking place here to help adapt to its impacts and build resilience is an example for the world to follow. The UK is proud to support it," he said.

Mr Lord Goldsmith discussed the climate issues on a 'virtual visit' to Bangladesh where he saw the impact of climate change in Bangladesh, on agriculture, health and livelihoods, as increased flooding in both rural and urban areas is displacing people from their homes.

Since 2008, UK aid funding has helped over 27 million people in Bangladesh gain access to early warning systems for floods and cyclones; installed 249 solar irrigation pumps serving 6,062 farmers, has protected 40,000 hectares of cultivable land against monsoon flooding; and provided emergency assistance and recovery support after disasters to more than 900,000 people.

Concor starts container train service to Bangladesh via Petrapole-Benapole route

The Container Corporation of India (Concor), a PSU under the Ministry of Railways, has begun dedicated container train services to Bangladesh through the Petrapole-Benapole border route.

This is the second such dedicated service to the neighbouring nation after the Gede-Darshana route (passing through Nadia district in West Bengal).

According to a senior official, the "permanent service" will connect various stations in Bangladesh that include Benapole, Jashore, Singia, Noapara and Bangabandhu Bridge West (BBW). The trains will have 60 containers (called TEUs or twenty-foot equivalent units) with a maximum weight of 27 tonnes in each TEU.

Exporters can directly load their cargo at the Concor terminal in Majerhat, get customs clearance and put an Electronic Cargo Tracking System seal.

The Petrapole-Benapole route (roadways) accounts for the majority of the USD 11 billion India- Bangladesh bilateral trade. Petrapole – Asia's largest land port – handles 500-550 trucks from India and around 100-150 from Bangladesh.



Norway to fund USD 1.5mn for local ship recycling industry



Norway has committed approximately USD 1.5 million (14m Norwegian Krone) to support the development of ship recycling industry in Bangladesh through the third phase of IMO's Safe and Environmentally Sound Ship Recycling in Bangladesh (SENSREC) project.

The agreement between IMO and the Government of Norway to support Phase III of the project was signed on 24 July 2020 by IMO Secretary-General Kitack Lim and the Norwegian ambassador to Bangladesh, Sidsel Bleken.

The project was implemented to enhance safe and environmentally sound ship recycling in Bangladesh and help the nation towards becoming a party to the IMO Hong Kong Convention treaty on safe ship recycling.

The Agreement follows the successful implementation of Phase I (2015-17) and Phase II (2018 - 2020) of the SENSREC Project, both mainly funded by Norway. With the additional funding, Phase III of the project will be implemented over 18 months, starting from November 2020.

SENSREC Phase III will focus on improving ship recycling standards in compliance with the Hong Kong Convention and enhancing capacity building for the Government of Bangladesh on legislation and knowledge management. Bangladesh will be provided with specific technical assistance to establish a facility for treatment, storage and disposal of hazardous wastes. IMO said there will be a special focus on evaluating the impact of Covid-19 on the ship recycling industry in Bangladesh.

Scottish Maritime Museum launches new online learning programme



The Scottish Maritime Museum, located in Harbourside in Irvine, Ayrshire, is offering free places to local primary schools on its new online learning programme.

The Ship to Shore programme includes two live links via online platforms with the museum's education team as well as digital resources. Activities for younger children will include workshops looking at the principles behind designing a ship and exploring the historical importance of puffers - traditional cargo steam boats - to island communities. Older children will be able to investigate issues such as Morse code and lifesaving at sea in an activity based on the Titanic, and learn about buoyancy through Archimedes' "Eureka moment".

The live activities will include "unboxing" objects from the museum's national maritime heritage collection. All the workshops will also include an activity linked to the museum's new national art collection. Claire Munro, the museum's learning and access officer, said: "We're thrilled to launch our new Ship to Shore online learning workshops. "We have a well-established education programme here at the museum so it has been a natural and exciting step for us to translate some of our most popular workshops into a live learning experience for schools and support them as they look for new ways to educate during these challenging times.

"With our new online programme, pupils of all ages can get curious, creative and inspired by our nationally recognised collection of maritime heritage and engineering which is so well suited to STEM learning. "As we're living in such an uncertain world at the moment, our workshops are also designed to be flexible. They can be delivered to pupils in class or at home if blended learning is introduced, for example."

Shipping data indicates the recovery of world trade



After a big drop during the second quarter of 2020, the number of ships pulling into ports to unload and load containers recovered in many parts of the world in the third quarter.

Maritime shipping saw a sudden slowdown earlier this year as regulatory measures used to curb the COVID-19 pandemic limited economic activities and travel.

As a result, by mid-June, the average number of container vessels arriving weekly at sea ports worldwide had sunk to 8,722, an 8.50% year-on-year decline.

Nevertheless, the average weekly calls have started to recover globally, rising to 9,265 by early August which was 3.0% below the levels of one year earlier, according to the latest estimate of the United Nations Conference on Trade and Development (UNCTAD).

According to UNCTAD, this offers a hopeful sign for world merchandise trade, which suffered a historic year-on-year fall of 27.0 per cent in the second quarter.

"Most of the manufactured goods that we produce and consume are shipped in containers," said Shamika N. Sirimanne, director of UNCTAD's technology and logistics division. "The latest containership port call patterns therefore offer a ray of hope for economic recovery from the pandemic."

China sends 3rd maritime satellite into space



China sent another maritime satellite into the space on 21 September 2020. According to media reports, the new sea and ocean-monitoring satellite was launched from the Jiuquan Satellite Launch Center in northwest China. The report also said that the Chinese-built Long March-4B rocket carried the Haiyang-2C (HY-2C) satellite that took off at about 0540GMT.

It is China's third maritime satellite which will join the previous HY-2B and subsequent HY-2D satellites "to carry out high-precision maritime environment monitoring."

It was also 347th launch by the Long March rocket series. China also sent an observation satellite, Gaofen-11 02, into the orbit through a Long March-4B carrier rocket. It will be used for mapping efforts in China's Belt and Road Initiative.

CSL to construct two autonomous electric ferries



On 15 July 2020, India's largest commercial shipbuilder Cochin Shipyard Ltd (CSL) said it has signed contracts for construction and supply of two autonomous electric ferries to Norway-based ASKO Maritime, with an option to build

two more identical vessels.

CSL is already constructing 23 hybrid electric boats for Kochi Water Metro. It won this export order after detailed evaluation of various global shipyards and based on its value proposition to the customer, the Kochi-based shipbuilder said in a release.

ASKO Maritime AS, the subsidiary group of NorgesGruppen ASA, is one of the largest players in the Norwegian retail segment.

The project, partially funded by the Norwegian government, aimed at emission-free transport of goods across the Oslo fjord. The 67 metre-long vessels will initially be delivered as a full-electric transport ferry, powered by 1,846 kWh capacity battery. After commissioning autonomous equipment and field trials in Norway, it will operate as a fully autonomous ferry of ASKO that can transport 16 fully loaded Standard EU trailers in one go across the fjords.

IMO endorses world maritime theme for 2021



The IMO Council endorsed the theme following a proposal by IMO Secretary-General Kitack Lim.

“Seafarers: at the core of shipping’s future” has been selected as the World Maritime

theme for 2021, reflecting a clear need to raise awareness of seafarers’ vital role in world trade and increase their visibility. The focus on seafarers comes as the COVID-19 pandemic has placed extraordinary and unprecedented demands on seafarers. Hundreds of thousands have faced and are still facing extended sea times, going months at sea without seeing families and loved ones. The crew change crisis in 2020 has highlighted seafarers’ exceptional contribution as key and essential workers, on the front line of delivering world trade through a pandemic and in ordinary times.

The theme will provide flexibility to the Secretariat, Member States and NGOs in consultative status to focus on seafarers as the people at the heart of shipping, while also allowing for activities to delve into specific topics relevant to the role of the seafarer in safety, maritime security, environmental protection and seafarers’ well-being; and the future of seafaring against a backdrop of increased digitalization and automation.

WMU president delivered keynote speech on maritime distance learning



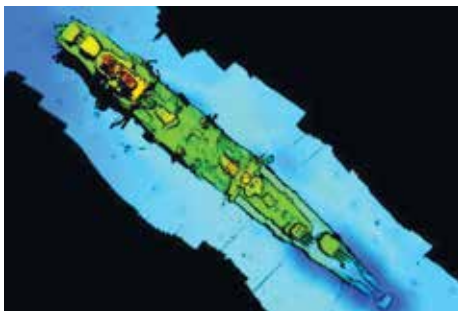
As part of the Middle East Maritime Online Forum Webinar Series, Dr Cleopatra Doumbia-Henry, President of the World Maritime University (WMU), delivered the keynote speech on 28 July 2020 on the topic “Maritime Distance Learning - Reality and Challenges”. Her remarks focused on WMU’s vision for the maritime industry in the e-learning era taking into account the digital revolution that is transforming the shipping industry.

President Doumbia-Henry noted that the COVID-19 pandemic has had, and continues to have, a dramatic impact on the entire world, including on the maritime industry. Over the past six months social distancing, wearing masks, constant use of hand sanitizers, quarantines and lockdowns have become the new normal. The impact of the pandemic has redefined mobility and transport, while technology has enabled us to stay connected and transfer many of our activities online.

President Doumbia-Henry highlighted the importance of aligning standards across distance learning programmes with standards for traditional resident programmes. She also emphasized the potential challenge of “perceived invisibility” of distance learning students, “despite their not being physically at WMU, they require, deserve and must receive the same attention as our resident students enjoy. For example, their access to library and student welfare services needs to be taken into consideration and made a priority so they too can make the most of their educational experience,” she said.

President Doumbia-Henry identified three main issues - learners, instructors, and curriculum - that have been addressed by scholars in recent years regarding distance learning. For a successful distance learning delivery, the students need to regulate their own activities, instructors need to efficiently use the technology available, and the curriculum needs to align with teaching modes and valid assessments. She noted these areas are of particular importance in relation to Maritime Education and Training and in respect of the Certification requirements for safety, security and environmental protection.

174-metre sunken German World War II battleship found off Norway



The wreckage of a major German warship has been discovered off the coast of Norway some 80 years after it was sunk in a World War II battle.

Identified this year from images and sonar scans of its hull and of details such as the position of gun turrets, the cruiser Karlsruhe was first detected in 2017 just 15 metres (50 feet) from a subsea power cable that has been operating since 1977.

Built in the 1920s, the ship was later fitted with a Nazi-era swastika that was also captured in subsea images.

The 174-metre vessel, part of the German force that invaded Norway in April 1940, was struck by a British submarine torpedo shortly after starting its return voyage from the southern Norwegian port of Kristiansand.

The ship's crew subsequently evacuated and the vessel was finally sunk by the Germans themselves, resting upright on the seabed at a depth of 490 metres, some 13 nautical miles (24 kilometres) off the coast.

CMMI sets sail



CMMI[®] Institute

The Cyprus Marine and Maritime Institute (CMMI) prepares to set sail as it aspires to become the driver behind the island's sustainable blue growth through knowledge and innovation.

CMMI's newly appointed CEO Zacharias Siokouros said the institute aims to fill a decades-long void in marine and maritime education, undertaking the task of setting the country's Blue Economy on concrete foundations.

The Institute which was set up by MaRITeC-X consortium, spearheaded by Larnaca municipality that includes local universities, as well as international maritime institutions.

"The CMMI will be an independent, international, scientific and business Centre of Excellence for Marine and Maritime activities and carry out Research, Technological Development and Innovation (RTDI) activities to provide practical solutions to the challenges that the marine and maritime industry face," said Siokouros.

The project received €15 million in co-financing from the EU, after being selected for funding by the European Commission's Horizon2020 research and innovation programme, another €15 million funding is from the Cyprus government.

Government funding will be going towards the construction of the institute's facilities in the Mackenzie area on a plot that was approved by the Custodian of Turkish Cypriot properties.

New president of The Nautical Institute to focus on three challenges



The newly elected President of The Nautical Institute, Jillian Carson-Jackson has vowed to help the Institute and wider maritime community meet three important challenges – those of diversity and inclusion,

branch engagement and managing the impact of technology.

Speaking at Nautical Institute Annual General Meeting on 2 August 2020, she announced a pledge from the Institute on diversity and inclusion saying: "There has been a concerted effort over the past years to raise visibility of not just women, but the overall role of diversity and inclusion in maritime. The pledge of the Institute, as a global body for maritime professionals, is to show its commitment to encourage, support and celebrate a diverse and inclusive maritime industry."

Championing the Institute's worldwide network of branches Ms Carson-Jackson described her own branch, The Nautical Institute South East Australia branch, as her professional family, sounding board and reality check. She commented "Nautical Institute branches provide a focus to engage with other maritime professionals and to think global while acting local. They offer a forum to gather ideas, share experiences, develop best practice and influence the activity of the Institute and beyond."

On the subject of technology, Ms Carson-Jackson cautioned that in a fast-changing environment "it may be difficult to see beyond the tools to the people. As we see the increase in technology in our industry, our challenge is to consider the changing skill sets and competencies required for maritime professionals in an increasingly digital and autonomous environment."

Seaversity launches learning system with AR



Seaversity, a maritime technology provider, has advanced its online learning system for maritime students to adapt to the “new normal” ushered in by the coronavirus disease 2019 (COVID-19) pandemic. It formally launched the Seaversity Learning Management System (LMS) with Augmented Reality (AR) for the familiarization of future maritime students and to help equip institutions to easily teach students using modern technology and equipment.

Seaversity Chief Operating Officer (CEO) Ephrem Dela Cerna Jr. said that the launch was made even more significant with a contract signing with the Asian Institute of Maritime Studies (AIMS). AIMS as a partner that will start using Seaversity’s LMS developed technology and platform this year. LMS would help future maritime students to be more aware of their advanced technology and harness this

with the help of Seaversity to adjust and “actually improve their skills in handling the fast pace technology that has been changing the face of modern shipping globally.

Looking beyond the negative impact of the current down-turn of shipping because of the pandemic, augmented reality in maritime skills training and education has become so much more essential and important. Seaversity’s products and services include online LMS for Higher Education Institutions (HEIs) with emphasis on Bachelor of Science in Maritime Transportation (BSMT) and Bachelor of Science in Maritime Engineering (BSMarE). They also have courses on block chain, white label platforms and virtual reality (VR) and augmented reality.

The trainees can explore the decks of a virtual ship. Life-size elements and high-end rendering of actual ship complete with interior and exterior images of the vessel, its engines and other components, which allow trainees a better understanding of depth and scale of the ship.

In VR, the immersive experience brings the trainees to respond in a virtual environment, as if he is present in an actual ship. They get to immerse in a virtual environment without compromising their safety and in the process, making training more effective and cost-efficient for companies.

Cosco Shipping Maritime University debuts in China



The IMO Council endorsed the theme following a proposal by IMO Secretary-General Kitack Lim.

“Seafarers: at the core of shipping’s future” has been selected as the World Maritime theme for 2021, reflecting a clear need to raise awareness of seafarers’ vital role in world trade and increase their visibility.

The focus on seafarers comes as the COVID-19 pandemic has placed

extraordinary and unprecedented demands on seafarers. Hundreds of thousands have faced and are still facing extended sea times, going months at sea without seeing families and loved ones. The crew change crisis in 2020 has highlighted seafarers’ exceptional contribution as key and essential workers, on the front line of delivering world trade through a pandemic and in ordinary times.

The theme will provide flexibility to the Secretariat, Member States and NGOs in consultative status to focus on seafarers as the people at the heart of shipping, while also allowing for activities to delve into specific topics relevant to the role of the seafarer in safety, maritime security, environmental protection and seafarers’ well-being; and the future of seafaring against a backdrop of increased digitalization and automation.

Maritime learning from Bureau Veritas goes global



Bureau Veritas (BV), has launched the BVS eAcademy to provide online learning to a global audience. The eAcademy is led by BV Solutions Marine & Offshore (BVS M&O) – the Technical Advisory, Asset Management, and Assurance Solutions provider dedicated to Marine and Offshore Energy Markets.

The courses are all delivered online and ‘on-demand’. The e-learning modules allow students to set their own pace and manage their own learning experience in a carefully structured and engaging format. Suitable for maritime professionals, or students looking to develop their awareness and understanding of specific areas of expertise, the courses address key technical areas related to:

- Naval architecture
- Materials, welding and non-destructive testing (NDT)
- Rules and regulations
- Classification and statutory matters

Offering more than 25 maritime courses, BVS eAcademy was developed from BV’s own internal training academy which, since 2016, has delivered more than 20,000 training sessions to over 1,500 BV staff.



Wave energy for energy efficient shipping

Mohammad Saidee Hasan, Md Aminul Islam and Obi Kumar Nath

Industrialisation is the prerequisite for development. And it must go on to feed the larger consumer base amid a shortage of resources. At the same time, its negative impacts should be addressed as rampant industrialisation is continuously resulting in a gradual depletion of fossil fuel and extensive damage to the environment.

The quest for clean sources of energy as an alternative to fossil fuel, thus, now becomes a global priority.

Perhaps the shipping sector that is dependent exclusively on fossil fuels to float will require green energy faster than the other.

According to the International Maritime Organisation estimation, total marine fleet of the shipping world altogether consumes between 250 and 325 million tons of fossil fuel annually during 2007 and 2012. The sector is blamed for approximately 2.8% of annual global greenhouse gas emissions.

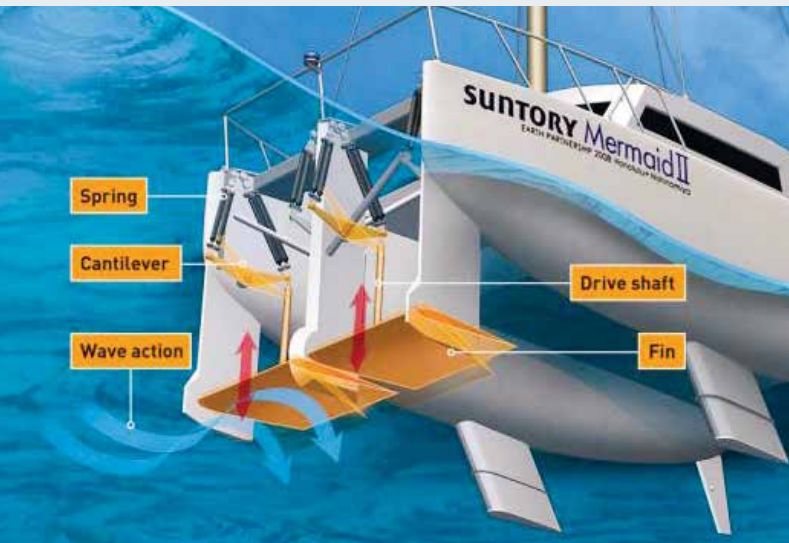
There are stringent regulations and measures by The International Convention for the Prevention of Pollution from Ships to check carbon dioxide emissions 20% by 2020 and 50% by 2050.

In addition, the rise of bunker fuel price in a global volatile market and low freight rate are reasons for the shipping company to find the best alternative way to reduce dependency on fuel.

The shipping industry is the backbone of the global economy. Approximately 90% of the tonnage of all traded goods is transported by ships as estimated by the International Chamber of Shipping.

Due to the nature of this industry, there is always availability of waves at sea which can be harnessed and utilised as a source of energy though it hasn't been utilised yet in vast canvas. Wave energy can be considered as a robust form of energy and an effective alternative to fossil fuel if it can be properly harnessed.

As more than 70% of the earth's surface is covered by ocean, it is theoretically estimated that the ocean holds energy resources about four times the global electricity demand. In this context, the energy-efficient shipping idea incorporated with renewable energy comes to focus.



Many technologies are being invented to capture energy from ocean waves and some technologies can be installed in vessels.

Solar, wind and wave are the basic forms of renewable energy. Among these, the wave has the high-density energy form. Moreover, wave energy has significant advantages over other renewable sources of energies. While solar energy intensity is typically 0.1–0.3 kW/m² (kilowatt per square metre) in a horizontal surface, converted to an average power flow intensity of 2-3 kW/m², wave energy in the vertical plane is perpendicular to wave propagation.

A Wave-based power generator can produce power up to 90% of the time compared to a maximum of 30% for wind and solar power devices. Most importantly, it has limited negative environmental impact in use.

As seawater is about 850 times heavier than air, it contains a lot of energy while in motion. Power per length of a wave crest is a fair measure of the energy contained in waves. A study on worldwide shipping route during January-December of 2007, found that the average energy flux of wave varies between 10 kW/m and 50 kW/m with a yearly average of 26 kW/m.

With an estimated average energy flux, a ship following the worldwide route will be exposed to an energy of roughly 4 MW on average. This vast pull of energy can save large amounts of fuel if properly exploited and utilised in the propulsion system.

The power of a wave is determined by the “Wave Power Equation”. Wave power is defined by the flow of energy through a vertical surface perpendicular to the direction of its propagation. To calculate the flow of energy, it is necessary to find out the mechanical energy of a vertical column of water and then multiply with the speed of the wave. The mechanical energy of a water column is the sum of its potential and kinetic energy.

Wave energy is another concentrated form of solar energy, which is produced by wind flow over the surface of the ocean. When the sunray strikes the atmosphere, it becomes hotter. As a result of the temperature differences created in the atmosphere, the air moves from a hotter region to a cooler region, thus making wind energy to flow. Waves can also be created from landslides, gravitational attraction, and other causes tectonic movement.

Many technologies are being invented to capture energy from ocean waves. These technologies include converting wave to electricity and converting wave to useful propulsive thrust. Among those, some technologies can be feasible to be implemented in vessels.

Different types of Wave Energy Converters (WEC) are available in the world. They can be categorised into three types: Wave activating body like Attenuator (Pelamis), Point absorber, Bulge wave converter and Oscillating wave surge converter; Oscillating water column and Wave capturing overtopping device.

Wave activating body extracts power from up and down motion of the waves, which depends upon the design and building characteristics while oscillating water column extracts power from the vertical oscillating motion of wave and converts to air pressure. Wave capturing overtopping device extracts power from the flow of water-assisted by wave and gravity.

Besides, there are some other technologies available like Hydrofoil/thrust generating foil technology and WITT (Whatever Input to Torsion Transfer).

These technologies, shortly WECT, can be implemented in vessels in three ways: during sailing, at port and port operation and anchorage.

How much power can be captured by WECT from available wave power can be calculated from the hydrodynamic efficiency of WECT. In case of capturing energy from waves to a WECT, the ratio of power absorbed by WEC to the wave energy flux (wave power per metre length of wavefront) is defined as capture ratio.

To calculate how much power can finally be contributed to the ship's power main, a vessel named MV Great Royal was used for trial during June 26 to July 13 of 2018 at Kutubdia anchorage, Bangladesh. The vessel with 360kW generator load consumed 2.8 tons of fuel every day.

In the study, 238.77kW wave power was calculated in each metre length of the wavefront.

Here, a small size WEC was considered for easy handling and carrying out of operation. On the other hand, large or medium size WEC can be applied in a vessel for more power, but ship personnel may face difficulties while installing on seawater surface.

For port, multiple arrays of WECT can be implemented in deep seaport or seaport. But this won't be effective if the water depth is less than 30-40 metres, as large size WEC unable to work efficiently in shallow water.

As Bangladesh has gradual slopping down of continental shelf to the seabed, it is not possible to find enough depth in Kutubdia or Chattogram port or even Payra port for implementing WEC technology.

High torrent characteristics of Karnaphuli River in Bangladesh may permit other tidal energy conversion technology.

But apart from Bangladesh, it is possible to find enough depth for successfully implementing WEC in other geographical port locations all over the world. Seaport having enough depth could be proved as a worthy example of the energy-efficient port to ensure an energy-efficient propulsion system in the shipping industry.

In such kind of geographic locations, commercial installation of robust size WECT, for example, Wave Dragon, Oyster, Pelamis can

contribute to a huge amount of electricity in port, which can be used for cold ironing (supplying shore power to ship).

A large size wave dragon can have a power rating of 7000 kW/ single unit. So, theoretically, two units of wave dragon can supply 1.4 MW, which can annually supply about 12264 MW of electricity to shore.

In the study at Kutubdia anchorage, it was calculated that 92 to 161kW power can be saved using 5 number of small size point absorbers heaving small buoy. While CO₂ emission can be reduced by 2.43 to 3.89 tons per day. Moreover, shipping cost can be saved by USD381.42 to USD611.25 every day.

Here, the smallest WEC is considered with the least efficiency of power uptake, so power production is less. If to consider medium or large WEC, then power production would be more undoubtedly. Other WEC technologies such as Anaconda Bulge wave converter technology seemed promising could be proved viable in a ship, but lack of data and unconfirmed information didn't assist to carry out the calculation.

The small heaving point absorber type WEC is considered regardless of the depth of installation in the sea. It is demanded by the manufacturer that a single unit point absorber, Aqua Buoy of 6m diameter with 50m depth can generate 250kW depending on sea state. In that case, instead of installing 5 units, only a single unit Aqua Buoy type WEC can contribute enough to reduce fuel consumption of that vessel.

In the context of exploiting and utilising wave energy in seagoing vessels while sailing, frictional drag effect and wave resistance of WEC devices, slow speed functioning of devices, a slower speed of the vessel and less effectiveness of these technologies in larger ships etc. result in drawbacks and not fulfilling requirements. Only WITT WEC seems promising.

Though all of these wave technologies are not commercially viable yet, testing of their prototypes proved good.

The cost of implementing WECT may be expensive in the short term but can give a long-term cost-efficient return for the shipping company as well as significantly contribute to the emission reduction and a better shipping environment.

Since wave energy idea, as a green energy source is still in fledgeling condition, less work has been conducted on wave energy research and application on seagoing vessels.

For ensuring the viability of wave energy while the vessel is at sea, more thorough research is required on advanced fluid dynamics and wave resistance effect on the ship. There are many works to be done on WITT WEC system and others for making them viable in the ship.

Further research can be conducted in the field of designing and developing WEC technologies which are feasible to work in shallow water such as Bangladesh seabed area.

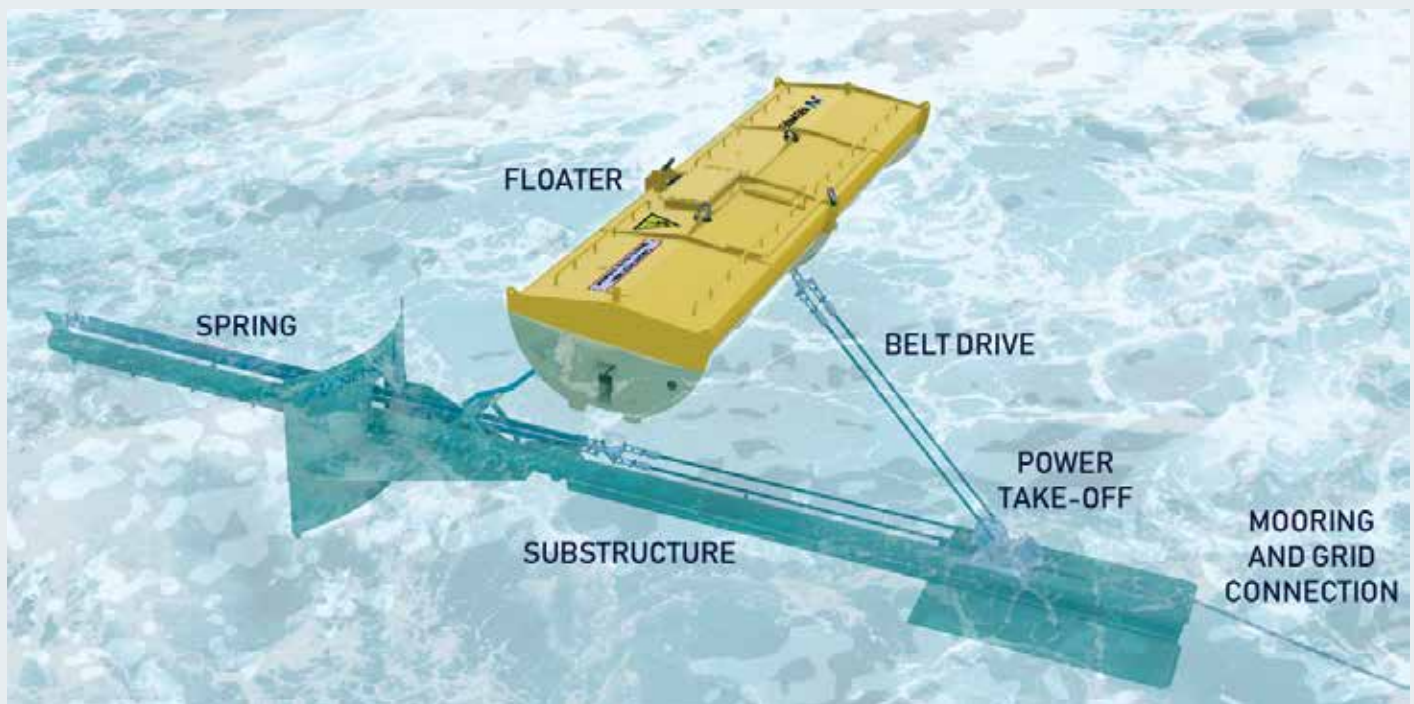
Mohammad Saidee Hasan

Lecturer
Department of Naval Architecture & Offshore Engineering, BSMRMU

Md Aminul Islam and Obi Kumar Nath

Students
Bachelor of Maritime Science, BSMRMU

The NEMOS Wave Energy Converter is an innovative system for generating electricity from ocean waves.





**Bangabandhu Sheikh Mujibur Rahman
Maritime University, Bangladesh**

www.bsrmu.edu.bd

