

Seminar Paper on
**Identifying the Prospects and Challenges of Blue
Economy in Bangladesh**

Submitted By: SADEQ AHMAD

Roll no. 113

130th ACAD

Submitted To: Dr. Md. Mizanur Rahman

Module Director

Module-05

Date of Submission: December 14, 2020



BANGLADESH PUBLIC ADMINISTRATION TRAINING CENTRE

Acknowledgement

At the very outset I'm thankful to the Almighty Allah, the most merciful, the most benevolent, for giving me the strength to complete the seminar paper in time in this COVID-19 pandemic situation without any hassle. I'm really indebted to my wife and sons for their sacrifice and support to complete the training.

The sincere gratitude offers for Mr. Rakib Hossain, NDC, Rector (Secretary) of BPATC for his constructive guidelines and encouraging words throughout the course. The author is much obliged to convey heartfelt thanks and gratitude to the Course Management Team (CMT) of 130th Advanced Course on Administration and Development (ACAD) specially to Mr. Khondoker Azim Ahmed, MDS, BPATC & Course Advisor, Dr. Mohammad Mizanur Rahman, Director, BPATC & Course Director, Mr. K.M. Abdul Kader, DD, BPATC & Course Coordinator, Mr. Md. Motaher Hossain, DD, BPATC & Course Coordinator and Mr. Sattyan Sarkar, Class Room Attendant for their painstaking jobs, continuous support and inspiration.

Special thanks and respect for Dr. Md. Mizanur Rahman, Director, BPATC & Module Director for his guidance and scholarly advice in writing the seminar paper.

Lastly, I would like to offer my wholehearted thanks and respect for the hyper-active participants of 130th ACAD for their enthusiastic presence, relentless support and cemented cooperation which paves my way to complete the course smoothly.

Hope that the sweet memories of the course will prevail in my memory for ever.

Table of Contents

Serial No.	Name of the Table/ Figure	Page No.
Table-1	Potential Sectors of Blue Economy in Bangladesh	Page-8
Table-2	Challenges of Blue Economy in Bangladesh	Page-13
Figure-1	Map showing the area of Bay of Bengal after Victory of Maritime Delimitation	Page-3
Figure-2	Contribution of Marine Capture Fishery	Page-9
Figure-3	Fish Production for last 5 years	Page-10
Appendix-1	Questionnaire	Page-19

Identifying the Prospects and Challenges of Blue Economy in Bangladesh

Executive summary

The objective of the study was to identify the mind-blowing prospects of ocean-based economy and spotlighting on the major obstacles in harnessing the potentials of blue economy in Bangladesh. The study was also aimed to find out a set of probable recommendations that will be necessary to overcome the existing constraints in implementing the blue economy initiatives. Both primary and secondary data were analyzed to identify the prospective sectors of blue economy in Bangladesh. The study revealed that blue economy encompasses multiple of potential sectors such as marine fishery, maritime transport and shipping, mariculture, offshore energy and renewable energy, blue tourism, ship building and recycling industry, biotechnology and carbon sequestration. On the other hand, in realizing the potentials of blue economy to the fullest, there are some impediments associated with the prospects such as lack of proper policy, ineffective regulatory framework, weak coordination mechanism, lack of experts in public sector, marine pollution and climate change, absence of updated action plan, inadequate survey and research and community ownership. Finally, the study proposed some pertinent recommendations for policy makers such as formulation of integrated blue economy policy, establishing a separate blue economy division/ authority, developing skilled manpower, bridging gaps between the policy makers and researchers, sensitizing community ownership, addressing marine pollution and impacts of climate change and adopting marine spatial plan.

Keywords: Blue Economy, Sustainable development, Bay of Bengal, Marine Resources, Bangladesh

1.0 Introduction:

1.1 Background:

Blue economy has opened a new space for economic development of coastal countries like Bangladesh. The concept 'Blue Economy' was first introduced by Gunter Pauli in 1994 and then he brought it to prominence in 2010 with innovative ideas in his book 'The Blue Economy: 10years,100 innovations, 100 million jobs'. After that, it got a break through in Rio+20 Conference on sustainable development in 2012 with a view to improving human wellbeing, social equity, reducing environmental risks and developing dynamic business models. Coastal and Small Island Developing States (SIDS) are at the core of ocean economy advocacy. Although the idea was initially unfamiliar to many of us, it has got huge attention immediately after the settlement of maritime boundary delimitation dispute with Myanmar in 2012 and India in 2014 respectively. Bangladesh established sovereignty over the resources of 200 nautical miles of Exclusive Economic Zone (EEZ) and a total of 118,813 square kilometer of maritime area which amounts to about 81% of the terrestrial land of the country. This victory offers ample scope for harnessing untapped potentials of blue resources which is closely related to sustainable economic development of Bangladesh. Aftermath of the achievement of huge water mass, the government has created a Maritime Affairs Unit at Ministry of Foreign Affairs (MOFA) and the unit has identified 9(nine) sectors to boost up that sectors with pragmatic action plans. The sectors are marine fisheries, mariculture, commercial shipping, marine tourism, offshore energy and blue biotechnologies, ecosystem services of mangroves, ship building and recycling industry, marine pollution and marine spatial planning (MAU, MOFA). According to the World Bank (WB), the concept blue economy outlines such marine based economic development which at the same time spearheads the human wellbeing and social equity along with decreasing the potential environmental hazards and ecological scarcities. The Indian Ocean Rim Association (IORA) defined blue economy as the integration of ocean economy development that enhances human welfare in a holistic manner. The development of blue economy requires the practices of social inclusion, environmental sustainability and innovative business model.

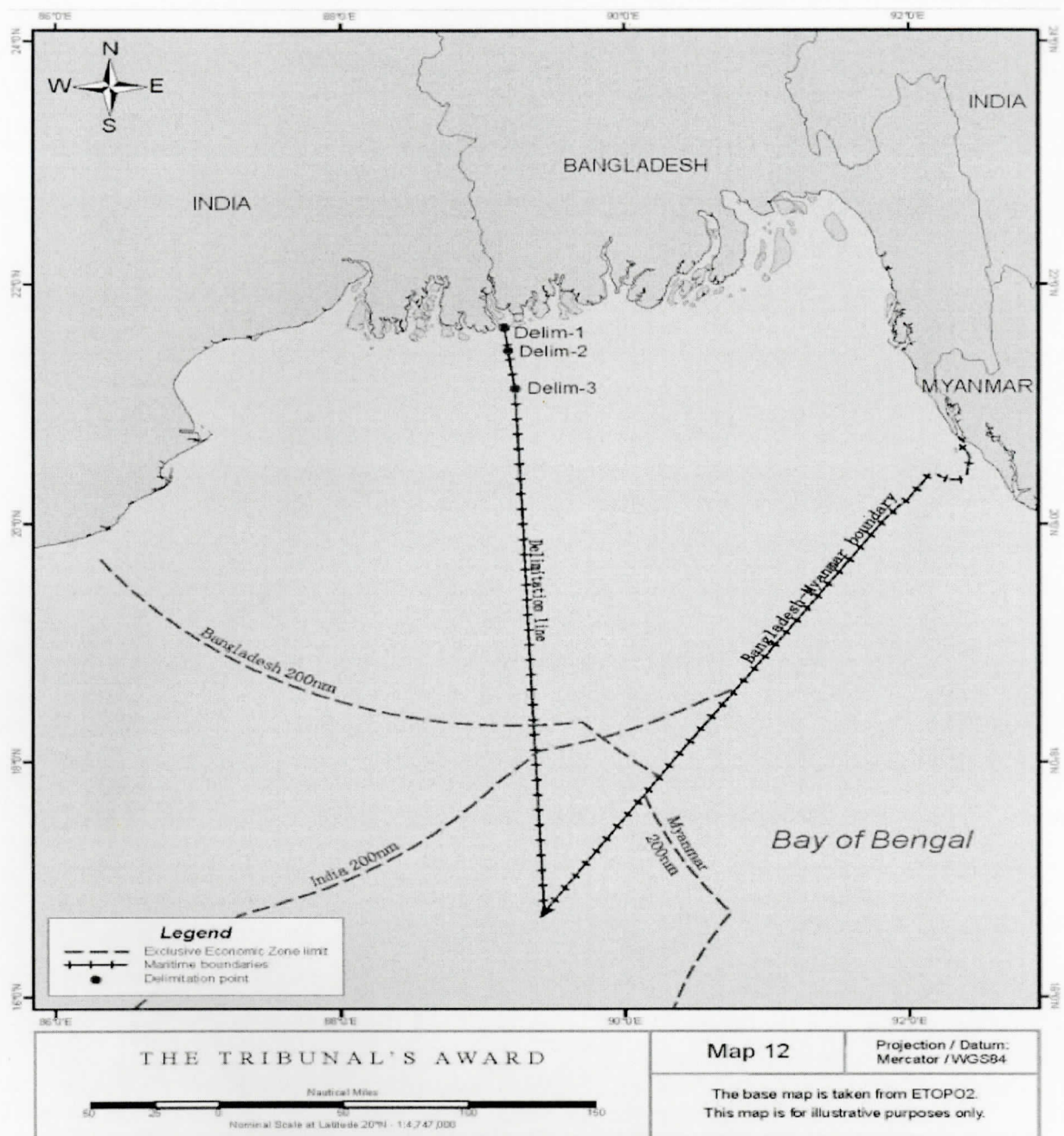


Figure-1: Map showing the area of Bay of Bengal after Victory of Maritime Delimitation

(Source: [https://www.asil.org/insights\(18,20\)/annex-vii-arbitral-delimits-maritime-boundary](https://www.asil.org/insights(18,20)/annex-vii-arbitral-delimits-maritime-boundary))

Keeping this in mind, Bangladesh might utilize the marine resources through innovative blue economy development initiatives and draw another skyline of expectations to transform the country into a developed one. Additionally, the oceans covering almost 72% of the

surface of the earth contributing a substantial amount of the world's demand for food, livelihood, energy, hydrocarbon and amenities. It is found that about 30 million people depend on the blue resources, for example, fisheries, aquaculture, tourism, shipping, shipbuilding and ship decommissioning, salt production, and offshore oil and gas production (Hossain *et al.* 2014). Study reveals that 50-60% of global hilsa catch takes place in the coastal and marine waters of Bangladesh followed by 20-25% in Myanmar, 15-20% in India and the remaining 5-10% in other countries (Hossain *et al.* 2014). A wide range of biodiversity, for instance, bony and cartilaginous fishes, shrimps, crabs, seaweeds, mollusks and mammals abundant in the coastal and marine ecosystems of the Bay of Bengal (Ahmed *et al.* 2008). Around 511 marine species along with shrimps are listed in marine water bodies of Bangladesh (Jahan *et al.* 2014). There is a great opportunity in field of non-traditional marine species such as mussels in the littoral zone of ocean water. A study reveals that substantive number of green mussels, clams and oysters have been producing in Moheshkhali, Kutubdia and Sonadia islands of Cox's Bazar and Teknaf regions (Shahabuddin *et al.*,2010). In Bangladesh, seaweeds grown naturally are available in the littoral and sub-littoral zones of St. Martin's island to Sundarbans mangrove forest from October to April (Islam and Aziz 1987). Hossain, M.S. (2001) mentioned that the coastal and marine environment are becoming increasingly important in fulfilling socio-economic development and strategic objectives of the country. Deb, A.K. (19989) conducted a study on shrimp culture in the coastal areas of Bangladesh. He finds that shrimp culture is expanding widely in the last two decades in an unplanned and unregulated way which has adverse impact on both environmental and socio-economic issues.

There are numbers of researches in the field of scientific domain regarding ocean economy have been carried out which reflect the multiple dimensions of prospects of the field but study in the field of social science has rarely been found. Islam *et al.* (2018) conducted a study on opportunities and challenges of blue economy for sustainable development of Bangladesh. He recommended for proper policy, expert manpower and marine-friendly environment. Hossain M.M. (2017) identified some potential sectors of blue growth and gave emphasis on human resources, utilization of marine resources (both living and non-living) and capacity building of academic institutions. Jiang *et al* (2014) calculated a multi-factor production function model with a constant elasticity of substitution in the case of

China's marine sector. They observed that during 2000 to 2011, the contribution of Chinese marine economy to country's GDP increased from 6.46% to 13.83% with an average annual growth rate of 7.17%. Zang *et al* (2004) recommended some policies to obtain the sustainable development of ocean economy in China which includes making ocean strategies as national strategy, achieving combined economic growth of sea and land, developing marine resources by science and technology, establishing suitable legal institution for marine environment and creating new idea of defending. Ghali (1976) examined the tourism-led growth hypothesis in the case of Malaysia and Singapore. He found that tourism is the cause for economic growth in Singapore, but economic growth is the cause for tourism in Malaysia. After the conference of Rio+20, there has been growing concern over the conceptualization of blue economy. Currently the blue economy conceptualizes oceans and seas as 'Development Space' where spatial planning assimilates conservations, sustainable uses of living resources, extractions of oil and mineral, bio-prospecting, marine trade, exploration of renewable resources and development of infrastructure (MOFA). Furthermore, the global leaders designed blue economy strategy to harness the potentials of blue economy for sustainable blue growth, food security, employment generation, conservation of marine environment.

1.2 Problem statement:

Blue economy, in general, is relatively a new concept around the world and "an unlocked potential" for Bangladesh, in particular. After Rio+20 United Nations Conference on Sustainable Development held in 2012, the notion achieved much attention from the policy makers, academics and researchers. Till today the term 'Blue Economy' does not have any universally accepted definition (Bollmann 2010). It is often narrowly interpreted as economic activities that takes place in oceans and seas. Definitely economic activities are an integral part of blue economy but there should have ample scope to see the concept holistically. Ocean encompasses two-thirds of surface of the earth and blue waters of the ocean are considered as the bloodstream of this planet. Consequently, blue economy entwines the biotic and abiotic resources of oceans and seas and conservation and sustainable uses of ocean resources. After the victory of maritime boundary delimitation,

Bangladesh started to envisage the broad spectrum of blue economy and identified 26 sectors as potentials of blue economy in Bangladesh (MOFA). Out of these, mariculture, energy and minerals, maritime trade and shipping and blue tourism are noteworthy. Owing to a new concept, there are not that much research works in this field for providing policy support to the policy makers. In case of policy framing in the field of blue economy, the policy makers are still in ambiguity about the purview of complex dynamics of blue economy. Nonetheless, the very few systematic studies those are carried out are confined to scientific research. Very recent rare studies in the social science context are conducted aiming to untap the potentials of blue economy in Bangladesh. As the concept of blue economy is comparatively a new entry in the maritime lexicon and it covers economic, social and environmental development of the seas and oceans, there are huge research gaps and missing links in understanding the dynamics of the concept and sustainable utilization of marine resources.

1.3 *Rationale:*

Policy formulation requires an in-depth understanding and threadbare analysis of policy issues. Proper knowledge and information can help the policy makers to draw a realistic conclusion on policy matters. So, the findings of the study will help the policy makers and policy researchers to provide impetus to consensus policy design. It will also help to bridge knowledge gaps and understand the missing links in the field of blue economy potentials and challenges herewith. Moreover, the results will be used as a benchmark reference for further study in this field.

1.4 *Objectives:*

The purpose of the study is to investigate the present scenario of ocean-based economy in Bangladesh. So, the objectives of the study are:

- I. To identify the prospects of blue economy in Bangladesh;
- II. To identify the challenges in harnessing the potentials of blue economy; and
- III. To way forward for policy researchers and policy makers.

1.5 Limitations:

The concept of blue economy is comparatively new in its dimension in Bangladesh. So, the first limitation of the study is lack of available empirical data in the field of blue economy. Secondly, the present pandemic situation bars the researcher to visit more fields to collect more relevant primary data; thirdly, time constraint is one of the major barriers to the research and fourthly, lack of logistics and funds for conducting the study is another impediment. Above all, the researcher has humbly confessed the limitation for conducting the study within “the comfort zone” considering time constraint. Despite the approach of Blue Economy is very wide, it is confined to analysis of prospects and challenges by collecting primary data from only professional group.

2. Methodology:

The study used both primary and secondary data. Primary data was collected from the officials who are assigned to deal with the issue in the field of developing and coordinating blue economy initiatives, secondly; the researchers who are conducting research in the concern fields and secondary was collected from relevant websites, journals, books, articles, periodicals, official archives etc. For collection of primary data, 08 (Eight) government officers were interviewed who are currently working in the concern field for a pretty long time by using the approach of focus group discussion (both vis-à-vis and online platform). In regards to, primary data collection, a semi-structured questionnaire was prepared. The nature of the study was descriptive and simple statistical analysis was carried out to analyze and interpret the findings.

3. Results and Discussion:

The primary data was collected by using the qualitative study tool “Focus Group Discussion (FGD)”. It was a context specific, semi-structured interview comprising of 08 (Eight) informants. All of the informants were acquainted with the research problem well ahead and they came up with some thoughtful insights. Both primary and secondary data are then analyzed and interpreted to reach a comprehensive underpinning of prospects and challenges

of blue economy initiatives development of Bangladesh. For discussion purpose, the results that obtained from primary data are crossed examined with the secondary data and then draw inferences. The discussion is followed as first, analysis of potential sectors of blue economy in Bangladesh and second, the challenges herewith in achieving the prospects of blue economy with a set of recommendations made for the policy makers and researchers.

3.1 Potential Sectors of Blue Economy:

At the outset of the discussion, the informants opined that blue economy has both opportunities. In response to the question: “what are the potential sectors of blue economy in Bangladesh?” They mentioned some sectors as “potential” which are presented in the following table.

Table -1: Potential Sectors of Blue Economy in Bangladesh

Rank	Potential Sector(s)
First	Marine Fishery
Second	Maritime transport and Shipping
Third	Mariculture
Fourth	Offshore Energy and Renewable Energy
Fifth	Blue Tourism
Sixth	Ship Building and Recycling Industry
Seventh	Biotechnology
Eighth	Carbon Sequestration
Nineth	Marine Spatial Planning
Tenth	Marine Surveillance

3.1.1 The informants responded to the question giving the rank of the sectors. To them, marine fishery is the highest priority sector out of ten sectors. They also told that though marine fishery is one of the most potential sectors for blue economy development of Bangladesh which is over-exploited in the shallow region of 10-40m. According to BFRI, during the year of 2017-18, the total fish production was 4.27 million metric tons out of

which only 16% (0.654 million metric tons) was from the marine fishery. It is also estimated that from 0.654 million metric tons of marine fishery catch, 83.72% are artisanal small-scale fishery and 16.28% are large industrial fishery (Figure-02). Although Bangladesh has a vast ocean, still the sector is not utilizing properly. Only 16% of fishes are caught from 10-40 meters. After 40-100 m only a small amount of tiger shrimps (penaeid shrimp) and finfish are caught by industrial trawlers (BFRI). Hussain and Rahman (2010) found that large trawlers are used for mostly penaeid shrimps and fin fish fishing within the depth of 40-100 meters. The informants also opined that Bangladesh should utilize the prospect of blue economy by extracting the marine fishery resources up to 200 nautical mile using modern technology instead of the traditional catch. They also stressed that the government of Bangladesh has come out with proper policy to extract fishery resources especially pelagic fish from high seas of the Bay of Bengal by using long-line and hook-fishing. The informants further added that before deep-sea fish-catch, the stock of fishes should need to be assessed through proper survey. As per the data available in website of Ministry of Fisheries and Livestock, it is observed that out of total Hilsa catch, Bangladesh extracted 50-60% from her coastal bodies whereas Myanmar 20-25%, India 15-20% and rest of the world 5-10% of total extraction.

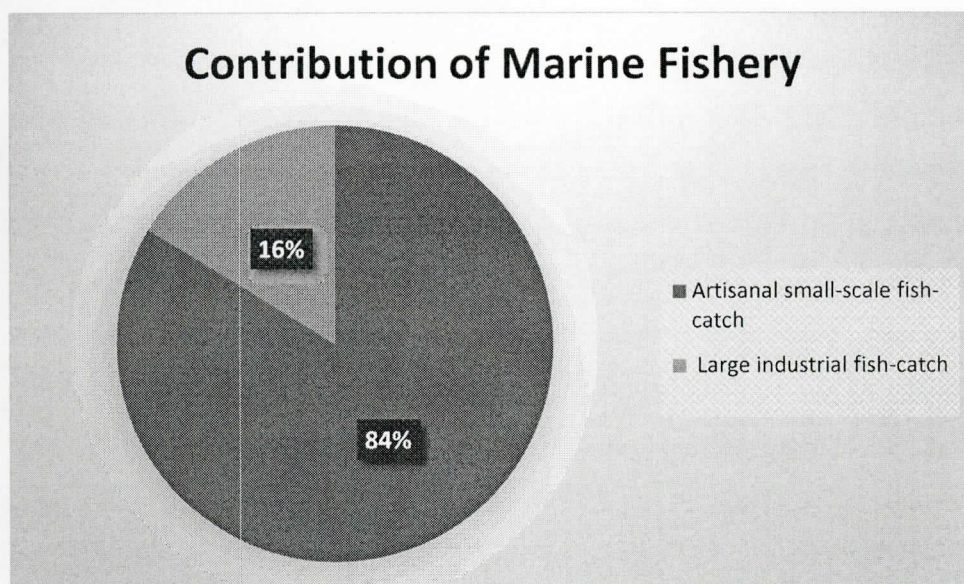


Figure-2: Contribution of Marine Capture Fishery (2017-18)

Hossain, MA (2017) found that at least 500,000 people fully and directly dependent on marine fisheries sector in Bangladesh. He also noted that globally 350 million jobs are linked to marine fisheries of which 90% of fishers living in developing countries. The study on the Bay of Bengal Large Maritime Ecosystem Project (BOBLME) conducted in 2009-2015 found that about 60 lac tons of fishes that constitute 16% of the world production are produced annually from the Bay of Bengal. Despite the limited access to marine fisheries resources in the Bay of Bengal, the trend is increasing in terms of fisheries resources and fish production (DOF). According to the Annual Report 2018 of DOF, only demersal fish and shrimp are caught from the Bay of Bengal. The report also revealed that fisheries sector accounts for 4.4% of national Gross Domestic Product (GDP). The reason for gradual increase of fish production is government policy and initiatives for sustainable aquaculture production. The status of fisheries resources and fish production for consecutive five years in Bangladesh are shown in Figure-3.

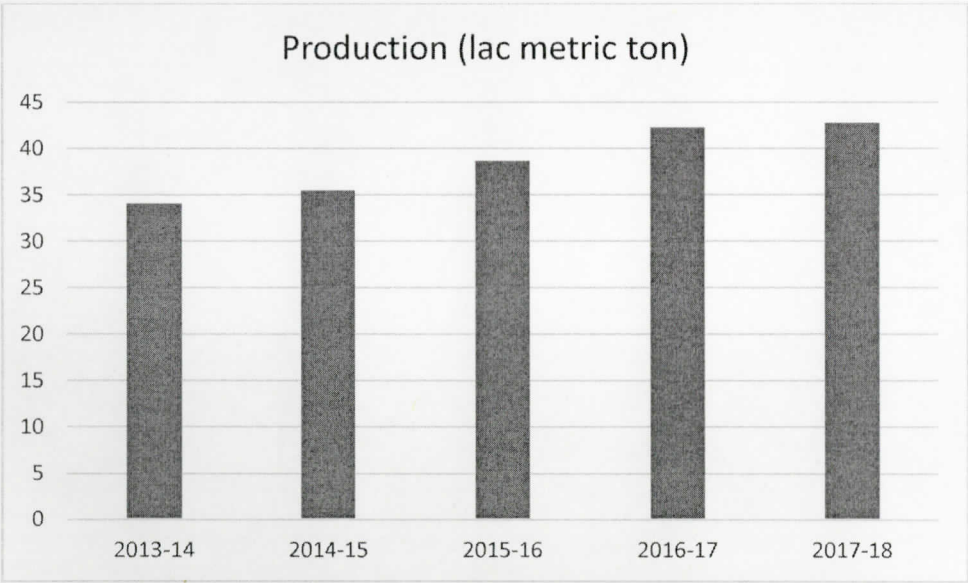


Figure-3: Fish Production for last 5 years

Hasan, M.M., *et al* (2018) pointed out that in spite of having bright prospects, marine aquaculture on a commercial basis as well as marine stock enhancement and sea ranching are yet to be developed. Moreover, the marine fisheries sector has been suffering from chronic disintegration and mismanagement that have led to many detrimental consequences on fish stocks and habitats.

3.1.2 In modern globalized world, ports play significant roles from strategic point of view as well as economic point view. According to the UN first Global Report of Ocean (2016), almost 90% of global trade by volume and 70% by value is carried out by sea and handled by ports worldwide. The Review of Maritime Transport of UNCTAD (2012) explored that global seaborne trade has increased by 4.3%, with the total reaching over 9 billion tons in 2012 for the first time ever despite the global economic recession. The informants opined that Bangladesh has to be very tactful and innovative in using the bay and immediate attention should need to be given in automation of ports for ensuring one stop services. According to the estimate of Bangladesh Bank (2016-17), around 77 billion US dollar equivalent business transaction was held where 43 billion US dollar for import and 34 US dollar for export volume in the RMG sector and surprisingly 98% of transport was conducted by three sea ports of Bangladesh.

3.1.3 In case of mariculture, the informants opined that mariculture has huge opportunities in the field of food, livelihood, entrepreneurship development and employment generation. They also opined that fresh water aquaculture and coastal aquaculture are familiar to all but mariculture has not yet got that much popularity in the country. Maritime Affairs Unit (MAU) revealed that Bangladesh is lagging behind in terms of neighboring countries like China, Myanmar, Philippines and Vietnam in popularizing mariculture both in traditional cultivation of brackish water shrimps, crabs, seabass, corals, grey mullet, pomfret etc. along with non-traditional cultivation of shell fish like oysters, mollusks etc. The informants highly give emphasis on cultivation and commercialization of seaweeds as it has a great potential as a source food, medicine and herbal paints. They also expressed their dismay that the government is not giving proper attention to the sector. They also suggested that the government should come out with appropriate policies and initiatives to reap the benefits of blue economy. Not only that, building of community awareness, encouraging private investment and appropriate research in this field may develop the sector and leverage the growth engine of Bangladesh.

3.1.4 Among non-living resources, oil and gas can play substantial roles in facing energy crisis in the near future. Currently there are 26 blocs in the Bay of Bengal of which 11 are offshore and 15 are onshore blocs. At present the 2D Non-Exclusive Multi-Client Marine

Seismic Survey is in process and the organization is trying to explore new gas bloc (Petrobangla). Regarding oil, gas and minerals exploration, the informants opined that the government should not only rely on oils and gas. It is evident from various scientific reports that there are chances of having gas hydrate and ample of minerals which could be new windows for blue economy development.

3.1.5 According to the United Nations World Tourism Organization (UNWTO), about one of every two tourists visits the seaside. Blue tourism opens new business and generate new employment in the field of hotels and restaurants, recreation such as yachting, fishing, shell collection, bird watching, sun bathing, wind surfing, scuba diving, boating etc. The UNWTO found that international tourism has grown from 25 million in 1950 to 1035 million in 2012 and it will be 1.8 billion in 2030. The informants opined that the ocean-based tourism is getting popularity day by day but there is no visible progress in this sector. They also added that the ministry of civil aviation and tourism, and the tourism board should have time-bound and innovative plan to develop the sector.

3.1.6 Ship building and recycling industry offers a wide range of prospects of blue economy in Bangladesh. This is an export-oriented sector and it helps to earn foreign exchange. According to The Ship Builders Association of Japan (2015) like India and Pakistan, Bangladesh is one of the top ship-breaking countries. Almost 70% of the global total ship-breaking activities are carried out by India, Pakistan and Bangladesh. Regarding the ship building and recycling the informants opined that the industries are situated with the vicinity of Bay of Bengal or on the bank of the river without installing Storage of Treatment Disposal Facilities (STDF). For this the marine environment is polluting severely with non-biodegradable substances released from the ships. The informants further opined that the concern ministries of the government should consult with relevant stakeholders to harvest the benefits of ship building and recycling with minimum polluting of the water bodies.

3.1.7 When the informants were asked about the prospects of carbon sequestration, marine bio-technology and Marine Spatial Plan (MSP) they opined that MSP is highly necessary for “Sustainable Ocean Governance”. They also stated that to expedite the achievements of the blue economy there should have well-coordinated and well-planned MSP, otherwise the marine ecosystem will be suffered drastically. In regards to carbon sequestration and bio-

technology the informants told that it will take time because these issues require in-depth study and field research.

3.1.8 When the informants were asked about marine surveillance, the opined that the Bay of Bengal is very important from strategic point of view too. They further added that marine surveillance must be an integral part of blue economy. There are multiple of security issues arisen from human trafficking, drug trafficking, gun running, smuggling, Illegal, Unreported and Unregulated (IUU) fishing etc. may hamper the peace and tranquility, and pose a serious threat to the state security. Again, the informants opined that sustainable blue growth is essential for sustainable development of the country. Sustainable blue growth is impossible without ensuring maritime security, protecting and preserving marine environment, conserving marine living and non-living resources and preventing marine pollution, piracy, trafficking of drugs, humans and arms. In addition, the informants mentioned that the role of marine resources in poverty eradication, achieving self-sufficiency in food production, protecting environmental balance, facing adverse consequences of climate change, and also protecting over and unscrupulous utilization of marine resources.

3.2 When the informants were asked about the challenges in realizing the potentials of blue economy, they identified some pertinent challenges which are presented in the table-2 below.

Table-2: Challenges of Blue Economy in Bangladesh

Rank	Challenges
First	Lack of proper policy
Second	Ineffective regulatory framework
Third	Weak coordination mechanism
Fourth	Lack of experts in public sector
Fifth	Marine pollution and climate change
Sixth	Absence of updated action plan
Seventh	Inadequate survey and research
Eight	Community ownership

3.2.1 The informants opined that ocean governance is at the core of challenges that includes proper policy, effective regulatory framework and strong coordination mechanism. Immediately after victory of maritime boundary delimitation dispute with neighboring India and Myanmar, Bangladesh established sovereignty over 1,18,813 Km² area in the Bay of Bengal which is almost 81% of the total mainland. After that, a “Blue Economy Cell” has been established in 5th January 2017 under Energy and Mineral Resources Division aiming at coordinating the ministries, divisions, attached departments and research organizations that have been working for blue economy initiatives development. The informants strongly opined that the Blue Economy Cell cannot work properly due to lack of integrated policy, ineffective regulatory framework, lack of authority for effective coordination. The informants come out with a recommendation that if the government of Bangladesh envisages to harvest the potentials of blue economy, there should have to establish either a separate division or authority, or the existing “Blue Economy Cell” should integrate to Prime Minister’s Office (PMO), otherwise there will not be any visible outcome of blue economy initiatives development. Hasan, M.M., *et al.* (2018) found that governance of the oceans and seas is a key global challenge. The number of international conventions and regional agreements makes it very difficult to ensure effective participation of coastal countries. Hossain, M.M., (2017) found that lack of maritime policy is a big challenge accompanying the possibilities of blue economy progress. Islam, K.M., *et al.* (2018) found that absence of marine related policy and lack of marine related resource person are significant obstacles for blue economy enterprises development in Bangladesh.

3.2.2 Regarding the experts in public sector, the informants opined that there are very few experts in the field of blue economy. The government of Bangladesh should give priority in human resource development by giving proper training on various aspects of blue economy. Hasan, M.M., *et al.* (2018) pointed out that Bangladesh should focus on capacity development and trained manpower for getting benefits from blue economy.

3.2.3 Marine pollution and impact of climate change are great threats for ocean health (UN Ocean Decade Declaration). The Bay of Bengal is continuously polluting with household debris, industrial effluents, agricultural wastes, human excreta, oil spillage and different

non-biodegradable wastes released from textiles and ship breaking and recycling industries. The informants opined that microplastic and microbead are unremovable by “Sewage Treatment Plants”. These types of pollutants are easily mixed with sea water. The aquatic animal, for example, fish easily consume these pollutants with their feeds that ultimately reached to human body. They also added that along with other pollution and adverse impact of climate change, plastic pollution is posing a serious threat to ocean health. In response to “what will be the probable solution of this problem” the informants suggested to stop the uses of microplastic and microbead in our daily essentials, search for natural alternative of microbead and to create public awareness of the adverse consequences of plastic pollution. Hasan, M.M., *et al.* (2018) stated that climate change, voluminous emission of carbon dioxide, over exploitation and inadequate management of marine resources are needed to be considered seriously while the focus only into the economic development.

3.2.4 When the informants were asked to know about the action plan, they replied that from the very beginning ministries designed their action plans but they did not update the plans. They also opined that the lead ministry (Energy and Mineral Resources Division) should design an integrated Maritime Spatial Plan (MSP) immediately for ensuring sustainable development of blue economy.

3.2.5 Survey and research are predominantly important for stock assessment and exploring new fishing ground. RV Dr. Fridtjof Nansen (Norwegian) and RV Meen Shandhani (Supported by FAO) are engaged in survey for stock assessment of marine fisheries in the Bay of Bengal(www.mofl.gov.bd). The informants opined that Bangladesh should assess the stock of pelagic fishes as well for instance, Tuna fish, and to utilize 200 nautical miles Exclusive Economic Zone (EEZ) maximally to get the fullest benefits of blue economy.

3.2.6 Regarding the ownership of the coastal community, the informants opined that government should take special programs for generating alternative livelihood opportunities for fisher community and creating awareness among them by instilling the sense of ownership of the oceans and seas. They further added that the NGOs and the private sectors should encouraged to invest in the sector with innovative ideas along with the government to achieve the maximum benefits of blue economy. The informants strongly opined that the government of Bangladesh should come up with proper policy to attract the private

investment in the untapped realm of opportunities of ocean economy to leverage the sustainable blue growth for the betterment of the country.

4. Way Forward and Conclusion

Bangladesh envisages to be a middle-income country in 2021 and a developed country in 2041. She is endowed with bounteous marine resources that can create ample of opportunities in creating jobs for millions and bringing tangible changes in lives and livelihood of hundreds of thousands of people of the country. The blue growth requires effective exploitation and utilization of sea-based resources through safeguarding sustainable balance between the fortification of marine ecosystem and marine resources. In the coming decade blue economy could be the possible solution for Bangladesh to achieve the sustainable development. Moreover, to feed 160 million people and to create employment opportunities for the workable young people, Bangladesh needs to grasp the new window of blue potentials. So, the government of Bangladesh should come forward with appropriate policies and programs for harnessing the maximum opportunities of blue economy. Hence, for ensuring sustainable blue economy in Bangladesh, the following recommendations are put forwarded for policy makers as well as researchers:

1. The first and foremost step of the government will be formulation of “An Integrated Blue Economy Policy” through concern stakeholders’ engagement; otherwise, the expectation of blue economy development will be unattainable;
2. The “Blue Economy Cell” is a temporary cell in its nature and it has given the authority to coordinate the blue economy development initiatives that are taken by different ministries, divisions, attached departments and research institutions. As there is no permanent entity, Blue Economy Cell cannot coordinate the activities effectively. So, the strong recommendation is that the government of Bangladesh needs to establish either a Separate “Blue Economy Division” or “Blue Economy Authority” with appropriate entity for materializing the dream of maritime victory;
3. For developing expertise in the field of blue economy, the government needs to create a “Resource Pool” and then develop their skills by imparting training at home and abroad;

4. There should create a “Common Platform” for policy makers and researchers to bridge the gaps between the blue economy policy makers and researchers;
5. For engaging the coastal community with blue economy development initiatives and creating a sense of ownership, the government should mobilize the necessary resources in the form livelihood development and awareness building;
6. The government should come up with investment-friendly policy to attract the private sector investment in blue economy development initiatives, particularly in blue tourism; and
7. Finally, for sustainable utilization of marine resources, adoption of Marine Spatial Plan (MSP) is a must. So, without making any delay, the government should take initiative to adopt MSP with proper consultation to the concerned stakeholders and to implement accordingly.

5. References:

Ahmed *et al.*, (2010). Rice Fields to prawn farms: a blue revolution in Southeast Bangladesh. *Aquaculture International*: 18(4): 555-574pp.

Blue Economy Concept Paper, (2012). The Rio+20, United Nations Conference on Sustainable Development (UNCSD), 2012, Reo de Janerio, Brazil.

BoBLME (2004) & Hossain, M.M., (2004). National Report of Bangladesh on Sustainable Management of the Bay of Bengal Large Marine Ecosystem (BoBLME) (GCP/RAS/179/WBG) (FAO).

The Case of “Dispute Concerning Delimitation of the Maritime Boundary Arbitration between Bangladesh and Myanmar in the Bay of Bengal”. International Tribunal for the Law of the Sea (ITLOS), 2012, Hamburg, Germany.

The Case of “The Bay of Bengal Maritime Boundary Arbitration between the People’s Republic of Bangladesh and Republic of India” Permanent Court of Arbitration , 2014, The Hague, Netherlands.

Dev A.K., (1989). Fake Blue Revolution: Environmental and Socio-Economic Impacts of Shrimp Culture in the Coastal Area of Bangladesh. *Ocean and Coastal Management*: 41: 63-88pp.

Ghali M.A., (1976). Tourism and economic growth: An empirical study. *Economic Development and Cultural Change*: 24(3): 527-538pp.

Hossain M.M., (2017). The Prospects and Challenges on the Sustainable Development of Blue Economy in Bangladesh Introduction. ResearchGate.

Hossain M.M., (2016). Prospects and Challenges of Blue Economy in Bangladesh. *Banderbarta* (a publication by Chittagong Port Authority (CPA), October 2016.22-23pp.

Hossain M.S., (2010). Biological Aspects of the Coastal and Marine Environment of Bangladesh. *Ocean and Coastal Management*: 44: 261-282pp.

<https://www.asil.org/insights> (18,20)/annex-vii-arbitral-delimits-maritime-boundary, accessed on 13 Nov 2020.

<https://www.un.org/depts/los/global>, accessed on 10 December 2020.

Islam K.M. *et al.*, (2018). Blue Economy of Bangladesh: Opportunities and Challenges for Sustainable Development. *Advances in Social Sciences Research Journal*: 5(8): 168-178pp.

Mazid M.A., (2002). Development of Fisheries in Bangladesh: Plans and strategies for Income Generation and poverty Alleviation.179pp.

Mazid M.A., (2003). Status and Potential of the marine fisheries resources and marine environment of Bangladesh. Presented in Regional Workshop of Bay of Bengal Large Marine Ecosystem (BoBLME) prog. held in Pattaya, Thailand. Feb.17-21pp.

Pauli G.A., (2010). The blue economy: 10 years, 100 innovations, 100 million jobs: Paradigm Publications.

Saetre R., (1981). Survey of Marine Fish Resources of Bangladesh Nov-Dec. 1979 & May 1989: Report on surveys in the R.V. Fridtjof Nansen. Institute of Marine Research, Belgium, Norway.

MOFA (2019). Blue Economy- Development of Sea Resources for Bangladesh. (<http://www.mofa.gov.bd>) accessed on 12 Nov 2020.

MOFL (2018). The Annual Report of Directorate of Fisheries (DOF). (<http://www.mofl.gov.bd>) accessed on 10 December 2020.

Zhang *et al.*, (2004). Sustainable development of marine economy in China. Chinese Geographical Science: 14(4): 308-313pp.

Appendix-1: Questionnaire

(The questionnaire will be used only for research purpose)

1. Do you think that after the victory of maritime boundary delimitation, the concept of “Blue Economy” has got attention to the policy makers, researchers and business communities?
2. Is Blue Economy an “emerging sector” of Bangladesh?
3. What are the potential sectors of Blue Economy in Bangladesh?
4. Does Bangladesh ready for harnessing the prospects of Blue Economy?
5. What are the major challenges in realizing the prospects of Blue Economy?
6. Do you think that the challenges will addressable? How?
7. Is there anything else you’d like to add?