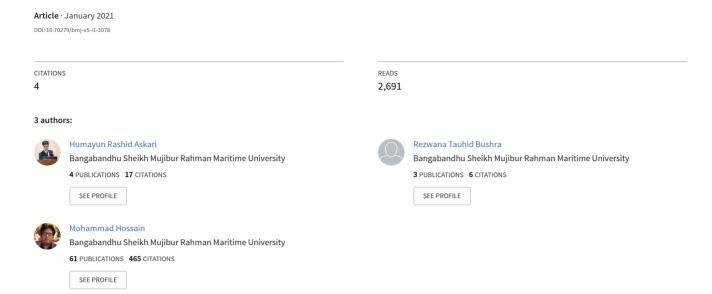
The Maritime Sector in the Economic Development of Bangladesh



The Maritime Sector in the Economic Development of Bangladesh

Humayun Rashid Askari¹*, Rezwana Tauhid Bushra² and Mohammad Nazir Hossain³

Abstract

Maritime economy, a comparatively new concept in the domain of economics, means the economic activities based on marine or sea-based resources. The present paper seeks to explore the prospects of a sea-based economy to help promote Bangladesh from a middle-income country as targeted in the 'Vision 2021' to a developed country as per 'Vision 2041' through the sustainable use of marine resources. The study also reveals that Bangladesh can accelerate its economic process through the effective use of sea resources. Bangladesh has 200 nautical miles of EEZ (Exclusive Economic Zone) with a 710 km long coastline in the Bay of Bengal. Seas, which cover nearly threefourths of the earth, play a vital role in two essential functions. From very ancient times, the sea was the major media of communication or transportation. And also, the biggest natural source of living and non-living resources. At present, we can see almost all the oceanic countries are becoming very substantially aware of their marine resources to resolve many of their economies' present and future challenges. As for Bangladesh, the ocean contributes an outstanding deal to its overall socio-economic progress by raising the country's economic activities and particularly to the coastal zone in the southern part. This paper, based mostly on secondary data analysis, investigates how much Bangladesh can handle the challenges in becoming a developed country by implementing Sustainable Development Goals (SDGs). Shows the impact of the maritime sector in Bangladeshi economic development. In addition, it attempts to find out the barriers and limitations of the activities from different angles of vision. It proposes some ways that forward for promoting sustainable development in Bangladesh.

Key Words: Maritime Economy, Sustainable -Development, Maritime, Blue Economy, Bay of Bengal, Bangladesh

^{1,2}Department of Port & Shipping Management, Bangabandhu Sheikh Mujibur Rahman Maritime University, Dhaka, Bangladesh,

³Department of Genetic Engineering & Biotechnology, Bangabandhu Sheikh Mujibur Rahman Maritime University, Dhaka, Bangladesh,

 $bba18013.humayun@bsmrmu.edu.edu.bd^1,bba18002.bushra@bsmrmu.edu.bd^2, nazir.geb@bsmrmu.edu.bd^3$

^{*} Corresponding Author

Introduction

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

For sustainable development, the concept of the maritime economy has become an important part. The only raw materials of the maritime economy are the sea-based resources. And every country must take care of these. These resources also cover most of the earth's surface (Paul V, et al; 2016). It is high time for Bangladesh to take measurable steps for ensuring the effective and efficient use of the maritime resources.

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

A few years ago, through the settlement of sea debate with India and Myanmar, Bangladesh had gained a large-scale area in the Bay of Bengal. So as a result of that, Bangladesh can claim to be a nation of the blue economy which is also known as maritime economy. This sea settlement has enriched Bangladesh with more regional territory and, most importantly, with more EEZ.

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

The Bay of Bengal can trigger a progressive source of the maritime Economy. Bangladesh can benefit from its oceanic assets like the investigation of oil and gas, fisheries, shipbreaking, and shipbuilding, collecting minerals like salt, creating tourist zone, etc.

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

The fact is that our nation has gained a large maritime boundary. It has made great scopes for investigating mineral resources from the seabed without obstacles. Under the seabed and water section of our maritime zone, there is a plentiful supply of living and non-living assets. But maybe if we want to determine the availability and investigate the assets, we will face a shortage of skilled manpower. By importing advanced education

on Bangladesh's oceanography & maritime sector, we will be able to manufacture skilled manpower in these segments.

It is high time that Bangladesh takes necessary steps to utilize our own oceanic territorial assets and capacitate its labour with learning and innovation to bring success. The rising ocean level and saltiness are two major difficulties to the sea-side populace. In such circumstances, we need to upgrade our ability because we have to protect ourselves. Only the implementation of the maritime economy will make the alternative skyline of expectations and help Bangladesh to transform into a progressive nation.

Literature review

The concept of the ocean's economy, also mentioned as the maritime economy, promotes economic growth, the sustainability of the environment, social inclusion, and also the strengthening of ocean ecosystems. However, not much study has been conducted as to the current topic in Bangladesh's perspective. Most of the researchers only conducted their study on aquaculture or fishery, especially on shrimp farming. A.K. Deb, (1998) described that shrimp culture within Bangladesh's coastal areas which impact on both environmental and socio-economic issues (A K Deb; 1998). While writing the concept of the maritime economy, the researcher has also made some remarks about the improvement of the present situation and the development of sustainable aquaculture.

We know from Hossain, M.S. (2001) that the coastal and marine environment has become more and more necessary in fulfilling the country's social and economic development and strategic objectives (Hossain, M.S.; 2001). But the study especially highlighted the fishing resources. The research paper of Hunt B., Vincent, A.C. (2002) shows the researched marine bioprospecting issue, and they found that marine bioprospecting used for pharmaceuticals may have minimal impacts on the environment (Bob Hunt, et al; 2006).

It is described in Creel, L.'s (2003) paper concerning demographic relation with the ocean. That paper stated that coastal regions, which are home to an outsized and growing proportion of the world, are undergoing environmental decline (Creel. L; 2003). For developing countries, this matter can be incredibly bitter.

The prospect of blue economy for Bangladesh is also discussed in the paper of Rear Admiral M. Khurshed Alam (Rear Admiral M. Khurshed Alam; 2019). The specific zone which can provide huge opportunity is also discussed.

Population factors play a significant role in the environmental issues. Now the number of living within 200 kilometers of a coastal zone is around 3 billion. From this study, it can be assumed that by 2025, the number is probably going to be doubled. However, this huge number of living people in the coastal areas has made several economic benefits. Industrial and urban development, revenue from tourism, improved transportation links, and food production are some of them. On the other hand, it is a threat to the ecosystem to boom the increase of this much population, also economic and technological development, in the future that will degrade many coastal habitats.

Further research on sustainable maritime economy as an economic zone of Bangladesh is very rare. That's the approach which has been adopted, and this study also tries to explore the prospects of the maritime economy in Bangladesh and find solutions to the challenges. However, there is not much specific study conducted on the impact of the maritime economy and achieving sustainable development through it and also on the challenges, according to the Bangladesh perspective. And here lies the importance of this study.

Methodology

The study applied secondary data analysis to present the current scenario of the maritime economy of Bangladesh. Descriptive statistics methods are used. The study also investigates the trends in some variables through graphical examination and secondary data.

Significance of Maritime Economy

According to the Blue Economy concept paper (2012), Oceans cover 72% of our blue planet's surface. Oceans support life with a lot of things. Oceans provide food to the worldwide population and are also very important for transport and trade ("Blue Economy Concept Paper"; 2012). The marine and coastal environment conjointly constitute an essential resource for the very important global tourism industry. The ocean also offers enormous renewable "blue energy." Such as; tide, wind etc.

Moreover, the ocean is the largest route of mass transportation.

Maritime Economy and Bangladesh

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

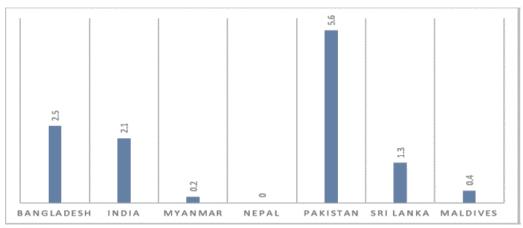


Fig. 1: Percentage of territorial (Data sources: OECD)

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

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

Future prospects of the Maritime sector in Bangladesh

Bangladesh is prosperous not only in terms of its vast water areas, however conjointly in terms of the biological diversity. The geographical position and climatic condition of Bangladesh make the coastal area one of the highly productive areas of the planet. The influence of the mangrove forests is one of the essential features of the coastal regions, which support a large number of fishes and other commercially valuable aquatic organisms (Md. Shahidul Islam; 2003).

A delta plain shapes Bangladesh. Bangladesh has several trans-boundary rivers. The surroundings are; Himalayan range in the North and the Bay of Bengal in the South. Bangladesh's 710-kilometer-long coastline extending from the tip of St. Martin's Island has various ecosystems with significant ecological and economic importance and potential (Md Shamsuddoha, et al; 2016).

Sector-wise emphases are given:

1) Shipping, Maritime Transport, and Port Facilities:

Shipping is one of the major factors which has a high impact on the international economy.

In national economy and trade, ports are playing a very major role now a days. A huge number of Bangladeshi people, around 30 million, directly depend on the maritime sector like commercial transportation and others (Ibid).

The maritime routes are also playing a big role on the aspect of globalization. Moreover, for Bangladesh, maritime transport is very essential or it's socio-economic prospects. Because, maritime transport is effective and efficient. Through this, various type and a large amount of goods can be carried and it is cheaper than other transport options.

Shipping:

The three pillars of sustainable development (social, economic, environmental) depend highly on shipping sector. It facilitates world economy, creates wealth, and creates job opportunity which plays huge role on human livelihoods. Through this way it helps whole nation.

In Bangladesh, around 90% freight trade is done through maritime routes. Globalization has made it very necessary. Recently Bangladesh has grown a very healthy development in maritime shipping sector or sea-based transport functions. Recently

Bangladesh has advanced in the export and import sector. We have a lot of foreign ships visiting our ports. Bangladesh has done massive benefits in the shipping sector, and to do more, Bangladesh's local shipping companies should be facilitated.

Coastal shipping/Feeder services:

It implies that national and international freight transport at intervals and to/from neighboring countries with medium-sized ships. The figure of Coastal shipping is getting higher for Bangladesh because it has long coastlines along the Bay of Bengal.

Coastal shipping or feeder transport provides maritime point-to-point transportation. The feeder service distributes containers from the main hub ports to the small ports or landlocked countries.

These types of services are very effective and efficient. Because it is very cost effective, it saves time and it creates huge job opportunity.

Ports:

Ports play a vital role in the national economic development. To keep pace with the modern world and globalization, ports are very essential. For sustainable development, development of port is a must. Bangladesh is highly dependent on international trade, in which ports have a significant role. Bangladesh should focus on handling existing capacities and also development of deep-sea ports with more technological facilities and advanced handling equipment. A lot of projects are going on in Sonadia, Matarbari and Payra.

For adjusting to the modern industry and globalization, focusing on ports is important.

Inland waterway transport:

Bangladesh is a riverine country. A lot of rivers flow all through it. So, it has a huge inland water transport system. It is about 24,000 km long and it has about 1000 landing points and 21 inland river ports. Among them the Pangoan inland container terminal has a storage capacity of 3,500 TEUs and with 55,000 square meter of container yards. It also handles 116,000 TEUs annually.

Around 1.5 million TEUs are annually handled by Chattogram port and 80% of them come to Dhaka through inland waterways. The main inland waterways of Bangladesh are centered at some major river points. They are Dhaka, Chandpur, Khulna, Narayanganj, Bhairab, Barishal, and Chattogram.

Maintaining the connectivity is very important for our economic development. So, it is very essential to maintain the proper maintenance of these inland waterways. The inland waterway service can also generate jobs, and it is undoubtedly less expensive.

Passenger ferry services:

Passenger ferries give synergies further, whereas inland shipping is another essential element. It is also an important part and is of a vast prospect.

Shipbuilding:

The shipbuilding industry contributes to the present function by providing the required equipment. In Bangladesh, there are more than 300 shipyards and workshops. Among them, almost 100% requires a lot of tools and infrastructural enhancement. In the dry docks of our country, around 15 ships are repaired annually and they earn a huge amount of foreign money. This industry helps our economic growth. It should be nurtured properly for achieving sustainable development and job opportunity.

Ship recycling industries:

The ship recycling industry of Bangladesh has provided a huge amount of materials to the steel industry, shipbuilding industry, and some other industries for over two decades. It also supplies to some other countries of South Asia. 80-90% of steel is derived of a ship at the end of her life. This industry offers very much opportunities to Bangladesh and it also should be nurtured properly.

2) Fishery:

Fishes that are of high export values and shrimp aquaculture have become a highly traded export-oriented industry nowadays. Recently, the marine fisheries sector of Bangladesh is suffering from mismanagement. Some important fish stocks are under threat. Also, the increasing of marine pollution is causing problems for coastal shrimp farming (MOFL; 2020). We should be aware of this problem.

Three hundred fifty million jobs are connected with marine fisheries internationally ("Blue Economy Concept Paper"; 2012).

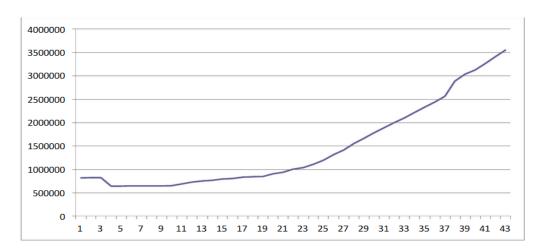


Fig. 2: Total production of Fisheries in Bangladesh (1972-2014) in M.T.

This graph it is seen that it's upward sloping. From this we can see that fisheries production in Bangladesh is increasing, and it is a good sign. In 2017-18, this sector

contributed 3.57 % to the national GDP of Bangladesh and 25.30% to the agricultural of the GDP of Bangladesh (MOFL; 2020). Moreover around 1.5% foreign exchange (2017-18) is earned by exporting fishes (Ibid). According to the Yearbook of Fisheries Statistics (2015-16), the COGR for the fisheries 5.28% over the last ten years (Dipa Sultana; 2019). Moreover, according to the industry estimates, the production of fish will reach to 5.20 million M.T. around 2021 (Ibid).

This sector will provide a large number of food output and will also support the economic growth for developing countries like Bangladesh. Now-a-days demand for fish is increasing and keep pace with it. Bangladesh must ensure sustainable development in this sector.

Fishing activities will continuously represent a huge part of economic and food output for several developing countries. As demand for fish increases, Bangladesh requires exploring options to keep advancing from this activity while ensuring sustainable management of stocks.

3) Tourism:

Tourism is a significant sector of global trade. It is a lot focused on the marine and coastal environment. In the tourism sector, cruise tourism is the fastest growing among all. In 2011, it had a boom (FCCA Cruise Industry Overview; 2012). The sea-side is visited by approximately one of every two tourists (United Nations World Tourism Organization [UNWTO]; 2013). Sustainable tourism is a very important sector for a developing country like Bangladesh. It will contribute highly to the national income and foreign exchange.

Coastal tourism represents 5% of world GDP, globally. It is a vital part of the economy of Bangladesh also.

Recreational water sports, yachting, and marinas also can encourage the growth of coastal tourism.

In 2018, the travel and tourism industry of Bangladesh, contributed 4.4% in the total GDP of Bangladesh (Basharat Hossain, et al; 2020).

Cruise tourism can also play a vital role in the maritime tourism sector.

4) Aquaculture:

From the aquaculture sector we get a considerable amount of food and it also supports livelihood. It is the harvesting, breeding and rearing of fish, algae and other organisms in various types of water environment. It is also known as aqua-farming. It is also the quickest growing food sector. Currently aquaculture provides 47% of the fish for consumption (FAO, Fisheries and Aquaculture Department; 2010). So, there will be a significant role for aquaculture in Bangladesh if some steps are taken.

5) Food:

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

6) Renewable Marine Energy:

In 2009, worldwide, around 32% crude oil was produced from offshore fields. Moreover, this is projected to rise to 34% in 2025 (IEA; 2011). For several decades oil has remained the dominant energy source. However, the ocean offers renewable energy like wind, wave, tide, biomass, etc. But the

demand of renewable energy is increasing day by day. By 2035 it is predicted to increase two and a half times worldwide. Bangladesh is also in this situation. We must keep that in mind.

The production of renewable energy from tides and waves, marine biomass, and submarine geothermal resources can be viable alternatives (Jugraj Singh; 2015). On the other hand, marine energy sources are also renewable and sustainable.

7) Marine-biotechnology and Medical Technology:

Marine biotechnology can handle huge challenges like human health, sustainable food supplies, environmental remediation and energy problems ("A Blueprint for Ocean and Coastal Sustainability"; UNESCO, IMO, FAO, UNDP; 2011). A very precious force of medication is marine bacteria. In 2011, about 36 marine products were directly used in drug and clinical development. Among them around 15 were for cancer treatment. Marine biotech may obtain a considerable contribution to developing the latest antibiotics (Bob Hunt, et al.; 2006). The European Science Foundation Algal bio-fuels also offer rising prospects. It predicts production of 20 - 80 thousand liters of oil per hectare per year (David Leary, et al; 2009). So marine biotech industry has enormous prospect.

8) Marine aquatic products:

Marine aquatic products are mainly aquatic animals and plants or their byproducts which are generally managed, grown, produced, harvested or marketed. These products can be used in fish medications and also for human medication. Marine aquatic organisms can be used for farming and also for human consumption. Now-a-days, these products are playing a very significant role in different sectors. Bangladesh should also focus on it.

9) Production of Sea salt:

Sea salt has been produced along coastline of Cox's Bazar for many years. The annual production here is 22MT but the Samut Sakhon of Thailand can produce 43MT per

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

10) Submarine Mining:

Now-a-days, the mineral deposits on and under the seafloor are being explored. A huge number of polymetallic nodules, cobalt crusts, and a large number of supplied deposits are being extracted from the ocean and the global industry is also focusing on these. For the rising commodity prices investors are focusing on sea-based goods. The exploitation and mining of minerals, aside from sand and gravel, have started from the sea. Submarine Mining can be a promising feature for Bangladesh.

11) Human resource and maritime surveillance

Human resource:

For a developed country skill, well-trained, and educated human resources are very essential. They can also participate in the globalization. Sustainable development is never possible without a skilled workforce. For the global market and industry requirement, marine science/oceanography, port & shipping management, maritime law& policy are necessary to introduce the tertiary education system. Bangladesh is in the perfect position to generate skilled human resources in these sectors. A huge drive in the maritime sector can come from a huge number of professional oceanographers, coastal and offshore engineers, navigators, mariners, fisheries technologies, and biotechnologists and particularly from the Port Management and Logistics graduates.

BSMRMU:



Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh, was established in 2013 to keep pace with and be a part of the developing world in maritime higher education and research, which is the first Maritime University of the country. The university is the 37th public university in Bangladesh, the 3rd Maritime University in South Asia, and twelfth Maritime University in the world upholding the motto "We Strive for Maritime Excellence." From BSMRMU, we are getting well educated and specialized human resources. The university is currently at its growing stage. It has many plans to develop this university as the highest position of learning for the students who would aspire to explore the maritime world for the greater interest of humanity.

Maritime surveillance:

Maritime surveillance boosts the awareness of sea-based activities including, the marine environment, maritime safety and security, fisheries management, trade and economic interests, and general law enforcement and defense. Recently in Bangladesh, threats like human and drug trafficking, and terrorism is increasing. We must be aware of it. A huge number of skilled manpower is needed in this sector.

Corridor to a High Incoming Country (The Maritime Zone of Bangladesh)

Bangladesh's per capita income rose to 5.24% which is 2,064 dollars in 2020 (BBS; 2020).

According to the vision 2021 poverty target of 14 percent by 2021 will be less certain, if Bangladesh cannot utilize all the possible exporting sectors and marine resources effectively, within the expected year by 2021, it may not be possible for Bangladesh to become a Middle-Income Country.

The marine resources, like living resources, fisheries, and aquaculture, are essential. Such as; penaeid shrimp (Penaeus monodon), hilsa shed, Bombay duck (Hossain, M.S.;2001).

With a view to achieving sustainable development Bangladesh should promote port facilities. If we can do it, more business activity will be increased. The employment opportunity for Bangladeshi people will also grow and directly help Bangladesh to become a middle-income country.

The Sustainable Development & oceans being one of the major factors:

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

While the modern thought of sustainable development is realized mostly from the 1987 Brundtland Report, it is additionally unmoving in earlier ideas concerning sustainable forest management and twentieth-century environmental considerations (Richard Ross Shaker; 2015). As this concept developed is changed to focus more on economic development, social development, and environmental protection, it has been suggested by the term "sustainability," whereas "sustainable development" refers to the temporal processes that lead us to the purpose of sustainability (Ibid).

Ocean economy is very necessary for Sustainable Development.

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

So, if Bangladesh focus on the maritime sector and manage & utilize the resources properly Bangladeshi economy can surely achieve sustainable development.

Challenges

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

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

Indeed, the maritime economy is extremely sensitive as it is related to ecosystem services, food security, and human activity.

Ways to overcome challenges

There are some challenges on the way to achieving sustainable development in the maritime sector. Here, we have shown some steps that can be considered to overcome the current situation.

Fishing:

Ways to get more benefits from this sector;

- 1. Using Bangabandhu Satellite-based monitoring system.
- 2. Increasing capability of fish capture and protection.
- 3. Mitigating and adaptive measures on the impacts of climate change.
- 4. Promoting surroundings friendly and sustainable shrimp, crab, and potentially vital alternative species farming systems within the coastal region.

Marine Renewable Energy:

Ways to get more benefits from this sector;

- 1. Increasing national and foreign investment.
- 2. Determining the true potential through the Marine Renewable Energy mapping project.

Marine Manufacturing:

Ways to get more benefits from this sector;

1. Loan and project to implement for Maine manufacturing.

Marine Biotechnology:

Ways to get more benefits from this sector;

- 1. Encouraging Sea food-based restaurant and sea goods-based trade.
- 2. Mid and Long-term research on preservation and processing.
- 3. Quality control of marine products

Minerals:

Ways to get more benefits from this sector;

1. Determining the true potentiality of hydrocarbon reserve in the Blue economic zone establishes capability further as foreign support.

Marine Tourism:

Ways to get more benefits from this sector;

- 1. Increasing safety and security.
- 2. Beautifying Marine tourism zone.
- 3. Providing eco-friendly tourism.
- 4. Making the communication system easier for tourists.

Port, Shipping & Maritime Logistics:

Ways to get more benefits from this sector;

- 1. Capability building of three existing ports.
- 2. Proper observation and management system and training.
- 3. Establishment of Sonadia deep (Island) harbor.

Education and Research:

Ways to get more benefits from this sector;

- 1. Capability enhancement of maritime educational research.
- 2. Making and enhancing maritime institutions, and research Centre.

SWOT analysis on the Bangladeshi Maritime Economy

Strengths

- Abundance in fisheries
- Species are mostly coastal and estuarine

- Experienced and skilled fishers
- Increased fishers and fishing efforts
- Established marketing channels

Weakness

- Few species in deeper zones & open sea
- Fishing operation extremely expensive
- The deficit in ocean observation, data assimilation
- & simulation infrastructure
- Insufficient R&D funding on marine fisheries studies
- Lack of conservation initiatives

Opportunities

- Defined maritime boundary
- Presence of keystone ecosystems, e.g., mangrove, saltmarsh and coral reef
- Global priority on oceans
- Market demands from local to global
- Direct contribution towards SDGs

Threats

- Species are highly migratory
- Natural maritime hazards
- Ocean acidification, hypoxia, SST, sedimentation, etc.
- Insufficient fishing water for long tuna liner, hook fishing.

CONCLUSION

The study concludes that efficient management and effective utilization of marine resources may help promote Bangladesh into a developed country even before the stipulated time. However, there are scopes for further research to make a detailed account of the prospects of 'Maritime Economy' in the development of Bangladeshi Economy. Bangladesh has enormous potential to enrich her economy with sea-based resources by striking a sustainable balance between protecting the marine ecosystem and marine resources. Job creation is a must for Bangladesh to achieve middle-income country status by 2021. (World Bank; 2016), so it is time to focus on the Maritime Economy for Bangladesh. The Bay of Bengal is an important factor with a lot of marine

resources to create huge job opportunities for Bangladesh. Our government should also go ahead with government and non-government joint investments to ensure the proper use of marine resources. If Bangladesh can utilize her marine resources actively, she can achieve the desired goal. However, there are too many challenges, also, which might appear as hindrances to it. So, the prospect of implementation of 'Maritime Economy' is a daunting prospect.

ACKNOWLEDGEMENT

Our special gratitude goes to Md. Mostafa Aziz Shaheen, Lecturer, Port and Shipping Management for his support and for inspiring us.

References

Apurba Krishna Deb; "Fake Blue Revolution: Environmental and Socio-Economic Impacts of Shrimp Culture in the Coastal Areas of Bangladesh"; Volume 41, Issue 1, October 1998, Pages 63-88

"A Blueprint for Ocean and Coastal Sustainability"; UNESCO, IMO, FAO, UNDP; Paris, 2011.

"Bangladesh Ministry of Fisheries and Livestock"; Updated information of 17 February, 2020.

"Bangladesh Bureau of Statistics Annual Report 2019-2020"; 2020.

Basharat Hossain, Syed Naimul Wadood, "Potential Unexplored? Tourism and Economic Growth of Bangladesh"; February 2020.

"Blue Economy Concept Paper"; Rio+20, United Nations Conference on Sustainable Development, Rio de Janeiro, 2012.

Bob Hunt, Amanda C J Vincent; "Scale and Sustainability of Marine Bioprospecting for Pharmaceuticals"; Publisher: AMBIO: *A Journal of Human Environment*; March 01,2006; Page: 35, 57-64.

David Leary, Marjo Vierros; "Marine Genetic Resources: A Review of Scientific and commercial Interest"; 2009; Page: 33, 183-194.

Dipa Sultana; "Bangladesh Fisheries Sector: Growth Prospects and Opportunities"; Light Castle; April 10, 2019

"FAO-Food and Agriculture Organization of the United Nations"; Fisheries and Aquaculture Department; Rome, 2010

"FCCA Cruise Industry Overview"; 2012.

"Helping Bangladesh Reach Middle Income Country Status"; World Bank, 2016.

"International Energy Agency, World Energy Outlook"; IEA, Paris, 2011.

Jugraj singh Randhawa; "Ocean Energy: The Future of Renewable Energy"; July 2015

Liz Creel; "Ripple Effects: Population and Coastal Region"; Population Reference Bureau, 1-9, 2003

M. Shahadat Hossain; "Biological Aspects of the Coastal and Marine Environment of Bangladesh"; September 2001; Ocean & Coastal Management 44(3-4):261-282

Md. Shahidul Islam; "Perspectives of the Coastal and Marine Fisheries of the Bay of Bengal, Bangladesh," Volume 46, Page 763-796, August 2003.

Md Shamsuddoha, M. Mahmudul Islam; "Bangladesh National Conservation Strategy: Coastal and Marine Resources"; Page: 2-3. July 2016.

Paul V R Snelgrove, Edward Vanden Berghe, Patricia Miloslavich, Philippe Archambault; "Global Patterns in Marine Biodiversity"; Chapter: 34; Publisher: Oceans and Law of the Sea, United Nations; January 2016

Rear Admiral M. Khurshed Alam, Secretary, MAU, MOFA; "OCEAN/BLUE ECONOMY FOR BANGLADESH"; 2019

Richard Ross Shaker; "The Spatial Distribution of Development in Europe and Its Underlying Sustainability Correlations"; July 2015

The Case of "Dispute Concerning Delimitation of the Maritime Boundary between Bangladesh and Myanmar in the Bay of Bengal"; International Tribunal for the Law of the Sea (ITLOS), March 14 2012, Hamburg, Germany.

The Case of "The Bay of Bay of Bengal Maritime Boundary Arbitration between the People's Republic of Bangladesh and Republic of India"; Permanent Court of Arbitration, July 7, 2014, The Hague, Netherlands.

United Nations World Tourism Organization Annual Report; 2013.