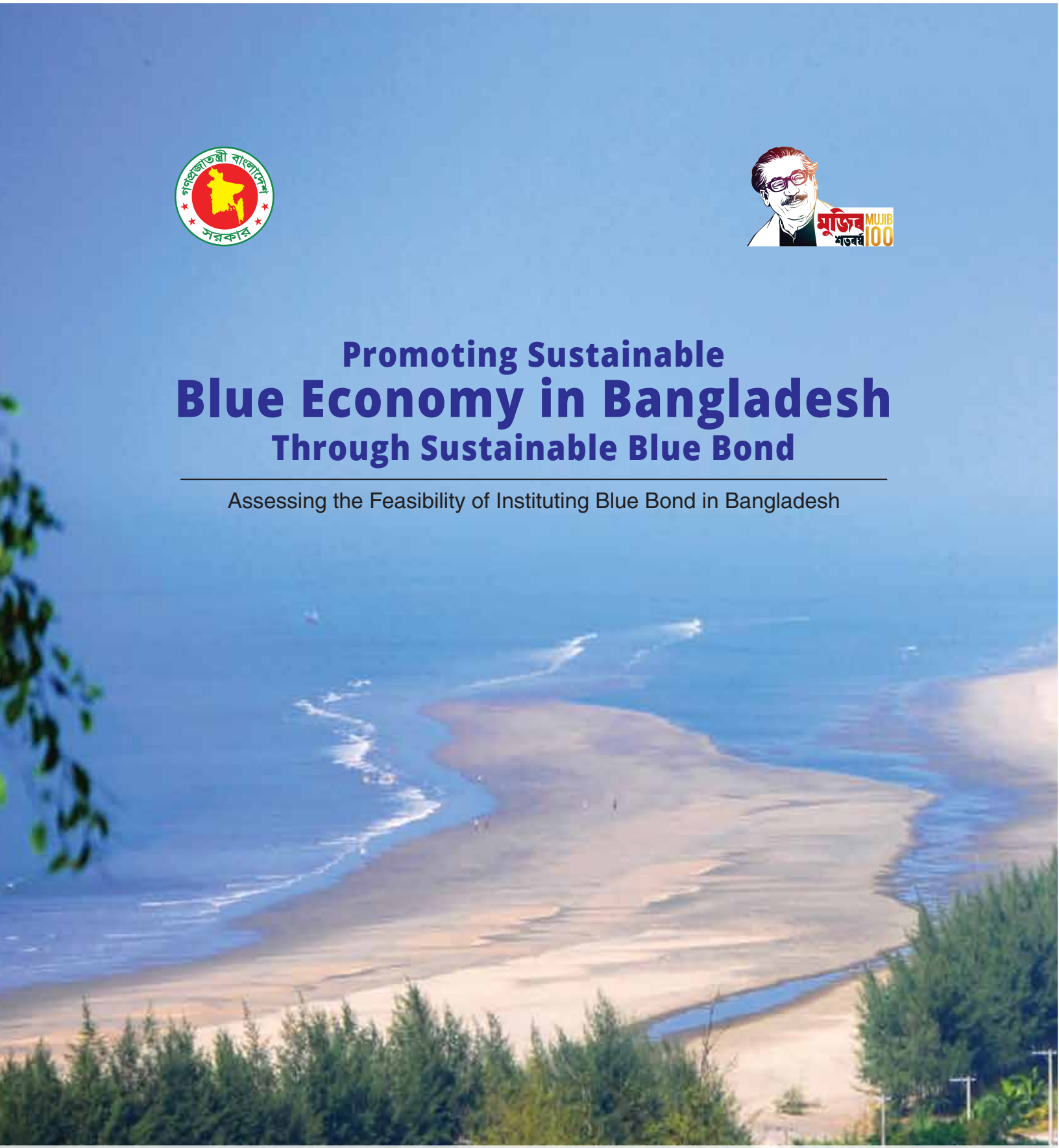
Promoting Sustainable
Blue Economy in Bangladesh
Through Sustainable Blue Bond

Assessing the Feasibility of Instituting Blue Bond in Bangladesh



General Economics Division (GED)
Bangladesh Planning Commission
Ministry of Planning
Government of the People's Republic of Bangladesh
June 2021

Promoting Sustainable Blue Economy in Bangladesh Through Sustainable Blue Bond

Assessing the Feasibility of Instituting Blue Bond in Bangladesh

Prepared and Published by
General Economics Division
(Government Poverty and SDGs Focal Point)
Bangladesh Planning Commission

This document is prepared with the technical and financial support from the 'Strengthening Institutional Capacity for SDGs Achievement in Bangladesh (SC4SDG)' Project of UNDP Bangladesh and UNEP-PEA4SDGs

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Copies Printed: 500

Printed by
turtle
67/D, Green Road, Dhaka, Bangladesh
Web : www.turtlebd.com

M. A. Mannan, MP
Minister
Ministry of Planning
Government of the People's Republic of Bangladesh

Message

I would like to congratulate the General Economics Division (GED) of Bangladesh Planning Commission for publishing the report on 'Promoting Sustainable Blue Economy in Bangladesh through Sustainable Blue Bond: Assessing the Feasibility of Instituting Blue Bond in Bangladesh'. This report is an attempt to gather a better perception of the blue economy in Bangladesh, understand its potential, and assess the suitability of bond financing.

The Sustainable Development Goals (SDGs) set out universal and transformative goals and targets of the 2030 Agenda for the world. Unlike the Millennium Development Goals (MDGs), the SDGs are comprehensive and expansive in nature. They explore development schemes of vital importance to humanity. The country has already integrated the goals and targets of the Agenda 2030 in its 7th and 8th Five- Year Plans (FYPS) and Perspective Plan (PP) 2041. Nevertheless, the targets of FYPS, PP, and SDGs in Bangladesh can be restrained, and the ongoing economic development cannot be sustained if there are not enough resources to finance the development programs. As Bangladesh looks forward to becoming a higher middle-income country by 2031 and a higher income country by 2041, it will be crucial to design an Integrated National Financing Framework (INFF) to manage and mobilize required resources from public and private sources for attaining the national and global goals.

This report critically evaluates the possibility of promoting the blue economy in Bangladesh through the issuance of blue bond. The report discusses the blue economy, sustainable and innovative financing strategies, and sustainable bonds for sustainable financing, especially blue bond. Besides, it explains the opportunities and challenges to initiate the blue bond in the bond market of Bangladesh. In the end, the report proposes required policy actions to introduce blue bond in the bond market of Bangladesh to finance ocean-based projects and support a sustainable blue economy in the country.

I would like to take this opportunity to thank the GED officials, particularly Member (Senior Secretary), GED for their initiative and hard work, different ministries/divisions/agencies for providing inputs, and the SC4SDG project of UNDP Bangladesh and UNEP-PEA4SDGs for their support in the preparation of the report. I hope this document will guide the relevant bodies to carry forward the discussion on blue bond and help in accelerating the process of introducing blue bond in the bond market of Bangladesh.

(M.A. Mannan, MP)

Dr. Shamsul Alam

Member (Senior Secretary)
General Economics Division (GED)
Bangladesh Planning Commission

Preface

'Promoting Sustainable Blue Economy in Bangladesh through Sustainable Blue Bond: Assessing the Feasibility of Instituting Blue Bond in Bangladesh' is an analytical Report evaluating the possibility of introducing blue bond – the latest member of sustainable bonds family - in the bond market of the country. This is another milestone study GED has conducted as a part of its continued effort to produce knowledge products on different social, economic, financial and environmental issues.

Bangladesh, followed by its marked success in achieving Millennium Development Goals (MDGs), has become one of the frontrunner countries in implementing the Sustainable Development Goals (SDGs). The country has already undertaken some innovative initiatives that are yet rare in many countries, particularly, developing countries. Bangladesh has done all the preparatory works to achieve SDGs by the year 2030. So far, the Government of Bangladesh (GoB) has integrated SDGs into the Five Year Plans (FYPs), conducted a data gap analysis, mapped ministries and divisions by targets, completed the SDG financing strategy, developed an SDG action plan, and designed a Monitoring and Evaluation (M&E) framework for SDGs. The development approach of the country aims to implement SDGs by the 'whole of society' approach. That is why the Government of Bangladesh (GoB) has initiated to engage the private sector, NGOs, CSOs, think-tanks, academia, and media in the process of achieving the SDGs.

Bangladesh is currently putting efforts into disseminating the produced knowledge on SDGs, sensitizing the relevant stakeholders, and implementing the global goals at local level. However, resource mobilization, especially from the private sector will be a key factor in achieving SDGs in Bangladesh. According to the SDG Financing Strategy Report 2017 by GED, on average, 85.1% of the SDG financing will come from domestic sources and the private sector will need to finance 42.1% of it. The effectual implementation of the 'whole of society' approach and a special focus on private sector investment will be critical in financing and realising the SDGs by the year 2030.

Going forward, a framework to integrate the financing strategies will be important for managing and mobilising required resources from domestic and foreign sources for attaining SDGs. Mobilising finance from actors beyond the government for the SDGs will require effective collaboration between government and private stakeholders including dialogue on policy issues and active partnerships on specific projects. It will also need a policy and enabling environment that is conducive to the sustainable development of the private sector and civil society. Bangladesh will need to go beyond just stimulating growth in private investment and emphasize on investigating new innovative financing strategies to engage the private sector in financing the SDGs.

Bangladesh has recently introduced two sustainable bonds – sukuk bond and green bond – in the bond market to finance the implementation of a safe supply water project, enhance micro-credit operations, and ensure environmental development. This initiative from Government will incentivise, especially the private sector, to promote financing for inclusive development. The recent success, for instance, the introduction of sukuk bond should be an encouragement for the bond market in Bangladesh. Bond market in Bangladesh is yet to be developed. Though the country's bond market is still taking a shape, it is expected that it will play a crucial role in long development financing through fixed income securities or bonds.

It is evident from the latest examples of sukuk and green bonds, there is a demand for bonds of new kinds in the market. Thus, the country should make a feasible plan and engage in expanding the horizon by issuing more 'sustainable bonds' to raise funds for sustainable development. The money raised from sustainable bonds will be used to support the financing of specific projects related to social, economic, and environmental goals. They will ultimately contribute to promoting environmental sustainability and the socio-economic development of the country.

Bangladesh has a great prospect if we consider the blue economy. There are huge scopes for ocean-based traditional as well as new economic activities in Bangladesh, for example, fisheries, shipping, coastal tourism, offshore gas exploration, salt production, and offshore renewable energy. It implies, if the coastal and marine ecosystem resources can be used efficiently, they can be a great asset for Bangladesh in increasing food security, generating employment, alleviating poverty, and reducing inequality.

Promoting the sustainable blue economy is an expensive endeavour and thus, demands huge investment. To be successful, Bangladesh will also need to identify the bankable projects with clear outcomes. However, to meet the demand for development financing, Bangladesh should espouse a solid approach to mobilise funds through developing fixed-income securities or sustainable bonds, for instance, blue bonds.

Blue bond can be an innovative as well as sustainable instrument to finance the investment in the ocean and marine related projects that will eventually inspire inclusive development in Bangladesh. Nevertheless, there is a lack of consciousness and expertise on blue bond since it is comparatively a new concept. To explore the full potential of the blue economy in the country and assess the feasibility of blue bond as a sustainable financing solution, knowledge products and more discussion will be necessitated to sensitise the relevant stakeholders on these issues. In this case, I hope that this Report will help us to understand the blue economy and its prospect, bond market, suitability of bond financing, and likelihood for releasing a blue bond in Bangladesh along with mapping the pathway of releasing such a bond.

Let me thank the different ministries/divisions/agencies who helped us by providing feedback in the preparation of this report. I would like to take this opportunity to thank the SC4SDG project of UNDP Bangladesh and UNEP-PEA4SDGs for supporting us through the provision of technical and financial assistance.

Finally, we all from GED are grateful to our Honorable Minister, Ministry of Planning, Mr. M. A. Mannan, MP for his guidance, inspiration, and instantaneous support in bringing out this document.

(Dr. Shamsul Alam)

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Acronyms

APEC	Asia-Pacific Economic Cooperation
AUM	Asset Under Management
BBE	Bangladesh Blue Economy
BBESA	Blue Economy Satellite Account of Bangladesh
BDP	Bangladesh Delta Plan
BE	Blue Economy
BESA	Blue Economy 'Satellite Account
BRE	Brown Economy
BSEC	Bangladesh Securities and Exchange Commission
CBI	Climate Bond Initiative
CDBL	Central Depository of Bangladesh Limited
CSE	Chittagong Stock Exchange
CSO	Civil Society Organizations
DBS	Development Bank of Seychelles
DSE	Dhaka Stock Exchange
EAS	East Asian Seas
EEZ	Exclusive Economic Zone
EIB	European Investment Bank
EIU	Economist Intelligence Unit
GDP	Gross Domestic Product
GED	General Economics Division
GEF	Global Environment Facility
GHG	Greenhouse Gas
GoB	Government of Bangladesh
GVA	Gross Value Added
ICMA	International Capital Market Association
IDA	International Development Association
IDRA	Insurance Development & Regulatory Authority
IFC	International Finance Corporation
INFF	Integrated National Financing Framework
IOT	Input-Output Table
IUCN	International Union for Conservation of Nature
JICA	Japan International Cooperation Agency
LuxSE	Luxembourg Stock Exchange
MI	Market Infrastructure
NBFI	Non-Bank Financial Institution
NBR	National Board of Revenue
NDC	Nationally Determined Contribution
NGO	Non-Governmental Organisation
NIB	Nordic Investment Bank
NSCs	National Savings Certificates
OECD	Organisation for Economic Co-operation and Development
WWF	World Wildlife Fund

Executive Summary

Development of Blue economy (BE) has a high potential for harnessing our ocean resources sustainably whilst also meeting the social needs of the global population. It is particularly promising for developing nations rich in coastal resources and who need to strengthen food security, job opportunities and economic prosperity. It aligns well with the SDG goals, in particular with SDG 14 – Life Below Water, alongside several others around reducing hunger (SDG 2), decent jobs (SDG 8) and building strong institutions (SDG 16). Even though blue economy is widely being adopted as a goal in policy making and investment, there is still no single formally accepted definition of Blue Economy. It generally refers to the sustainable ocean-based economic model where coastal and marine ecosystem resources are explored for use in increasing food security, alleviating poverty, creating jobs, lifting trade and industrial profiles whilst at the same time conserving biodiversity, protecting the coasts and oceans as well as the health, livelihoods, and welfare of the people in coastal areas.

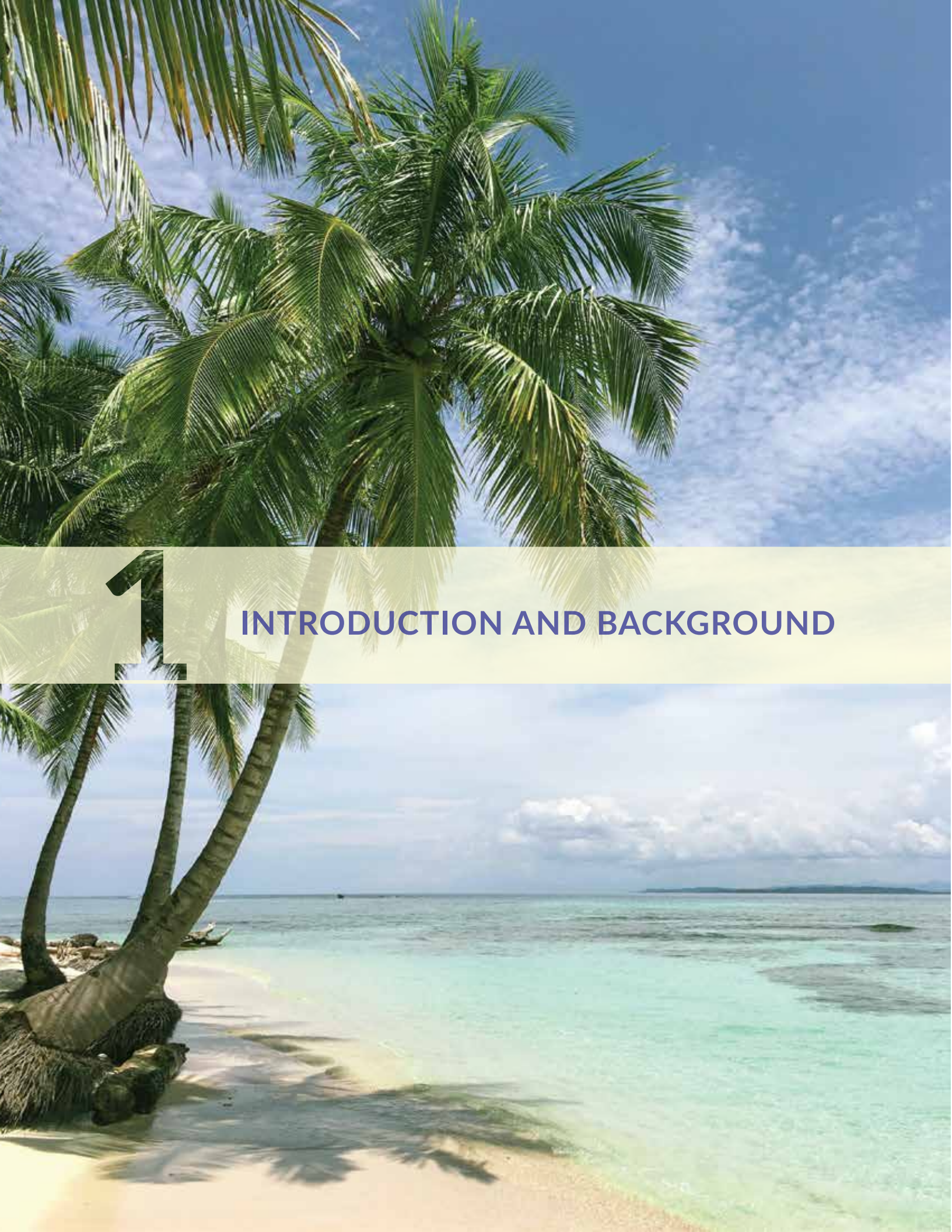
Bangladesh is a promising country in respect of Blue economy. Fisheries, shipping, and coastal tourism are the traditional uses of coastal and ocean resources. In addition, there are new sectors like offshore gas exploration, salt production and offshore renewable energy. The old and new sectors of ocean use have a high prospect of growth. Together with other ocean uses, the Government has taken initiative for huge industrial expansion in the coastal regions including coal power plant, deep-sea port, and LPG-LNG terminal. However, in Bangladesh, the management of exploitation of living and non-living resources in the coastal and ocean space is still sectoral, and managed by about 20 ministries. Fishing and shipping, as ancient ocean uses, are based on traditional approaches. The newly introduced sectors such as gas exploration, coastal tourism, salt production and renewable energy production, are not well researched or managed holistically. Scientific information is a fundamental prerequisite of sustainable management, which is insufficient in Bangladesh. Initial analysis of economic activities from the blue economy sector shows that the contribution of ocean-linked economic activity in Bangladesh in 2014-2015 was just over 3 per cent of national gross value added – derived mainly from tourism and recreation, fisheries and aquaculture, transport and energy.

This study is an attempt to understand the possibility of promoting blue economy in Bangladesh through issuance of blue bonds. The study is based primarily on secondary sources –studies,

reports, and assessment of published data and statistics. In addition, interviews and stakeholder consultations were also held to gather better insights of the Bangladesh Blue economy, its potential, and suitability of bond financing. The bond market and potential for releasing a Blue bond in Bangladesh is evaluated in this study along with mapping the pathway of releasing such a bond. Currently, the bond market in Bangladesh is lopsided with government issuance of debt instruments significantly larger than the corporate issuance. The corporate debt market is also very limited. The private bond market is largely limited to commercial banks issuing subordinated debt to meet capital adequacy requirements. In the backdrop of the weak and under-developed state of bond market in Bangladesh, IFC, in collaboration with Bangladesh Bank, commissioned a study to assess introducing green bond in Bangladesh.

The study covered a wide range of areas including determination of demand-supply sides; identification of issuance actors; identification of the potential investors (both domestic and international) and issuers, and documenting constraints/barriers. In addition to identification of the actors required for developing green bonds in Bangladesh, the report also documented constraints and barriers to the green bond market. Separate concerns or barriers have been documented for three groups: Issuers, domestic investors, and international investors.

A number of recommendations are suggested on taking forward the plans for financing blue economy. Due to the scarcity of data, there should be a comprehensive study on the Bangladesh Blue Economy (BBE) encompassing setting the BBE vision and goals; defining the scope of the BBE; better valuation of the BBE; firmer projections of the BBE (in conformity with PP 2041 timeframe) and additional resource requirements; and exploring financing options including issuance of the Blue Bond. There is also need for awareness and capacity building on the scope and potential of the Blue Economy. This is not known to many local investors in Bangladesh. Thus, Bangladesh Planning Commission and UNDP should conduct a survey on the future of the Bangladesh Blue Economy covering investors (mainly institutional investors), regulators, policy makers, environmentalists, and researchers. External companies and investors interested in projects that are sustainable should also be made aware of the potential of the Bangladesh Blue Economy. Lastly, GoB and UNDP may decide to undertake an educational tour to either Indonesia or Seychelles to gather first-hand knowledge in the areas of defining the Blue economy, assessing its potential, addressing barriers, and determining the institutional arrangements for promoting BBE.



1 INTRODUCTION AND BACKGROUND

The Government of Bangladesh (GoB), as a signatory of the 2030 Agenda for Sustainable Development, is engaged in implementing the Sustainable Development Goals (SDGs) for the last five years. The country has completed all the preparatory work, such as integration of SDGs in the national plan, mapping of ministries and divisions, SDG M&E framework, SDG need assessment and financing strategy, and the SDG action plan. Bangladesh has been playing an active role in the global discourse for implementing the SDGs. In recognition of the fact that SDGs are overarching, the GoB has adopted a 'whole of society' approach and engaged the private sector, NGOs, CSOs, think-tanks, academia, and media for achieving the SDGs.

A key impediment to realizing the SDGs in Bangladesh is a lack of resources. According to the SDG Financing Strategy report, Bangladesh needs an additional USD 928.48 billion to materialize the SDGs during the implementing period (i.e. till 2030). It has been estimated that, on average, 85.1% of the financing will come from domestic sources, with 42.1% being financed by the private sector. However, the economy's narrow tax base poses an enormous challenge to financing the SDGs for Bangladesh. The effectual implementation of the 'whole of society' approach with a special focus on private sector investment by the government will play a crucial role in financing and realizing the SDGs by the year 2030.

An Integrated National Financing Framework (INFF) will be instrumental for managing and mobilizing the required resources from public and private sources for attaining the SDGs. This entails going beyond just stimulating growth in private investment, for example, to creating incentives that promote blue financing for environmental sustainability and socio-economic development. As the implementation of SDGs goes forward, INFF intends to put an effort into designing innovative financing strategies, e.g. Blue Bond and roadmap for the INFF based on the successful experiences of other countries.

Recent studies have indicated enormous scope for ocean- based activities. Bangladesh is no exception. With an ocean area larger than the land area, the potential from this source has been argued to be large. However, reaping benefits from nature endowed assets needs careful handling. Blue economy, which is intrinsically linked to the ocean – is an approach to careful and sustainable handling of the Ocean assets. The promoting of blue economy needs large investment. Following the experiences of several countries, long-term development financing is best-served through fixed income securities or bonds. The world has witnessed a surge in green or sustainable bonds in the last decade – more specifically in the last few years. Blue bond is the newest member of the sustainable bond family.

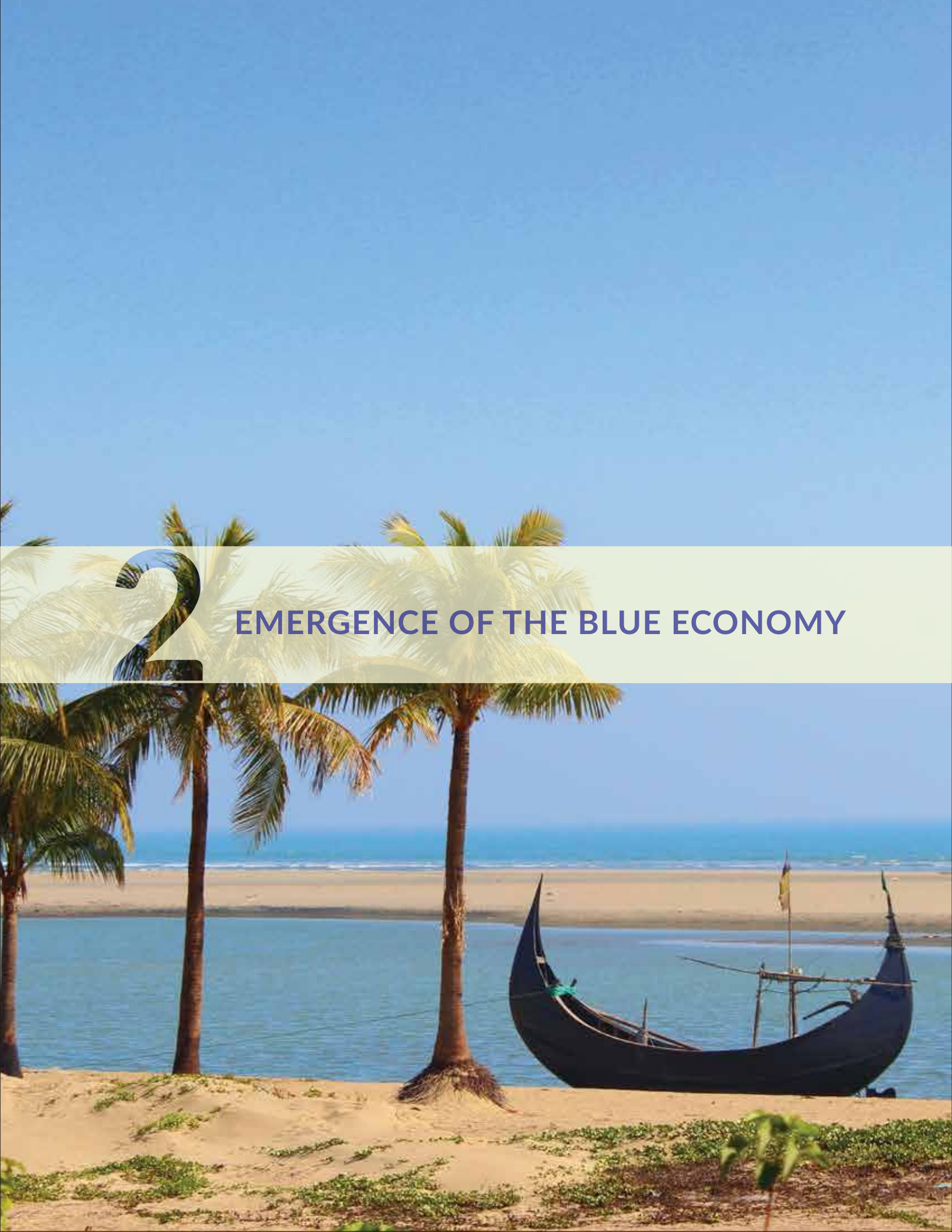
Blue investments financed through blue bonds should be used at promoting the implementation and achievement of sustainable development goals, in particular

Protecting Ocean Resources through the SDGs

The UNSDGs are increasingly gaining traction as an organizing framework for many investors, particularly those looking for a thematic investment approach. The SDGs are a set of 17 global goals focused on sustainable-development themes ranging from poverty, equality, education, climate change, infrastructure, land and water, and production/ consumption, with a target of 2030. Within the context of thematic investing, the SDGs are both a framework for thinking about and pursuing impact. A number of companies, organizations and government entities have committed to addressing SDG 6 (Clean Water and Sanitation) and SDG 14 (Life Below Water).

SDG 14 (Conserve and sustainably use the oceans, seas and marine resources for sustainable development) and related SDGs (i.e. 1,2, 6, 13 and 15), that contribute to good governance of the ocean and coastal habitats, deliver long-term value to marine and coastal ecosystems, and reduce carbon emissions or strengthen resilient livelihoods of people who depend on oceans and their resources in a changing climate.

This study is an attempt to understand the possibility of promoting blue economy in Bangladesh through issuance of blue bonds. The study is based on secondary sources – studies, reports, and plans; and assessment of published data and statistics. In addition, interviews and stakeholder consultations were also held to gather better insights of Bangladesh blue economy, its potential, and suitability of bond financing.



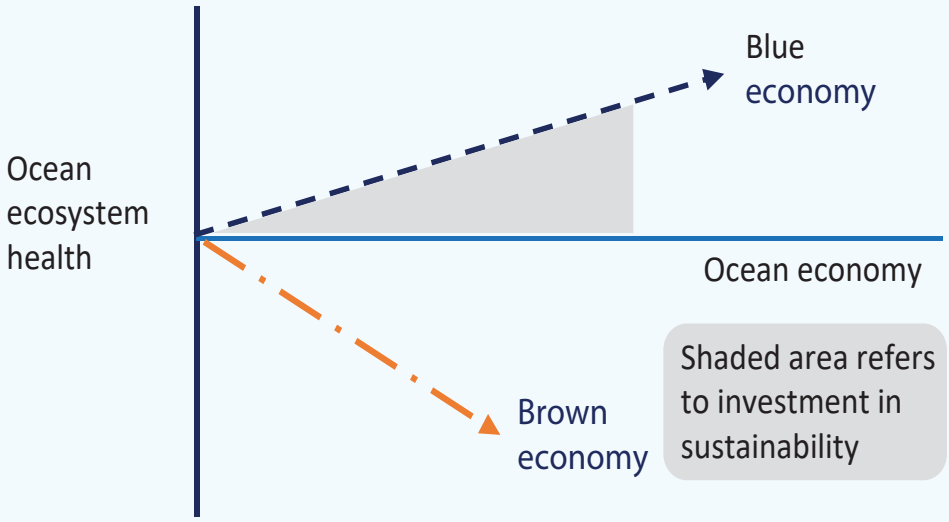
2 EMERGENCE OF THE BLUE ECONOMY

2.1. Defining the Blue Economy

The Blue Economy (BE) is a fairly new and thus an evolving concept. Policy makers, experts and researchers have been trying to define the scope, sectors, and activities encompassing the BE. However, it is an ocean-based activity thus closely linked to ocean assets and Ocean Economy (OE). World Bank (2019) provided the association between the OE and BE under the purview of the theoretical framework of Ocean Economy (OE), Blue Economy (BE) and Brown Economy (BRE). The definition of BE emerged out of the association.

Following the OECD (2016) report, the OE is defined as encompassing all economic activities in ocean-based industries, and the assets, goods, and services of marine ecosystems. The OECD definition is based on the most extensive global survey to date, and measures in terms of gross economic output (gross value added). The OE experienced two opposing trends – growth of the OE on the one hand and human driven declining health of the ocean ecosystems on the other hand. Since ocean assets are finite, their destruction is unsustainable, which may ultimately impede growth of the OE.

Chart 1: Theoretical Illustration of the Associations



Source: GED's creation based on World Bank (2019)

In the BRE the economic growth is largely based on environmentally destructive forms of activity, especially fossil fuels like coal, oil and gas. One of the by-products (negative externalities) of the BRE is massive levels of climate change causing greenhouse gas (GHG), which includes carbon dioxide and methane. Air and water pollution are also defining characteristics of this type of economy and this also includes a range of harmful impacts on biodiversity. In the BRE system, economic development depends on finite resources. The BE, on the other hand, supports clean and healthy oceans, as well as coastal and other aquatic ecosystems. The BE acknowledges that water is crucial to our financial, biological, cultural, and spiritual well-being. The BE thus primarily focuses on managing oceans, waterways and water resources. The BE is thus also defined as the *sustainable development of the OE* (UNDESA, 2017; FAO, 2014; and WB, 2019)

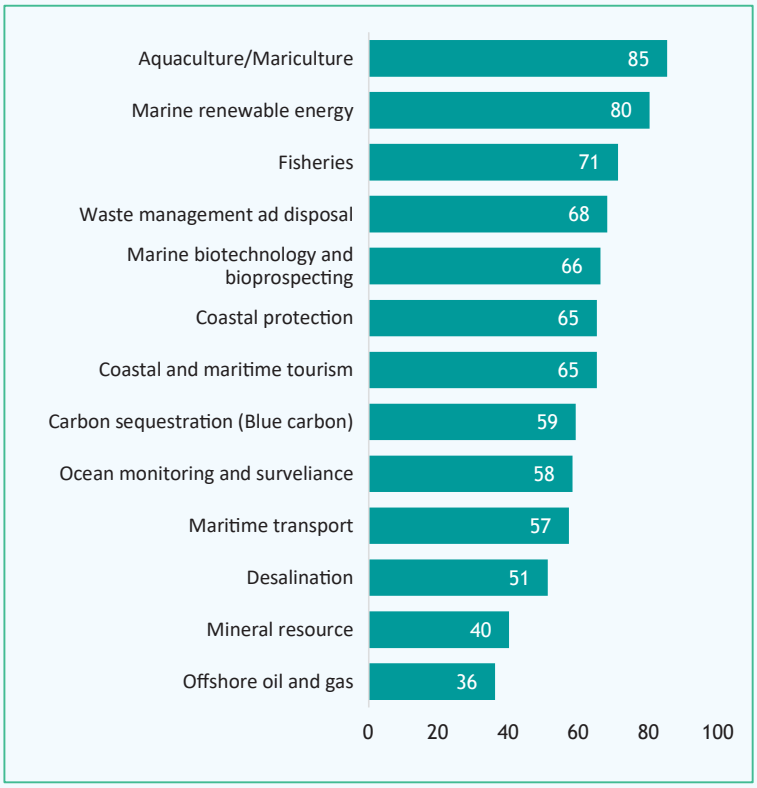
Two well-cited definitions of sustainable Blue Economy have been narrated by the World Bank and WWF.

- The World Bank definition is ***"the Blue Economy is the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health."***
- According to WWF ***"A sustainable Blue Economy is one which: provides social & economic benefits for current & future generations; (ii) restores, protects & maintains diverse, productive & resilient ecosystems; and (iii) is based on clean technologies, renewable energy & circular material flows."***

East Asian Seas (EAS) Congress in 2012 also defined the blue economy as the sustainable use of ocean resources. It stated that the blue economy relies on the ocean-based economic model that is largely dependent on coastal and marine ecosystems and resources, but one that employs environmentally-sound and innovative infrastructure, technologies and practices, including institutional and financing arrangements, for meeting the goals of: ***(a) sustainable and inclusive development; (b) protecting our coasts and oceans, and reducing environmental risks and ecological scarcities; (c) addressing water, energy and food security; (d) protecting the health, livelihoods and welfare of the people in the coastal zone; and (e) fostering an ecosystem-based climate change mitigation and adaptation measures.***

A recent study was conducted by Credit Suisse (2020) to gather understanding of the Blue Economy by key global investors. The study collected responses from 328 investor respondents from 34 countries – with 53 per cent of respondents from Europe; 59 per cent of respondents are asset managers, compared with 41 per cent asset owners. Majority of them have listed equity, fixed income and multi-asset strategic investments with asset under management (AUM) of over €50 bn. Among others, the study asked the investors to define the Blue Economy from a sectoral perspective.

Figure 1: Sectors Constituting the Blue Economy: Investors Response



Note: % of respondents, 218 respondents
Source: Credit Suisse (2020)

According to 218 sample investor respondents (asset owners and asset managers), 13 sectors (see adjacent graph) define the boundary of the Blue Economy. According to them, the top 3 sectors of the Blue Economy include Aquaculture / mariculture (85%) This is followed by 'marine renewable energy' (80%) and fisheries (71%) 'waste management and disposal' emerged as the fourth sector with 68 per cent of the respondents–perhaps reflecting public policy concerns with the topic of marine plastic pollution. On the other hand, least considered sectors include environmentally damaging activities such as 'offshore oil & gas', as well as 'mineral resources/deep sea and seabed mining/ dredging'.

Box 1: Blue Economy as Conceptualised by GoB

"Blue Economy comprises activities that directly or indirectly take place in the seas, oceans and coasts using oceanic resources and eventually contributing to sustainable, inclusive economic growth, employment, [and] well-being, while preserving the health of oceans. It includes activities such as exploration and development of marine resources, appropriate use of ocean and coastal space, use of ocean products, [and] provision of goods and services to support ocean activities and protection of the ocean environment. The Blue Economy approach emphasizes that ideas, principles [and] norms of Blue Economy lend significant contribution[s] towards eradication of poverty, contributing to food and nutrition security, mitigation and adaptation of climate change and generation of sustainable and inclusive livelihoods. It is needless to say that for most developing states, particularly for Bangladesh, making [the] transition to [a] Blue Economy would entail fundamental and systemic changes in their policy-regulatory- management-governance framework(s) and identification of various maritime economic functions.

"The Blue Economy conceptualizes oceans and seas as 'Development Spaces' where spatial planning integrates conservation, sustainable use of living resources, oil and mineral wealth extraction, bio-prospecting, sustainable energy production and marine transport. The Blue Economy approach is founded upon the assessment and incorpo¬ration of the real value of the natural (blue) capital into all aspects of economic activity (conceptualization, planning, infrastructure development, trade, travel, renewable resource exploitation, energy production/consumption). Thus, Blue Economy requires a balanced approach between conservation, development and utilization of marine and coastal ecosystems, all oceanic resources and services with a view to enhancing their value and generating decent employment, secure productive marine economy and healthy marine ecosystems."

Sources: Seventh Five Year Plan (GED 2015) and Alam 2015 2016**

2.2. Economic Valuation of the Blue Economy

The current value of the global Blue Economy is US $ 2.5 trillion per annum. As mentioned above, although the Blue Economy encompasses a wide variety of ocean-linked sec¬tors and industries, fisheries and aquaculture alone generate direct or indirect employment for 10 to 12 per cent of the global workforce – with more than 90 per cent of the employment created in developing countries[1]. The potential of the Blue Economy has been projected to be large. The global 'Blue Economy' is expected to expand at twice the rate of the mainstream economy by 2030[2].

The contribution of the BE to the gross value added (GVA) and/or gross domestic product (GDP) as well as overall employment have been estimated by several countries. The estimated contribution of BE by selected countries are provided below.

1 The EU Blue Economy Report. European Commission, 2019

2 The Ocean Economy in 2030. OECD, 2016

It appears that these estimates are preliminary and may underestimate the contribution of BE in GVA/GDP as these estimates are still not anchored in well accepted valuation systems such as the System of the National Account (SNA).

Chart 2: Estimated Contribution of Ocean Economy in Selected Countries

Bangladesh 	**Contribution of US$6.2 billion in GVA to the Bangladesh economy in 2015, which is approximately 3 per cent of GDP (P.G. Patil et al, 2018). 2019****
Australia 	**Contribution of AU$47.2 billion to GDP in 2012, or over 3 percent of the total (National Marine Science Committee 2015)**
China 	**Total gross value added (GVA) of US$239 billion in 2010, or 4 per cent of GDP, employing over 9 million people (Zhao et al. 2014) 2016****
European Union 	**Total GVA of €500 billion annually (2% of GDP), employing over 5 million people (EC 2017a)**
Jamaica 	**An average contribution of 6.7 per cent for the period 2012 to 2017 (Justin Ram et al 2019)*****
Mauritius 	**Contribution of 10 per cent of GDP on average for the period from 2012 to 2014 (Cervigni and Scandizzo 2017)**
United States 	**Contribution of US$359 billion to GDP in 2013 or more than 2 per cent of the total, employing 3 million people (Kildow et al. 2016).**
The Philippines 	**Contributed an average of 4.5 % to the country's GDP and 5 % to 5.5 % of the total employment between 2003 to 2006 period.**

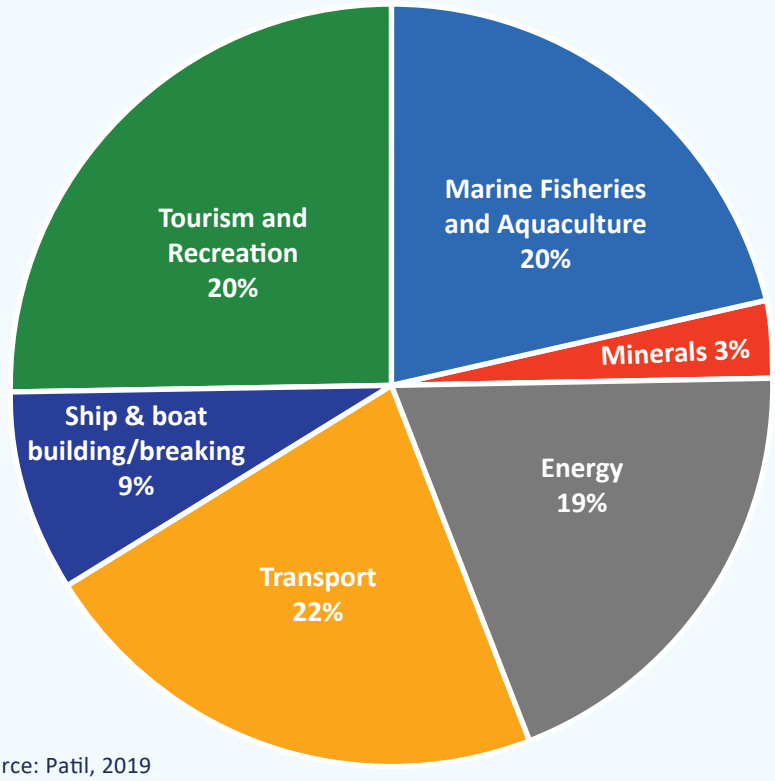
The estimated contribution of Bangladesh's ocean economy to overall GDP of the country is close to the estimated contribution reported for other countries – especially with Australia, China and USA. However, Bangladesh's contribution is half of Jamaica's (i.e. 6.7%) and one third of that of Mauritius (i.e. 10%).

Economic Valuation of Blue Economy in Bangladesh

Initial analysis of economic activities from this sector show that the contribution of ocean-linked economic activity in Bangladesh in 2014-2015 was just over 3 per cent of national gross value added – derived mainly from tourism and recreation, capture fisheries and aquaculture, transport, and energy (Patil, 2019).

The ocean economy contributed US$6.2 billion in GVA to the Bangladesh economy in 2015, which is approximately 3% of GDP (P.G. Patil et al, 2018). From the composition of the Bangladesh ocean economy, the gross value added is derived evenly from these sectors except from shipbuilding, shipbreaking, and minerals.

Chart 3 : Composition of the Ocean Economy in Bangladesh in 2018



Source: Patil, 2019

Bangladesh is a promising country in respect of blue economy (Alam et al, 2017). Fisheries, shipping and coastal tourism are the traditional uses of coastal and ocean resources. In addition, there are new sectors like offshore gas exploration, salt production and off-shore renewable energy. The old and new sectors of ocean use have a high a prospect of growth (Bari, 2017). Together with other ocean uses, the Government has taken initiatives for huge industrial expansion in the coastal regions including coal power plant, deep-sea port, and LPG-LNG terminal (JICA, 2018).

However, in Bangladesh, the management of exploitation of living and non-living resources in the coastal and ocean space is still sectoral, which is managed by about 20 ministries (Shahadat Hossain et al, 2017). The fishing and shipping, as ancient ocean uses, are based on traditional approaches. The newly introduced sectors such as gas exploration, coastal tourism, salt production and renewable energy production, are not well researched or managed holistically (P.G. Patil et al, 2018). Scientific information is a fundamental prerequisite of sustainable management, which is insufficient in Bangladesh (OC, 2017) (GED-PC-GoB, 2015).

Before we can start to expedite any sector e.g. marine and fisheries resource, there is a need to explore the fisheries we have. We need to know quantifiable estimates of our resources e.g. standing stock, biomass of fish/fisheries. Blue economy (BE) should not just be about exploitation, it is also about conservation of what Bangladesh has – living-based resources such as rich marine biodiversity, high level of livelihoods from fisheries and non-living based such as marine-based industry. BE is a marine ecosystem but if the terrestrial activities around marine ecosystem does not support marine, then it is not really sustainable. For example, in the coastal belt, we have mangroves. If we destroy the land through development such as unplanned industries that adds more pollution, then it is not sustainable. If we look at the non-living extraction and energy production, we see that only non-renewable development is taking place – e.g. deep seaport for handling coal, transport, and development of Liquid NG – tankers port. According to the Credit Suisse (2020), these are some of the more environmentally destructive sectors to invest in.

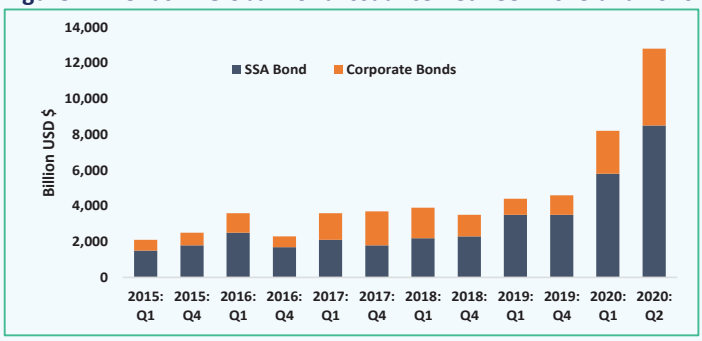
As mentioned above, the blue economy concept features prominently as a policy objective in the Government of Bangladesh's Seventh Five Year Plan completed in 2015 to support the country's economic development (GED 2015), and in the recently completed Bangladesh Delta Plan 2100 (Bangladesh Delta Plan 2100 [Strategy], 2018). To help deliver on this objective, the Government subsequently undertook a number of technical consultations, most recently in the Second International Blue Economy Dialogue hosted by the Ministry of Foreign Affairs in late 2017. That same year the Government established a new department titled the "Blue Economy Cell", with a mandate to coordinate across sectoral ministries in order to better chart a path toward sustainable development of the ocean area, and to answer key questions about implementation of the five-year development plan (Patil et al. 2018).

3 EMERGENCE OF SUSTAINABLE BONDS FOR SUSTAINABLE FINANCING

Bonds are forms of debt security or a fixed income investment, a legal contract for money owed that can be bought and sold between parties, with its price fluctuating over time. Investors in bonds become creditors to the issuing entity. Investors are paid a fixed interest rate (coupon) on a fixed schedule and will be returned their initial investment (principal) upon maturity. As interest is typically paid over the maturity period they are also referred to as fixed income securities. Fixed income securities constitute the world's largest capital markets (IUCN, 2019). The Dutch Republic became the first state to finance its debt through bonds when it assumed bonds issued by the city of Amsterdam in 1517. The average interest rate at that time fluctuated around 20 per cent. The first official government bond issued by a national government was issued by the Bank of England in 1694 to raise money to fund a war against France (Wikipedia Contributors, 2019)[3].

As of August 2020, International Capital Market Association (ICMA) estimates that the overall size of the global bond markets in terms of USD equivalent notional outstanding, is approximately US$128.3 trillion. This consists of US $87.5 trillion SSA (i.e. sovereign, supranational, agency) bonds (68%) and US $40.9 trillion corporate bonds (32%) (International Capital Market Association (ICMA), 2020)[4].

Figure 2: Trends in Global Bond Issuance Between 2015 and 2020

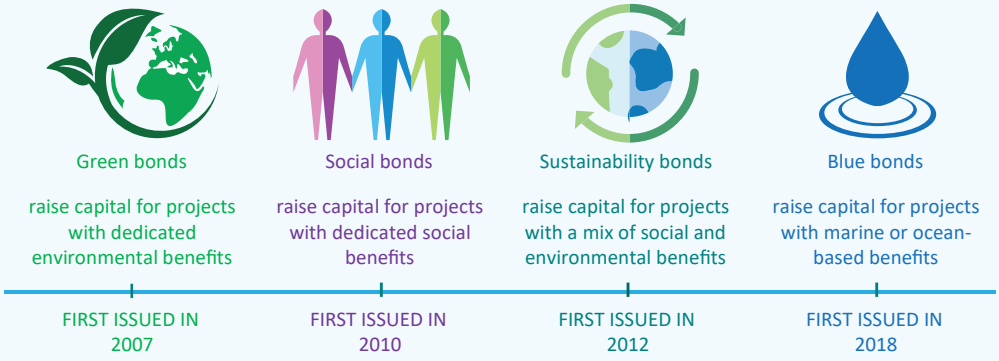


Source: ICMA (2020)

- The SSA bond markets are dominated by the US ($22.4 trillion), China ($19.8 trillion), and Japan ($12.4 trillion). Between them they make up 62 per cent of the global SSA market. Sovereign bonds constitute 73 per cent ($63.7 trillion) of the global outstanding SSA market.
- In terms of country of incorporation of the corporate bonds, the global corporate bond markets are dominated by the US ($10.9 trillion) and China ($7.4 trillion). Between them they make up 45 per cent of the total global corporate bond market. 53 per cent ($21.5 trillion) of outstanding corporate bonds are issued by financial institutions.

With the issuance of the first green bond in 2007, a new family of bonds have emerged, known as the 'sustainable' bond. The family has now four members: ***(i) Green Bond; (ii) Social Bond; (iii) Sustainable Bond; and (iv) Blue Bond.***

Chart 4: Timeline of Sustainable Bond Issuance



Source: GED's creation based on Morgan Stanley (2019)

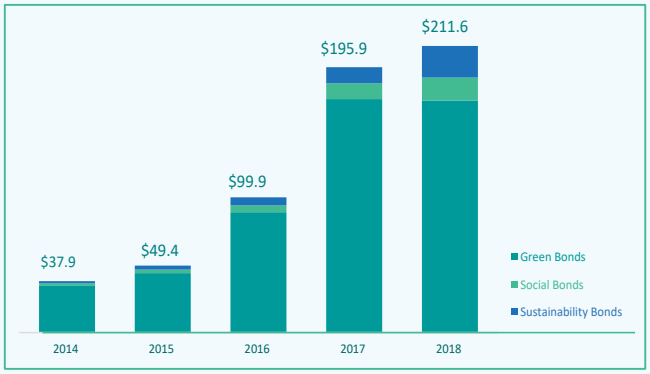
3 https:// en.wikipedia.org/wiki/Government bond. The%20average%20interest%20rate %20at, was%20 both % 20 lottery%20 and%20annuity.
4 https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/Secondary-Markets/bond-market-size/

The difference between a sustainable bond and a regular bond is the specific use of the funds raised to support the financing of specific projects related to climate change or the environment or social goals (e.g. SDGs). In additional to financial characteristics, investors analyze the specific environmental purpose of the projects that the bond intends to support. The first sustainable bond – a green bond- was issued in 2007 by the European Investment Bank (EIB) under the name of Climate Awareness Bond. The value of the bond was EUR 600 million. This bond had been listed in 2007 on the Luxembourg Stock Exchange (LuxSE). The proceeds from the bond were expected to be used for the renewable energy and energy efficiency projects.

Although not in the same league as the green bond in terms of asset sizes, two other sustainable bonds – social and sustainability bonds- have also emerged as an accepted asset class. The prime goal of the social bonds is to use their proceeds for new and existing projects with positive socio-economic outcomes for an identified target population, with neutral or positive impacts on the environment. The proceeds from the sustainability bonds, on the other hand, are exclusively used to finance or re-finance a combination of both green and socio-economic projects. The Blue Bond is the newest member of the sustainable bond family, emerging in 2018 with the issuance of the 'Seychelles Blue Bond'. The proceeds of the Blue Bond will be used for projects for sustainable expansion of the ocean economy as well as for the protection of the ocean ecosystem. The Seychelles Blue Bond was launched in October 2018 by the Republic of the Seychelles. The second Blue Bond – Nordic Sea Blue Bond – was issued sround three months after the launching of the first Blue Bond. The Nordic Sea Blue Bond was launched in January 2019 by the Nordic Investment Bank (NIB).

There has been a surge in sustainable bonds in recent years. Global sustainable investing assets are now valued at more than $30 trillion— with an increase of 34 per cent over the last two years (Bloomberg, 2019)[5]. One-third of sustainable investments are now accounted by the United States alone. In USA, one in every four dollars (i.e. $12 trillion in total) is sustainably invested (US SIF, 2018)[6]. Following the Paris Agreement in 2016, the world has witnessed heightened interest in green bonds. In particular, there has been a spike in green bond issuances by companies, municipalities, and banks. While commenting on the growth of blue bond market, Morgan Stanley (2019), argued that *'it is too early to tell whether the blue bond market will grow with the speed of green bonds or if current interest will, in fact, spur future investment. However, the momentum seems high.'*

Figure 3: Global Sustainable Bond Issuance (Billion $)

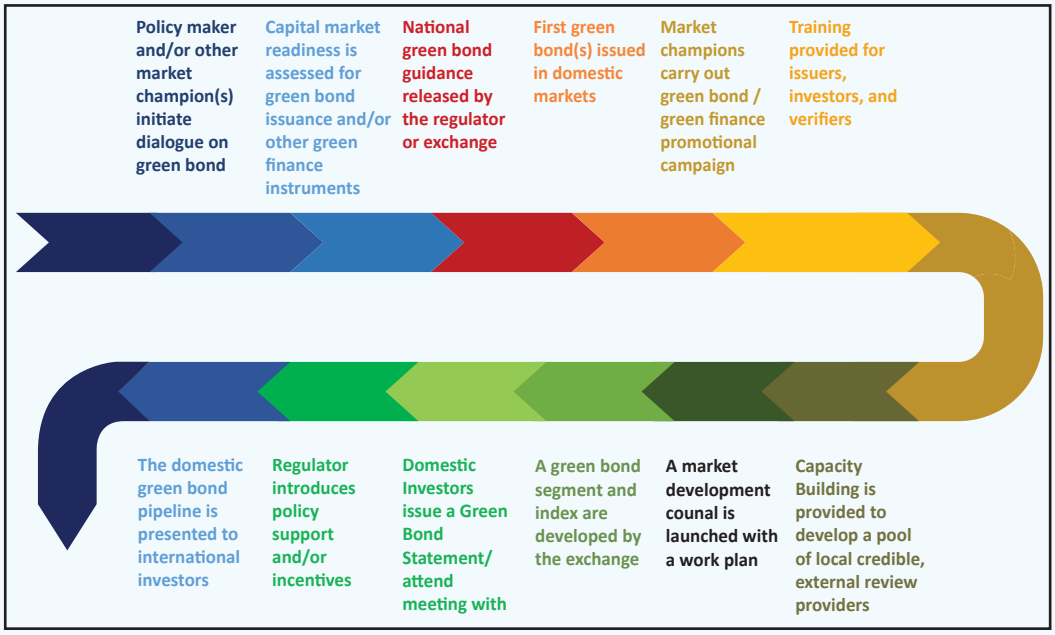


Source: Environmental Finance Database, 2019

5 Global Sustainable Investments Rise 34 Percent to $30.7 Trillion." Bloomberg, April 1, 2019.
6 "US SIF Foundation Releases 2018 Biennial Report on US Sustainable, Responsible and Impact Investing Trends." The US SIF Foundation, October 31, 2018.

The development of the Green Bond (also applicable for other sustainable bonds) generally followed a structured road map. The chart below delineates a roadmap with common milestones for developing green bonds (as well for other sustainable bonds – including Blue Bond) markets. Among others, road map includes translating national priorities into the green finance framework, engaging investors and issuers, building technical capacity of the regulators and financial institutions. SNB (2018) argued that 'a crucial first step to an effective market architecture is a clear translation of national priorities into a green finance framework, which determines (national) project selection criteria. This should contribute towards the country's NDC objectives, and ideally align with international guidelines. This framework then informs investor and issuer engagement, raises awareness of green bonds and stimulates action. It may be that while markets are nascent, fiscal incentives or support is required to support the market as it grows. This could take the form of grants for external bond reviews, tax exemptions, or training programs for investors, verifiers and regulators.'

Chart 5: Roadmap with Common Milestones for Developing Green Bond Markets



Source: SBN (2018), Creating Green Bond Markets – Insights, Innovations, and Tools from Emerging Markets

3.1. Blue Bond: Next Wave of Sustainable Financing Instrument

The Beginning: Blue bonds are a relatively new type of sustainable bond which finance projects related to ocean conservation. Like green bonds, blue bonds operate similarly to any other debt instrument by providing capital to issuers who repay the debt with interest over time. The main difference is that blue bonds dedicate use of proceeds to marine projects, such as promoting biodiversity and supporting economies reliant upon healthy and sustainable fisheries. They gained attention in October 2018, after the World Bank facilitated a bond agreement to offload a small portion of the Republic of Seychelles' debt in exchange for marine protection. It served the dual purpose of stabilizing the country's credit rating and investing in its economy, which is closely tied to the ocean.

Blue bonds may include all the features of the three types of the sustainable bonds. Although sustainable bonds are in operations for quite for some time, only two blue bonds have been floated starting in 2018. These are the Seychelles Blue Bond and Nordic Sea Blue Bond. The main features of these two bonds are summarised below.

Table 1: Key Features of Seychelles and Nordic Sea Blue Bond

Features	Seychelles Blue Bond	Nordic Sea Blue Bond
Commencement date	October 2018	January 2019
Objective	Implementation of the sustainable blue economy plan of the Seychelles	Protect and rehabilitate Baltic Sea
Issue size	$ 15 million	$ 200 million
Maturity	10 Years	5 Years
Credit rating	BB	AAA
Repayment guarantee arrangement	World Bank $ 5 million UN's Global Environment Facility (GEF) $ 5 million	NA
Coupon rate	6.5 % - declined to 2.8%	3.75 %
Trading arrangement	Sold in private placement to 3 Impact Investors [not traded]	Listed on Nasdaq Stockholm (Twice oversubscribed)
Payment method	Central Government Budget	
Fund manager	Seychelles' Conservation and Climate Adaptation Trust (SeyCCAT) and the Development Bank of Seychelles (DBS).	Nordic Investment Bank (NIB)

The Pre-requisites: Blue bonds' expansion as specific instruments to promote sustainable ocean economy will depend on the fulfilment of a number of pre-requisites. IUCN (2019) also suggested following four pre-requisites for blue bonds.

A. Pipeline of Acceptable Large Projects

The fundamental basic requirement is the availability of a pipeline of acceptable projects large enough in size. IUCN envisaged that *"unless there are adequate projects with the right risk-reward profiles there will be no market for funding. The development of appropriate projects with identified returns and robust assessments of their positive impacts on marine and coastal ecosystems is a crucial and possibly the critical gap to date."*

B. Growing Awareness of Market Actors

Another important constraint identified for blue bond issuance is the lack of knowledge on the potential market participants with this space – both issuers and investors. Following the successful role of the European Investment Bank with regards to the green bond issuance and World Bank for introducing the Seychelles blue bond, multilateral development banks need to assume a leading role for the future development of the blue bond market. On the other hand, to reach a wider audience of possible investors, blue bond issuers may benefit from listing the blue bonds on sustainable exchanges with high transparency and impact requirements.

C. Adequate Monitoring and Verification Procedures

Another fundamental re-condition for blue bond issuance and subsequent growth is the adequate monitoring and verification procedures – demonstrating the positive investment impact using clear, recognized and meaningful metrics.

Since the aims of blue bond financing is to protect and strengthen the coastal and marine nature-based capital stock, appropriate impact metrics are required for proper monitoring and verification for the satisfaction of both issuers and investors. IUCN further argues that "both issuers and investors face reputational risks and potential accusations of so-called *"greenwashing" if proceeds are not used for their intended purposes or if issuers are unable to prove that proceeds have funded projects with positive and additional impact."* According to IUCN, appropriate monitoring and verification procedures should be placed at the heart of the blue bond design.

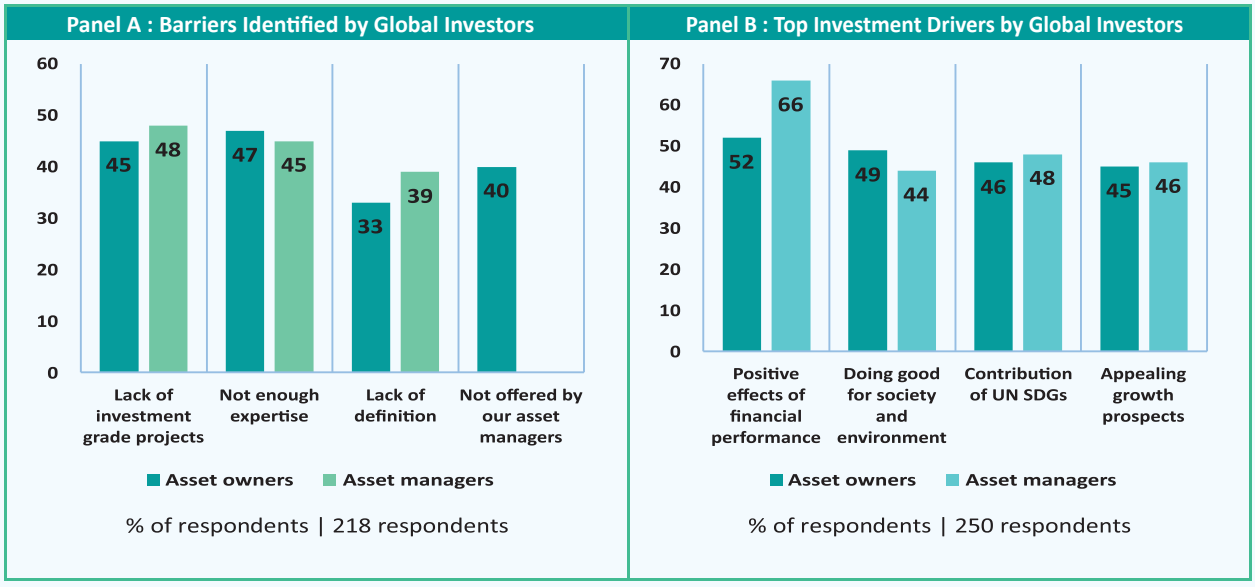
D. Adequate Impact Management Procedures

As is true for other sustainable bonds, specific attention must be put on the impact management process. This may relate to the type of reporting (ex-ante / ex-post), the frequency, and the choice of the reporting agent (in-house or independent), among others.

The Barriers and Drivers: Credit Suisse (2020) also asked top global investors to identify barriers to the blue bond. They have also been asked to ascertain the key drivers for investing in blue bonds. The responses of the more than 200 + top investors (which include asset owners and asset managers) are summarised below. Interestingly, lack of investible projects has also been recognized as a major barrier to the blue bond. Inadequate expertise and lack of definition also make the list of major constraints to blue bond.

Not surprisingly, the top factor for investment is their perception of the positive effects of financial performance. But it is reassuring to note their concerns for a sustainable future. Accordingly, contribution to UN SDGs and caring for society and environment are among the top three drivers.

Figure 4: Investors Identified Barriers and Drivers of Blue Bond



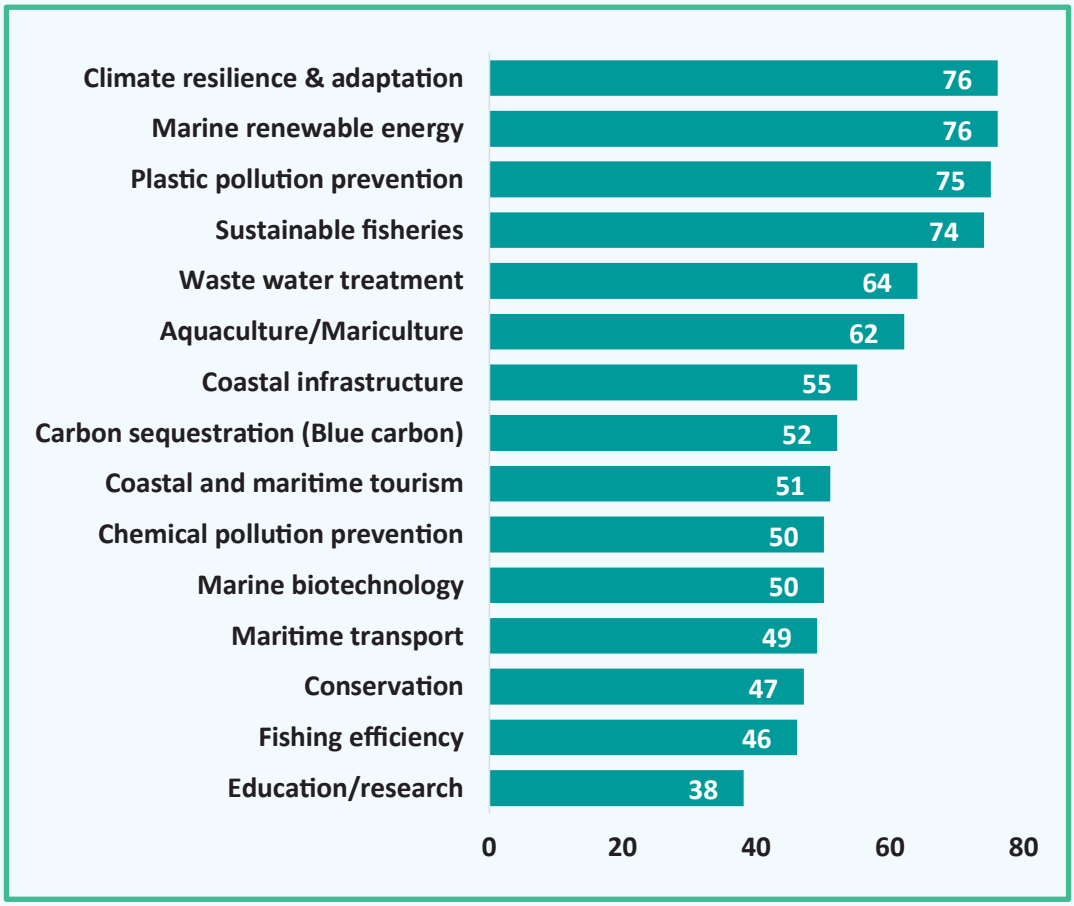
Source : Credit Suisse (2020)

Mark Campanale, Founder & Executive Director, Carbon Tracker Opines, "Data. Effective investment strategy requires accurate, timely, transparent and robust data on key and material elements of the business. Working in remote and isolated environments, data collection for fisheries was and remains a large issue in designing solutions that work for industry, investors and the planet."

The Priority Areas: Global investors who had participated in the Credit Suisse (2020) study revealed their priority areas for investment in blue economy sectors or activities. Their preferences resemble their perception of which sectors constitute the blue economy. Their responses are also consistent with the goals and scope of the blue economy and blue investment.

Top four investible areas securing more than 70 per cent of the responses include climate resilience and adaptation, marine renewable energy, plastic pollution prevention, and sustainable fisheries. These choices are also in line with the SDGs 6, SDG 13 and 14. Two investment areas securing 60 per cent above responses are waste-water treatment and aquaculture/mariculture. Interestingly, marine transport is not a priority investment area, and the same in the case of offshore oil/gas.

Figure 5: Priority Investment Areas by Investors



Note: % of respondents, 218 respondents
Source : Credit Suisse (2020)

4 BOND MARKET IN BANGLADESH[7]

4.1. Evolution and State of Bond Market in Bangladesh

The fixed-income securities market or bond market in Bangladesh comprises government and corporate debt instruments. The total value of the bond market (or fixed income market) in 2018 was US $ 16 billion – around 6 per cent of GDP (i.e. around $ 300 billion in 2018). Currently, the bond market in Bangladesh is lopsided with government issuance of debt instruments significantly larger than the corporate issuance. That is, government bonds account for the bulk of outstanding bonds. The corporate debt market is very limited. The private bond market is largely limited to commercial banks issuing subordinated debt to meet capital adequacy requirements (IFC, 2019).

The evolution of the government bond market can be categorized into three periods with regard to debt instruments and regulations.

Pre-2003 Period: Until 2003, T-bills were available in the market with the maturity of 30-day, 91-day, 180-day, and 1-year, and only the commercial banks were permitted to purchase these securities. The secondary trading could not take place due to the non-existence of a secondary market with limited number of buyers and sellers.

2003 to 2006-07 period: In 2003, the trading of the government securities started through an electronic registration by listing in the Central Depository of Bangladesh Limited (CDBL). Subsequently, Bangladesh Bank introduced the Primary Dealer (PD) system in 2003 by appointing 8 (eight) banks and 1 (one) Non-Bank Financial Institution (NBFI) as PD for primary issuance and secondary trading of the government securities (G-Sec). During this period, along with the short-term T-bills, 5-year and 10-year T-bonds were introduced to implement the long-term development plan of the Government. Consequently, the auction calendar was published by the Government for the first time in 2006 based on the deficit budget in Financial Year (FY) 2006-07.

Post 2006-07 period: To meet the long-term financing requirements of the Government, 15-year and 20-year T-bonds were introduced in FY 2007-08. Later, the PD system was encouraged with incentives and liquidity support against the collateralized securities from the central bank. Bidding commitments and underwriting obligations on PDs were introduced for T-bills and T-bonds auction in 2007 to strengthen their position as the market makers. At present, 21 banks act as PDs to bring vitality in the primary and secondary markets for government securities. In 2011, Bangladesh Bank introduced the Market Infrastructure (MI) Module for the automation of the government securities that act as the depository system for the transaction and settlement of government securities to advance the primary auction and secondary market.

As mentioned above, the corporate bond market is very small in size in Bangladesh. As of June 30, 2018, the outstanding amount of corporate bond was only 0.013 per cent of the GDP (Bangladesh Bank, 2019). During the last three decades (i.e. from 1988-2019), only 3 corporate bonds and 14 debentures were issued by public offerings and listed with the stock exchange. Due to the poor payment records (i.e. failed to pay the coupons and principal amounts) of the debenture issuers, these debentures could not draw the attention of investors. Many of these bonds and debentures were partially convertible to common stocks. The largest corporate bond was first issued in 2007. It was a perpetual bond named 'IBBL Mudaraba Perpetual Bond' with an amount of BDT 300 crore. In 2010, ACI Limited issued zero-coupon bonds with attractive tax incentives. BRAC Bank in 2011 issued BRAC Bank 25% Subordinated Convertible Bonds to raise Tier-II capital to comply with the regulatory requirements of Bangladesh Bank.

7 This section draws from the two recent reports – Bangladesh Bank (2019) and IFC (2019).

With the stock market capitalization of about 20 per cent of the total financing requirement – which is well below the regional peers – the World Bank (2019)[8] argued that the long-term debt market is almost non-existent in Bangladesh. The outcome is that 80 per cent of debt financing has to be mobilized from the banking sector, which cannot lend longer than around 5 years, given that 70 per cent of bank deposits are for 1 year or less (i.e. Scheduled Banks Statistics, October-December, 2018). As a result, as of June 2018, the total outstanding public debt of the Government from the banking sector stood at 7.23 per cent of the GDP. In FY 2017-18, the banking sector was the leading investor accounting for 77.1 per cent of the total stock holding. Long-term investors such as insurance and provident funds accounted for 15.5 per cent of the total holding.

A debt sustainability report prepared by IMF in 2018 provided the latest available comprehensive situation of debt sustainability in Bangladesh. As of June 2017, the share of external debt and domestic debt as a percentage of GDP were respectively 14.3 per cent and 18.9 per cent. Overall, debt is 33.2 per cent of GDP. IMF concluded that government debt is well under the sustainable threshold.

Table 2: Bangladesh External and Domestic Debt Situation

External (PPG) Debt*[9]						
	US$ Billion	%			BDT Billion	%
Total PPG Debt	**35**	**100**		**Total Domestic Debt**	**3,731.6**	**100**
Multilateral	**23.3**	**66.6**		**Bangladesh Bank**	**158.7**	**4.3**
of which				**Deposit Mo ney Banks**	**1,407**	**37.7**
World Bank (IDA)	13.1	37.4		T-bills	235.2	6.3
Asian Development Bank	8.2	23.5		T-bonds	1,117.6	29.9
Bilateral	**5.8**	**16.7**		Others	54.3	1.5
of which				**Nonbanks**	**2,165.9**	**58**
Japan	3.2	9.2		NSCs	1,909.0	51.2
China	1	2.9				
Short term Debt	**2.5**	**7.3**				
Guarantees (SOE)	**3.3**	**9.5**				
% of GDP		**14.3%**				**18.9%**

Note: * PPG refers to public and publicly guaranteed
Source: IMF (2018)

With respect to the bond market in Bangladesh, a new and important development took place in December 2020. Bangladesh introduced the Shariah-based bond Sukuk as a new investment tool to promote Islamic finance and attract local and foreign direct investment. Sukuk is the Arabic name for financial certificates, also commonly referred to as 'Shariah-compliant' bonds. It represents undivided shares in the ownership of tangible assets relating to particular investment activity. The purpose of the Sukuk is to raise BDT 8,000 crore to implement a safe water supply project titled "Safe Water Supply for the Whole Country".

Green (sustainable) Bond: In the backdrop of the weak and under-developed state of bond market in Bangladesh, IFC in collaboration with Bangladesh Bank commissioned a study to assess introducing green bonds in Bangladesh. The study covered a wide range of areas including determination of demand-supply sides, identification of issuance actors, identification of the potential

8 World Bank Group Report on Bangladesh Capital Markets, August 2018
9 PPG external debt consists of medium to long term loans from multilateral and bilateral creditors, short term debt and borrowings of the state-owned enterprises. Domestic debt does not include the outstanding liabilities of state-owned enterprises to the banking system.

investors (both domestic and international) and issuers, and documenting constraints/barriers. Regulators and verifiers are actors responsible for pre-issuance and post- issuance services or roles. On the other hand, issuers and investors are the key marketplace actors.

Chart 6: Identified Actors for Green Bond (Sustainable Bond) Development in Bangladesh

Regulators	Issuers
Ministry of Finance Bangladesh Bank SREDA BSEC NBR DSE/CSE IDRA	59 scheduled banks 34 non-banking financial institutions 2 state-owned financial institutions Finance Division (Ministry of Finance) Development banks Corporations
Verifiers[10]	**Investors**
No Bangladeshi firm Two Indian firms: Climate Bond Initiative's (CBI) International standard	*Domestic:* pension fund; asset managers; insurance companies; scheduled banks; NBFIs; and large corporations. *International*[11]: A. PIMCO; BNP Paribas and HSBC. a B. NN Investment Partners and Ostrum Asset Management C. Amundi, Robeco, Nikko Asset Management and Lombard Odier.

Source: GED's delineation based on IFC (2019)

In addition to the identification of actors required for developing green bonds in Bangladesh, the IFC report also documented constraints and barriers to the green bond market. Separate concerns or barriers have been documented for three groups: Issuers, domestic investors, and international investors. In total, 12 types of barriers have been reported in the figure below.

Figure 6: Identified 12 Barriers to Green Bond Market Development

Source: IFC (2019)

10 It has been assessed that no Bangladeshi advisory firm can perform the verification and reporting tasks. Thus, Bangladesh must look outside to get these services. Two Indian firms have been identified with good track records of certifying bonds in India. India has the most developed neighbouring verification market. Indian entities have issued 30 green bonds and over 70% have third party verification.

11 Three sets of international investors: A includes three large institutional investors with long-standing track records in emerging market debt are PIMCO, BNP Paribas and HSBC. B. Includes two specialist asset managers. C. Four international investors with dedicated green bond funds who also have high investment potential have also been identified – Amundi, Robeco, Nikko Asset Management and Lombard Odier are all specialist asset managers, that manage a number of funds with a clear ESG focus.

Discussions with the Bangladesh Bank brought to light additional barriers to bond market development in Bangladesh. They are summarised in the table below.

Table 2: List of Additional Barriers Identified

Sources of Barriers	Types of Barriers
Issuer Perspective	1. Policy barriers
	2. Lack of expertise in issuance of bond
	3. Lak of promotional activities
	4. Lack of research activities
	5. Lack of market data
Domestic Investors Perspective	1. Certainty of return from investment
International Investors Perspective	1. Ease of tax regulation
	2. Ease of documentation

Source: GED's compilation

4.2. Emergence of Islamic Bond in Bangladesh – Sukuk

Against the backdrop of the weak traditional bond market in Bangladesh, a new and important development took place in December 2020. Bangladesh introduced Shariah-based bond Sukuk as a new investment tool to promote Islamic finance and attract both local and foreign direct investment.

Table 3: The Main Difference between Traditional Bond and Sukuk Bond

Indicators	Traditional	Sukuk
Asset ownership	Bonds do not give the investor a share of ownership in the asset, project, business, or joint venture they support. They are a debt obligation from the issuer to the bond holder. The traditional bonds indicate a debt obligation.	Sukuk give the investor partial ownership in the asset on which the sukuk are based. In other words, Sukuk indicate ownership of an asset.
Investment criteria	Generally, bonds can be used to finance any asset, project, business, or joint venture that complies with local legislation.	The asset on which sukuk are based must be sharia-compliant.
Issue unit	Each bond represents a share of debt.	Each sukuk represents a share of the underlying asset.
Issue price	The face value of a bond price is based on the issuer's credit worthiness (including its rating). The bond pricing is based on credit rating.	The face value of sukuk is based on the market value of the underlying asset.
Investment rewards and risks	Bond holders receive regularly scheduled (and often fixed rate) interest payments for the life of the bond, and their principal is guaranteed to be returned at the bond's maturity date.	Sukuk holders receive a share of profits from the underlying asset (and accept a share of any loss incurred).
Effects of costs	Bond holders generally are not affected by costs related to the asset, project, business, or joint venture they support. The performance of the underlying asset does not affect investor rewards.	Sukuk holders are affected by costs related to the underlying asset. Higher costs may translate to lower investor profits and vice versa.

Source: GED's compilation

Sukuk is the Arabic name for financial certificates, also commonly referred to as 'Shariah-compliant' bonds. It represents undivided shares in the ownership of tangible assets relating to particular investment activity. Although new in Bangladesh, Sukuk bond is popular in many Islamic countries.

Sukuk implies 100 per cent tangible assets to deliver assets fully backed to investors. Moreover, since investment in the interest-bearing traditional bonds is not allowed under Islamic law, the issuer of a sukuk essentially sells a certificate to a group of investors and then uses the proceeds to implement a project where the group has a direct partial ownership interest (The Daily Star 2020)[12]. Qizam and Fong (2019)[13] argued that important features such as safe fund, less speculation, low trading turnover and less volatility turned Sukuk into an unique investment instrument. According to IIFM (2018)[14] data, the Sukuk market has been dominated by Malaysia (62.5%), Saudi Arabia (9.7%), UAE (7.3%), Indonesia (6.4%), Bahrain (2.8%), Qatar (2.6%) and Turkey (2%).

Bangladesh introduced Bangladesh Government Islamic Investment Bond (BGIIB) in 2004 with the aim to develop the Islamic bond market and also to convert excess liquidity into investments through Islamic bonds (Sarker et al., 2019)[15]. The Islamic bonds are issued based on the profit sharing ratio through open auction. the maturity period of Islamic bonds is 3 months and 6 months. Furthermore, in 2015, in order to boost Islamic finance further, Bangladesh Bank (BB) launched a weekly sukuk programme with the objective to boost the sukuk bonds as well as to provide local lenders with a new short-term liquidity management tool.

However, the measures undertaken by the Bangladesh Bank seems inadequate to tap the full potential of the Islamic investment. According to a central bank study, around 28 per cent of the country's investors are unwilling to invest in the interest-bearing T-bills, bonds and other government securities. So, the new investment instrument is expected to open a window for the clients who prefer Shariah-based securities. Some of the Islamic banks have been sitting on excess liquidity for years and are unable to invest the funds in the T-bills and bonds. The sukuk will give an excellent option to them, says a central bank official (The Daily Star, December 23, 2020)[16] [17].

In the current context, the purpose of the Sukuk is to raise BDT 8,000 crore to implement a safe water supply project titled "Safe Water Supply for the Whole Country". The key parameters of the Sukuk bond are presented below.

Table 4: Key Parameters of Bangladesh Sukuk Bond

Investment Limit		Profit		Duration
Minimum	Maximum	Percent	Payment	
BDT 10,000	No ceiling	4.69%	Half-yearly	5 Years (2020-25)

Source: GED's compilation

Size and Purpose:

- Total resources to be mobilised is BDT 8,000 crore.
- They will be mobilised in two tranches – BDT 4,000 crore in December, 2020 and BDT 4,000 crore in May, 2021.
- The proceeds will be used to implement the safe water supply project.

12 https://www.thedailystar.net/business/news/tk-8000cr-islamic-bond-safe-water-supply-2015849
13 Qizam, I., & Fong, M. (2019). Developing financial disclosure quality in sukuk and bond market: Evidence from Indonesia, Malaysia, and Australia. Borsa Istanbul Review, 19(3), 228-248.
14 IIFM. (2018). A comprehensive study of the global sukuk market. IIFM Sukuk Report. Retrieved from https://islamicbankers.files. wordpress.com/2019/02/iifm-sukuk-report-2018.pdf
15 Sarker, M.A.A., Islam, M.S., Rahman, M.M., Mashrur, M., Khan, M.I., Mobin, M.A. (2019). Liquidity Management Instruments for the Islamic Banks in Bangladesh, Special Research Work Report (SRW-1904), Bangladesh Bank, Head Office, Dhaka. Retrieved from https://www.bb.org.bd/pub/research/sp_research_work/srw1904.pdf
16 https://www.thedailystar.net/business/news/tk-8000cr-islamic-bond-safe-water-supply-2015849
17 For details on Sukuk please consult "Bangladesh Government Investment Sukuk." Source: DMD Circular No-05; Date: October 21, 2020 and DMD/219(1)/2020-2104; Date: December 23, 2020.

Investment:

- Although there is no ceiling on maximum investment, a client will have to invest a minimum of BDT 10,000 in Sukuk.
- Banks, corporate institutions and individuals are permitted to invest in Sukuk bond.

Profit:

- An investor will receive a profit of 4.69 per cent on their Sukuk investment. It is important to note that the return on Sukuk bond is higher than the return on traditional bond instruments in Bangladesh. The Bangladesh Bank (the central bank) has fixed the rate of Sukuk by adding an additional one percentage point on the last declared profit-sharing rate of 3.69 per cent paid on the Bangladesh Government Islamic Investment Bond (BGIIB).
- Profits will be paid to investors on a half-yearly basis.

The auction of first tranche totalling BDT 4,000 crore of Sukuk bond attracted large number of institutional investors (mainly banks). As many as 37 banks and 2 individual investors placed bids. It was hugely oversubscribed as bidders placed BDT 15,153 crore against the targeted amount of BDT 4,000 crore. An important question is what led to the huge interest and almost 4 times over subscription? Some of the key factors identified are:

1. Due to sluggish investment demand by the private sector (perhaps due to COVID-19), there is now exorbitant excess liquidity in the banking sector. In December 2020, excess liquidity in the banking sector stood at BDT 204,700 crore, suggesting a growth of 95 per cent year-on-year basis. Given the high excess liquidity and slow pace of recovery, banks found this as an ideal instrument to use some part of their funds. In a normal business environment, the demand for Sukuk could have been different.

2. Another factor which may have attracted investors (or lenders) is the relatively higher rate of return of Sukuk. Based on wide stakeholders' consultation and market analysis, Bangladesh Bank along with Ministry of Finance fixed the rate of return at 4.69 per cent – higher than the T bonds and BGIIB by 1 percentage point. However, it appears that a 3.69 per cent rate would have also attracted huge investors to invest in Sukuk. Thus, Bangladesh will have to bear the 1 per cent additional cost which could have been avoided. More in-depth analysis is needed to set the price of the public sector bonds – whether traditional or Sukuk.

3. Another important factor at work may be that it is a risk-free investment as the rate of return is fixed for the next five years – i.e. from 2020 to 2025. One of the key principles of Sukuk is ownership in assets and thus the investors agree to receive profit or accept loss. This implies that the return to the investment is likely to vary, rather than remain fixed. The implication of the fixed profit rate is that if DPHE incurs losses or makes less (i.e. less than projected while calculating the return) profit – the government will have to subsidise the investors – perhaps again through further borrowing.

Despite some of the above-mentioned apprehensions, introducing Sukuk is the right initiative. It should encourage introduction of more bonds to meet the long-term financing needs of the country. However, additional care (i.e. market research, and alignment with macro-fiscal-debt scenarios etc.) is needed when future public sector bonds are floated. Moreover, it is time for the corporate sector to come forward with issuance of bonds to raise funds for their business expansion.

5 PATHWAYS TO PROMOTE SUSTAINABLE BLUE ECONOMY AND BLUE BOND

A. Needs Accurate Valuation and Projection of the Blue Economy

The value of the Bangladesh blue economy has been estimated to be $6.2 billion or around 3 per cent of GDP. It appears that the valuation is based on an ad hoc and guestimates – not following the methods as prescribed in the System of the National Account (SNA). The outcome of such an approach is underestimation of the contribution of the blue economy. As a result, the future projection of the potential of the Bbue economy may also be inappropriate. As identified by the global investors and other reports, lack of accurate data of the blue economy (both at the aggregate and blue economy sector level) is one of the key constraints for raising funds for moving the sector forward.

The importance of measurement of the ocean economy was recognized back in 2005 during the second APEC ocean-related Ministerial meeting held in Bali. One of the outcomes was the Bali Plan of Action which prioritized issues of the marine economy (APEC 2005). The plan stated the following priority:

Understanding the value of the marine sector: A better understanding of the short-term and long-term market and non-market value of the marine sector would better enable stakeholders and decision makers to achieve sustainable, integrated marine management. Study the market and non-market value of the marine environment and marine industries in the Asia-Pacific region, including by undertaking research, communication and information exchange on marine activities (APEC 2005).

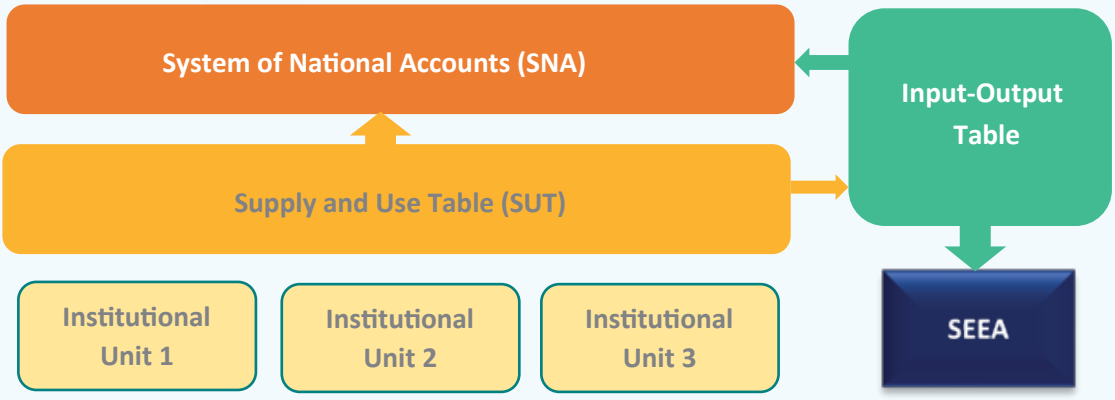
There have been efforts to introduce measurement of the blue economy through developing the blue economy 'satellite account' (BESA) – a method proposed in the SNA – and fits well with the SNA endorsed national account measurements such as the Supply and Use Table (SUT) and Input-output Table (IOT).

The SNA measures economic activity in an economy through a series of macroeconomic accounts. These accounts are created with strict adherence to internationally agreed standards and principles. The SNA boasts four characteristics that have led to its wide acceptance as the main source of national income statistics. The statistics produced from the SNA are: (a) universal;(b) transparent; (c) harmonised; and (d) flexible.

The macroeconomic accounts that are captured within the SNA describes the domestic economy and the relationships between its main economic agents (or institutional units) of activity. The main economic agents within an economic system are: (a) producers; (b) households and non-profit institutions; (c) government; and (d) financial institutions.

The most important statistic derived from the SNA is the GDP. Production of the SUT not only ensures accurate measurement of GDP by the three approaches, but also is the main data framework for the IOT and Satellite Accounts such as 'Tourism' satellite accounts; 'Energy' satellite accounts; SEEA and BESA etc. The satellite accounts capture information on a specific area of activity without interfering with the wider process of the SNA. These accounts are interconnected, but more detailed accounts are calculated while computing GVA. The use of satellite accounts requires greater levels of data capture at the institutional level and hinders the use of such accounts in the regional space. Satellite accounts link the central accounts of the SNA and target the computation of industry level data for an area of interest. Examples of currently used satellite accounts are tourism, energy, and environment.

Figure 7: Bangladesh Blue Economy Satellite Account (BBESA) within SNA



Source: GED's creation

The practice of using satellite accounts for ocean-related activities is recent, but increasingly common. In 2015, the Philippines agreed to assess ocean-based economic activities within its SNA using the latest version of the International Standard Industry Classification (Talento, 2016) and in 2016, Portugal launched the first SA for the Seas in Europe (Accounts, 2016). At a disaggregated level, these satellite accounts identify specific activities within maritime and maritime-related industries.

Once integrated within the wider SNA, satellite accounts will provide time series data on ocean- related activities and assist government and industry in identifying the direct and indirect benefits of activities within the blue economy. Satellite accounts enable reporting countries to measure and present data on specific areas of economic activity. Such identification is critical to determining the resource needs to develop blue economy industries.

Following the above discussion on the measurement of the blue economy in Bangladesh, BBS and Bangladesh Planning Commission may implement a pilot project to compile blue economy satellite Account of Bangladesh (BBESA).

Along with valuation, a related question is regarding the projected size of the blue economy. Although it may not be easy to set a target size of the blue economy for Bangladesh due to lack of data and clear vision, findings from other countries (or exercises) may help Bangladesh to set her targets with regard to the blue economy.

FINDING 1 – Mauritius (World Bank): *Doubling of OE or BE is possible but will take time, large investment and associated reforms.*

To date, Mauritius has carried out the most comprehensive exercise. They aimed to double the size of their ocean economy (which was around 10 % of GDP in 2015). The analysis led by World Bank (2015) and Government of Mauritius found that doubling the GDP share (referred to as O2) of the OE is possible but would likely to take at least between 15 and 18 years. The exercise also cautioned that attempts to pursue the O2 target over a shorter period of time may well result in undesirable economic outcomes, such as diseconomies of scale, price increases, excessive use of natural resources, and fiscal imbalances. Nevertheless, already within the first 10 years, the O2 strategy can yield considerable growth results (Table 2), including a 62 percent increase of the OE GDP, in absolute terms, and an increase of 38 percent in OE's share in the national total.

Realizing such as ambitious target needs huge investment as well as setting up institution with strong convening power and capacity[18].

FINDING 2 – Global (OCED): *By 2030 the size of global OE will be doubled with blue economy activities leading the growth.*

The OECD (2016) projected the growth of the ocean economy to 2030 by major Ocean based activities. The OCED projections found that the many ocean-based activities may likely to outperform the growth of the global economy—more specifically doubling its contribution to global value added in 2030 from 2010. The OECD projects strong growth rates in marine renewable energy, fisheries, port services, ma-rine aquaculture, and ocean-based tourism. It also found significant long term growth potential for marine biotechnology, and carbon capture and storage, though unlikely to be realized by 2030. Three scenarios were used in the OECD projection: (a) unsustainable growth, (b) business-as-usual, and (c) sustainable growth (a blue economy). The OCED concluded that "the difference in the contribution to gross value added from these three scenarios by 2030 is relatively small (from US$2.8 trillion, to US$3.0 trillion, to US$3.2 trillion, respectively), though expected to widen significantly by 2050."

Table 5: OECD Projection of the Ocean Based Activities

	Share of OE (%)		Change in OE share (%)	GVA ($ Billion)		Additional GVA ($ Billion)	Growth (%)	Yearly growth (%)
	2010	2030	2010 -2030	2010	2030	2010 -2030		
Tourism	*25*	*26*	*1*	*375*	*780*	*405*	*108*	*5.4*
Ports	*13*	*16*	*3*	*195*	*480*	*285*	*146*	*7.3*
Fisheries	*6*	*11*	*5*	*90*	*330*	*240*	*267*	*13.3*
Marine Renewable	*1*	*8*	*7*	*15*	*240*	*225*	*1500*	*75.0*
Shipping	20	17	-3	300	510	210	70	3.5
Offshore Oil and Gas	34	21	-13	510	630	120	24	1.2
Aquaculture	1	1	0	15	30	15	100	5.0
Total	100	100		1500	3000	1500	100	5.0

Source: OECD (2016)

FINDING 3 – Global (EIU): *Ocean is likely to become an economic force as activity accelerates at a pace reminiscent of the previous industrialization on land*

The Economist (2015) suggests that in this century, *"the ocean is likely to become an economic force as activity accelerates at a pace reminiscent of the previous industrialization on land (Economist Intelligence Unit 2015)."* In line with the findings of the OECD study, it also reported that many of the ocean-based activities are projected to grow rapidly during this century as the global population reaches 9.6 billion by 2050, and as countries continue to look to the sea for the next economic frontier. Growing demand for the seafood will propel expansion of aquaculture production. Renewable energy, from wind, waves, and currents, among others, offers the potential to help meet increasing global en-ergy demand while reducing long-term carbon emissions. Moreover, the shipping industry will experience a manifold increase in traffic and eco-tourism will continue to increase. As mentioned above, projecting the expansion of the blue economy is difficult due to weak valuation, scope of the blue economy, and lacks appropriate methodology. However, both Mauritius and OECD projected doubling of the size of the blue economy within a 15 to 20-year timeframe.

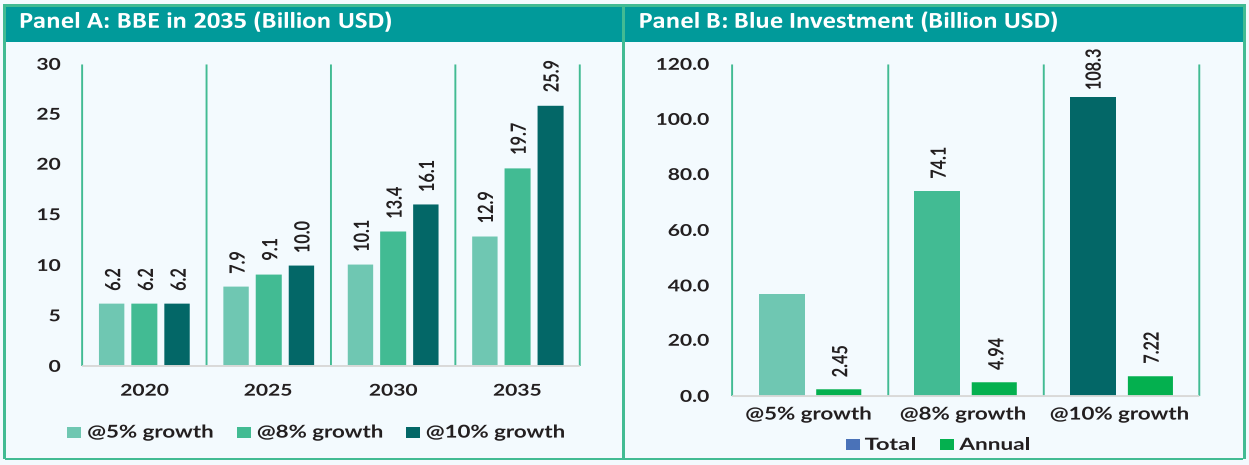
18 Accordingly, the government created a new Ministry of Ocean Economy, Fisheries, Marine Resources and Outer Islands in 2015, aimed at consolidating the several different entities that existed with stronger coordination mechanism as well as promoting a stronger ownership and accountability.

It was also noted that the growth of the global blue economy would be higher than growth of the global economy. Following these suggestions, we have considered three scenarios for the Bangladesh Blue Economy (BBE).

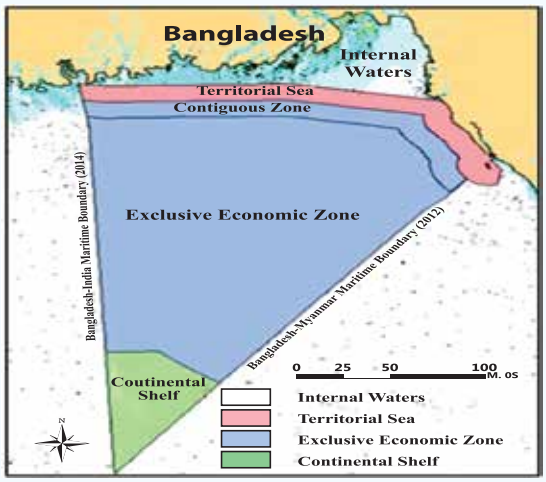
1. The BBE will grow at 5 per cent rate between 2020 to 2035 such that the size of the current BBE of USD 6.2 billion increased to USD 12.9 billion.
2. It will grow at 8 per cent rate between 2020 to 2035. The size of the BBE will reach USD 20 billion.
3. Finally, a higher growth rate of 10 per cent is assumed for BBE. Due to the higher growth rate, the size of the BBE in 2035 would reach USD 26 billion.

One of the key pre-requisites of 5 to 10 per cent growth rates is to invest into the BBE. Using a ICOR of 5.5[19], we have also estimated the required investment amounts for these three scenarios. These are presented in Panel B of Table 8.

Figure 8: Projected Bangladesh Blue Economy Size and Investment Needs ($ Billion)



Source: GED's projections



B. Requires Identification of Blue Projects

Few studies/reports that have been conducted on the 'Bangladesh Blue Economy (BBE)' suggests enormous potential and opportunities. When the 'Extended Economic Zone' is added to the 'Open Access Sea', the resource base of the BBE is suggested to be larger than the Bangladesh land base (Haque, 2020). Hossain et al (2017), argued that Bangladesh has the sovereign right to govern 118,813 sq. Km of waters extending up to 12 nautical miles of territorial sea and a further Exclusive Economic Zone (EEZ) of 200 nautical miles into the sea. The size is extended further if the Continental Shelf extending up to 354 nm from the Chittagong coast is considered (MoFA, 2014b). It is a vast area and opens up enormous commercial and economic interests together with environmental concerns.

19 The ICOR of 5.5 was found for Mauritius. Total estimated investment requirement for doubling of Mauritius Blue Economy (MBE) has been USD 8.2 billion. Net addition to the MBE has been projected at USD 1.5 billion. The ICOR for MBE has been estimated as 5.5 => 8.2/1.5.

Box 2 captures the horizons of new resources and new activities. Although this suggests an enormous opportunity for the blueeEconomy, some of these mentioned activities are not fully in alignment with the scope of the blue economy and the perceptions of international investors and researchers[20]. As mentioned earlier, the blue economy refers to a sustainable ocean-based economic model that is largely dependent on coastal and marine ecosystems and resources, but one that employs environmentally-sound and innovative infrastructure, technologies and practices, including institutional and financing arrangements, for meeting the goals of: (a) sustainable and inclusive development; (b) protecting the coasts and oceans, and reducing environmental risks and ecological scarcities; (c) addressing water, energy and food security; (d) protecting the health, livelihoods and welfare of the people in the coastal zones; and (e) fostering ecosystem-based climate change mitigation and adaptation measures.

Available studies suggest that harnessing the blue economy is a costly venture and thus may require huge investment in projects with time-bound completion and clear outcomes. Stakeholder discussions/interviews and literature revies did not produce a clear list of projects specifically set aside for the blue economy in Bangladesh. The above outcomes of the stakeholder consultations are not surprising since currently there is no existing framework or universally adopted principles to guide which investments would support a sustainable blue economy or 'blue' investments. There are also gaps in understanding and scale as significant ocean contributions to the economy are not reflected in market prices or GDP (Rashid et al, 2020).

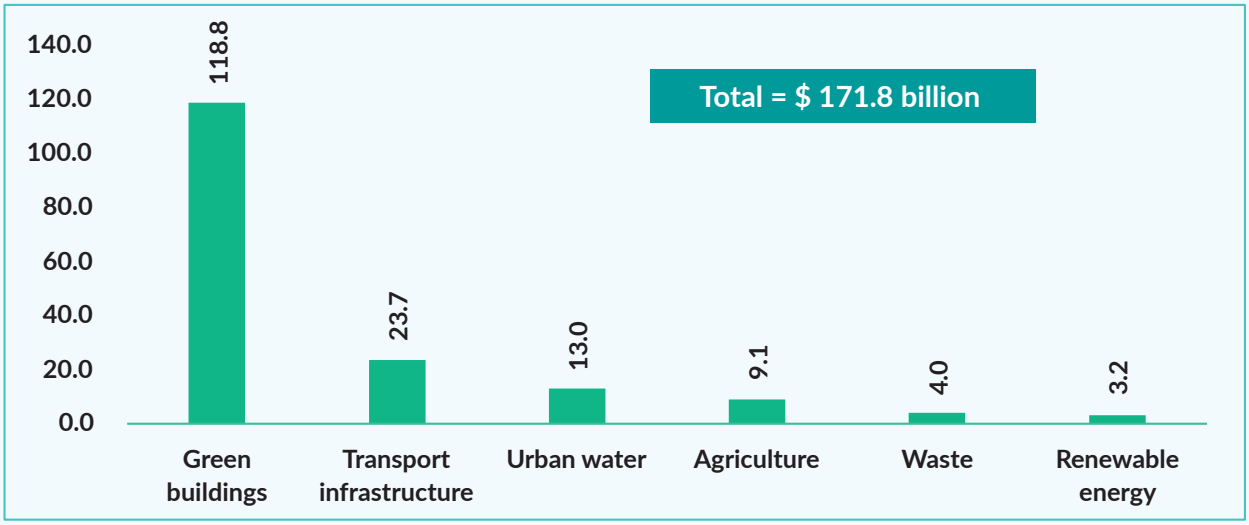
Box 2: Blue Resources and Activities

Source: Based on Haque (2020), and Hossain et al (2017)

20 There is a growing perception that the blue economy is only relevant to big sectors like ports, shipping, industrial fisheries, energy and waste management, without addressing issues of sustainability. This perception is actually counter to the blue economy concept and needs to be challenged. Österblom et al. (2020) found that ocean resources and sectors are 'rarely equitably distributed', and many of their benefits are captured by a few. At the same time, most of the costs from ocean based economic activities, such as the environmental impacts are not considered and borne by marginalized communities.

However, other studies have identified projects which may be relevant (or have features of a blue project) for the development of the blue economy. IFC (2017) has already estimated that US $172 billion would be required as climate-smart investment between 2018 and 2030 to meet the NDC and sectoral targets agreed by Bangladesh. The IFC estimates assume that Bangladesh will meet its conditional NDC as well as all announced ctoral targets, covering both mitigation and adaptation measures.

Figure 9: Bangladesh Climate-Smart Investment Need ($ Billion)



Source: IFC (2017)

There is also the Bangladesh Delta Plan (BDP) 2100, which is unprecedented in its scale (Time and Space) and complexity. The main goals of the BDP are achieving long-term food and water security while ensuring environmental sustainability and economic growth. The government plans to spend US $37.5 billion by 2030 towards this plan.

Following the definition (sustainable) of the blue economy and practices in other countries (e.g. Indonesia, Seychelles, and Norway), Bangladesh may focus on the following few areas for the promotion of the blue economy:

A. *Renewable energy*

B. *Sustainable fisheries (including aquaculture and mariculture)*

C. *Plastic pollution prevention*

D. *Coastal tourism/eco-tourism*

E. *Education and research (including data)*

F. *Natural resource exploitation*

G. *Sustainable Transport Infrastructure*[21]

Whatever may be the ultimate vision of the Bangladesh blue economy determining the areas for intervention, the realization of the vision would require identification of blue projects large enough in size and investment.

21 It refers to development or modernization of infrastructure for climate adaptive and sustainable marine transportation.

Marine Fisheries

Opportunities

The fishery sector contributes 2.06% to the total export earnings, 3.69% to the gross domestic product (GDP) (DoF, 2016), approximately 23% of the total agricultural production, and 60% of the total animal protein intake of the country (FRSS, 2016). More than 17 million people (about 11% of the total population), including approximately 1.4 million women, depend on the fisheries sector for their livelihoods through fishing, farming, fish handling, and processing (DoF, 2016). Of the total production of 3,684,245 MT (in 2014–2015), approximately 16.28% come from coastal and marine fisheries (FRSS, 2016).

Bangladesh has a geographical advantage with the Bay of Bengal in the south, which includes rich coastal and marine ecosystems, and is home to a wide range of aquatic biodiversity, such as fishes, shrimps, mollusks, crabs, mammals, seaweeds, etc. The harvest of marine capture fisheries increased from 379,497 MT during 2000-2001 to 588,988 MT in 2012-2013. This was sold as frozen (transported to large cities and overseas) or fresh in local markets. Hilsa shad (Tenualosa ilisha) is the largest and single most valuable species with an annual catch of 340,000 MT and generates employment and income for 2.5 million people valued at $US 1.3 billion per year.

Marine fisheries and aquaculture contribute directly to the food safety and economy of Bangladesh through revenue, employment, and foreign trading. Bangladesh is one of the world's leading fish- producing countries with a total production of 4.134 million MT (DoF, 2017), where the contribution of marine fisheries and aquaculture is about 15.42% and 56.44% respectively (DoF, 2017). More than 11% of the total population of Bangladesh is engaged with this sector on a full-time and part-time basis for their livelihoods (Serajul Islam et al, 2016). Bangladesh is not only self-sufficient in fish production but also earning considerable amount of foreign currency by exporting shrimp, fish and other fishery products which is about 3% of the total revenue earning from foreign trade. The average growth of this sector is almost 5.43 percent over the last 10 years (Shamsuzzaman et al, 2017.)

There are about 400 marine species, and by measuring our entire resource, we need a system to protect not only the target species in specific zones, but also species related to the sea like mollusks, coral species etc. The zones have to be measured by horizontal-vertical calculation, but it has not done yet. We need to work on which species will be better in which location. We need to target top 10 species first, since now the available species in the market are locally produced and used, and these are not being exported. We have to provide technology to aquaculture farmers which will help them in a) artificial seed propagation, b) nursery, and c) Supply the shrimp seed to hatchery. It can be divided into three stages:

a. Primary- Starting day to 30 days,

b. Secondary- 30 days to 60 days,

c. Tertiary- 40 to 60 more days.

Natural water in the pond is available for only 6 months. The farmers target these 180 days to raise the prawn or if possible, they do it for 12 months using artificially-made ponds which is pricier. No species (no matter what it is) from sea/river/pond can make adaptation in artificial water or hatchery. It will take at least 2 years for such an adaptation. The second one is 'Nursery'. The third one is ''Phase to grow.'' In these phases the farmers have to think what species they will cultivate, what will be duration,

how many species can be cultivated together, whether the environment is favourable, whether they can do it themselves or not, the economic situation, and most importantly, what should be fed to the fish to have a good harvest.

Challenges

Blue economy (BE) should not just be about exploitation, It is also a conversation about biodiversity, fisheries, and industry. Before can start to expedite any sector e.g. marine and fisheries resource, we need to explore the fisheries we have. We also need to know how much resources we have e.g. standing stock, biomass of fish/fisheries

A study by Mahmud et al (2019) revealed a number of barriers to the implementation of fisheries laws. The study identified coastal poverty, the inadequate and improper distribution of incentives, insufficient logistics support, limited alternative occupations, political interference, and a lack of awareness regarding fishery regulations as the major limitations in implementation. This should be considered when looking to exploit and expand fisheries sector further. The illegal entry by foreign vessels also leads to illegal, unreported and unregulated (IUU) fishing in the high seas of Bangladesh. The improper implementation, as well as the non-compliance with fishery regulations, could lead to the degradation and unsustainability of fishery resources in the coastal and marine environments of Bangladesh.

The drawbacks of proper implementation and the non-compliance of fishery regulations can lead to fishery degradation, directly affect the sustainability of the coastal and marine ecosystem of Bangladesh, and may be barriers to achieving Goal 14 of the Sustainable Development Goals (SDGs). Establishing a co-management mechanism for sanctuary management, creating economic opportunities outside of fishery sectors, declaring more protected areas in the coastal and marine ecosystem, enhancing logistic support to the enforcing agencies, and building awareness are critical to improving compliance levels among fishers. (Mahmud et al., 2019)

Mariculture

Opportunities

The Perspective Plan of Bangladesh, 2021-2041 (2018) highlights the potential of BE in ensuring food security and for reducing poverty. This is done in two areas – mariculture and fish and fisheries product value chain. According to the PPB 2021-2041, using our vast sea resources to contribute to food security and food safety can be done in two ways. For mariculture, we can use seaweed to prepare cake, jelly, soup, roll, salad, and organic manure in the agriculture sector. And in fisheries, we can look into improvement of fish catching and manufacturing systems in fresh and marine ecosystem. At the same time, looking at overall agriculture, the role of BE can be to diversify agricultural output and livelihoods. This could be done in three ways, including strengthening the role of small-scale fisheries:

- Collaborative efforts need to be taken for exploring blue economy-related activities concerning the fisheries sector.
- Subsistence level aquaculture and fisheries interventions contribute significantly to uphold the nutritional status of poor households. In this context, aquaculture-based farming activities may be expanded to ensure the required nutrition.
- Private sector investment should be attracted for fish and fisheries product value chain

Seaweed farming is happening at Saint Martin Island. There is a lot of potential for seaweed culture if we can tap into it, including in the export market. So far, what the findings show is that the value of it is relatively low as it is only sold to Myanmar through the Naf River. There is less physical protection,and the tidal fluctuation is very high. As such, it is hard to plan for expanding mariculture. Structural units need to be built to handle coastal waves. Currently, the seaweed market is not big, and for mollusks, the market is even smaller. Also, our coastal waters are very turbid and therefore not suitable for many items for mariculture. As of now, it is not commercially scalable as the Cost Benefit Analysis shows that monetarily it is not feasible as opposed to other aquaculture e.g Mud crab fattening in Sunderbans.

We have plenty of resources that can be cultured for seafood production, but we do not eat them locally. Also, they are not harvested sustainably from the wild e.g. sea turtle eggs (tribal people collect from nature, so it is not sustainable.). However, if we 'domesticated' them towards culture, then we can see what benefits can come to us e.g. Oysters and turtle farming, which is successful in many countries.

- Most successful/potential for mariculture is seaweed – This is grown in Saint Martin Island, Cox's Bazar, Putuakhali.
- Potential for seaweed for Export
- Recently, research was conducted through a UKRI Innovation funding project – seaweed is a prominent sector – currently it is extracted in a disorganized manner, where coral health is degraded too. After processing, there is little to no foreign value as it is sent to Myanmar through NAF river. But now, we can look into multiple marine resource uses, seaweed mariculture, but also conside MPA and ecotourism from Teknaf to Saint Martin.

Action Plan

- Research needs to be carried out across six ponds in Khulna and Cox's Bazaar for one year. The next year we have to include 6-10 fish farmers to work with Department of Fisheries, and then we can have four trials at a time and conduct more research on species. DoF scientists will have to do economic calculations in this regard. We have to do similar to what we did for Telapia fish - establish artificial breeding. DoF will work with 10 targeted species- 5 species of fin fish and 5 species of shellfish such as oysters, crab, etc.
- Marine Protected Areas (MPA) are also being considered to increase the area of MPAs and to maintain marine biodiversity and fish stocks at sustainable levels. Destructive fishing methods and gear (e.g. set bag net) have been completely banned from operation. Vessel Tracking and Monitoring System (VTMS) with satellite communication links are going to be installed soon in fishing vessels in phases, in order to monitor and control their manoeuvering at sea for various management purposes. In the environment sector, several Ecologically Critical Areas (ECA) have been enforced in various coastal ecosystems to maintain critical habitats, biodiversity, marine turtle breeding and conservation, and mangrove restoration and growth.

Coastal Ecotourism

Globally, coastal tourism constitutes 5 per cent of world GDP and contributes to 6-7 per cent of total employment (In 150 countries, it is one of five top export earners and in 60 countries it is at the top) Tourism is one of the most promising sectors for accelerating GDP growth for Bangladesh (Das and Chakraborty, 2012). A large number of tourists visit Bangladesh every year for its attractive natural beauty, rich cultural background, and archaeological resources.

In 2010, Bangladesh received 0.3 million foreign tourists, among which more than 70% came for business and official purposes (Hasan et al., 2013).

Opportunities

Bangladesh has the potential to become a hotspot for ecotourism in South Asia due to its natural attractions such as tropical beaches and sea, tropical forests, rivers and lakes, and mixture of natural and cultural sites (Bhuiyan, 2010). Bangladesh has some unique natural resources of global significance such as the world's largest mangrove forest, the largest unbroken sea beach, and a unique landscape set in the world's largest alluvial delta with flora and fauna. Some of the coastal tourist spots that can be developed for ecotourism include: Cox's Bazar, Himchori & Inani Beach, Moheshkhali Island, Sonadia Island, St. Martin Island, Nijhum Island, Teknaf, and Laboni beach.

Cox's Bazar is the coastal tourist capital of Bangladesh with a 186 km long sandy, straight. and drivable beach (FFYP, 1997- 2002). Other special attractions of Cox's Bazar are Inani Beach (about 30 km from Cox's Bazar full of coral stones), the island of Maheskhali (famous for its Buddhist and Hindu temples and dry fish industry), Teknaf (the southernmost point of Bangladesh), Ramu, Sonadia, Himchhari, and St. Martin Island. A few studies have been done in specific coastal tourist spots in Bangladesh. One such study (Haider and Hossain, 2018) on economic value of tourism in Southwest Bangladesh using CVM, showed that consumer surplus per tourist is between $2-4$ for specific spots. The study also found that yearly, the recreational value ranged between US$ 0.06 million to US $ 0.84 million.

Challenges

There are no plans or capacity yet to do this through the government. Studies have also highlighted how an increase in regular tourism in coastal hotspots such as Cox's Bazar and St. Martin Island has caused severe environmental degradation. There is still a lack of awareness and knowledge around ecotourism and this needs to be addressed through capacity building at all levels – consumers, tour operators, private businesses and local communities.

Action Plan

There is need for a management plan to preserve the health of the local marine environment and support ecosystem services. Two large-scale studies need to be carried out as part of this plan – firstly gathering evidence on local stakeholders' opinions regarding the marine environment and ecosystem and how they believe marine tourism can be increased. This needs to happen through facilitation of an integrated management decision to represent the opinion of local stakeholders. Secondly, there needs to be a study on Willingness-to-Pay (WTP) for understanding the mechanism to collect revenue and utilize this for conserving marine tourism resources. There is a need for facilitation of an integrated management decision to represent the opinion of local stakeholders.

There is a strong need for development of infrastructure and public facilities. These include accommodation, dining services, transport and development of other facilities at attraction points e.g. visitor centres. Foreign investment needs to be attracted to increase such development through blue bonds. At the same time, local goods and handicrafts need to be encouraged, and artisan collectives formed and promoted to tourists to increase demand. The potential sites for developing coastal ecotourism include: Nijhum Dwip, Shatkhira, Teknaf, St. Martin Island, and Kuakata. Management plans need to improve for existing areas for coastal tourism such as Cox's Bazar and the eastern side of the Sundarban forest (i.e. Kotka and Kochikhali)

Marine Plastic Pollution

The plastic industry represents a significant sub-sector in the Bangladesh economy. Plastic-based products have become a significant segment of the manufacturing industry of the country. However, having no polyolefin industry of its own, the country is solely dependent on imported raw materials. Currently, plastic consumption consists of imported polymers and local recycled plastic waste of about 750,000 tons. The country saved USD 600 million import of virgin plastic in the year 2010 by recycling 60 percent of the post use plastics (Bangladesh Waste Database, 2014). Import of plastic raw materials represent 0.26 percent of world imports, ranking 59 in the world. China, Saudi Arabia, and Thailand are the main suppliers of plastic to Bangladesh.

The greatest threat is from single use plastic that are thrown away, and the different shapes and sizes of unrecycled plastic materials. All these end up through landfill to water bodies, and through canals and rivers finally in the seas. Such intensive pollution in the oceans is affecting and threatening all species of ocean and marine fish, animals and other species. In turn, these are entering into the human food chain. Micro and nano-plastic, particularly below millionth and billionth of one meter respectively, is found to enter the tissues of animals, marine species, and humans and pose serious health problems. It has been reported that by the year 2050, the oceans of the world will have more pollutants, mostly plastics components larger than the total weight of fish in the oceans.

Three things need to happen to address the rise in plastic pollution and to prevent the plastic entering the rivers and oceans. This needs to be adopted by citizens, government, and other stakeholders. At the local level, there is a need for awareness and education around waste and plastic disposal. There is also a need for a solid waste management plan at the local and regional government level, including better segregation of waste and reducing the amount of plastic getting into our waste stream as well as more plastic recycling facilities. At the national level, there is a need for adoption of a circular economy design which will also reuse and recycle the plastic generated. Traditionally plastic pollution has been tackled after it has happened, through clean-up efforts, but the only solution lies in addressing its root causes. These lie in the dominant "take, make, waste" linear economy, fueled by large amounts of cheap, accessible energy and other resources, and producing things designed to be disposable. The circular economy, by contrast, aims to use resources for as long as possible, extracting as much value from them as is practicable, and then, when they do reach the end of their lives, to recover and regenerate products and materials. It aims to design out waste and hazardous materials in favour of such restoration and regeneration.

Better science-based policies, strategies and action plans, education and social mobilization, and attribution of responsibilities to appropriate agencies are urgent steps that we must take. There is also the issue of transboundary issues related to plastic pollution. Bangladesh's marine pollution is significantly large as we are traversed by the three major river systems of Asia, namely the Ganges, the Brahmaputra, and the Meghna river systems. Since we are at the lower end and are the lower riparian of both China and India, the two major polluters of electronic industries, the country is facing transboundary river pollution including plastic waste pollution. Bangladesh bears much of the marine pollution emanating from these two countries. There is an urgent need to develop a tripartite understanding and agreement on how to reduce marine plastic and electronic pollution along with other types of pollution in the three key river systems and subsequent pollution in the Bay of Bengal.

It is evident that the demands of plastic products will rise in the country in the coming years. Therefore, abating plastic pollution will be one of the major challenges. This can be done through a vigorous regulatory regime, encouraging segregation of plastic waste among the users, and increasing the capacity of municipalities to collect the maximum possible quantity of solid waste compared to the real generation of solid waste. The awareness raising drive for segregating plastic waste by users should be increased at all levels including individual, family, community, and institutional levels of medical, electronic and plastic waste.

The government of Bangladesh should encourage the plastic industry and the sectoral actors for recycling, regeneration and reuse toward better pollution reduction. This would need technological and local innovation, positive engagement of actors, and investment in the sector. Plastic industry and recycling of plastic should be modernized and formalized in the country through the public-private partnership (PPP) approach. The government and all relevant actors including industry, private sector, traders, research, and the scientific community and collectors of plastic would need enhancement in technical and management capacity in this regard.

Coastal Renewable Energy

Opportunities

In Bangladesh, renewable energy only contributes 3% of energy to the national grid, but there has been a lot of expansion in the sector in the past 5 years, including the national target of reaching 10% energy source from renewable sources. Most of this is to come from wind and solar energy. Other sources such as tidal and geothermal is still very much at the R&D stage. Most of the coastal islands of Bangladesh are not connected to the national grid and many are being designated for renewable energy projects. For example, Monpura Island (designated as a green island), has approved Solar farm of 3 MW (currently on diesel). Wind turbines are suitable for other small islands. Cox Bazar has a 60 MW wind farm, Feni 30 MW, and Khulna 50 MW (larger ones will contribute to the national grid). They are being made by private Chinese and Indian companies. The government policy is to go green in the coastal areas. Offshore floating solar is being tested now. The technology is new and difficult to use, but with more research and development, it is possible. A lot of shipping ports are being made for economic development, which is restricting the room to construct this renewable electricity. There is a need to collect data on the areas where these plants are to be constructed and also need to identify space for offshore zoning. There is also a need for education and awareness amongst consumers on improving and incentivizing cleaner energy consumption patterns. Some of the opportunities for developing renewable energy in the coastal belt, both from the consumer and producer side include:

Consumer Incentives

- Develop incentive schemes to facilitate adoption of RE (e.g. solar) by commercial operations and households
- Introduce mandatory energy efficiency audit and retrofitting of public infrastructure
- Include energy efficiency as a condition to new infrastructure development proposals
- Encourage the use of hybrid vehicles
- Establish compulsory vehicle emissions standards for private and public transport as condition of license renewal

- Ensure all household and commercial premises are properly metered
- Conduct spot energy audit for compliance

Producer Incentives

- Technological Assessment/modelling economic feasibility of marine based renewables as component of RE (e.g. OTEC, offshore wave, wind, offshore solar farms)
- Selection of most cost-effective and efficient pathways/mix to meet RE policy targets
- Investigate investment options and cost effectiveness for sitting marine renewable energy plants and associated infrastructure (e.g. battery storage)
- Assess infrastructure storage, capacity needs and land for further solar energy production
- Blue Carbon -Assess the C storage potential of marine ecosystems (e.g. mangroves) and methodology to include in national C accounting and Bangladesh Nationally Determined Contribution under the Paris Agreement
- Develop international partnerships and seek investments to develop and adapt renewable energy technologies to the Bangladesh context.
- Map out the capacity needs (from construction to managing to maintaining facilities) to support the establishment of those sectors
- Capacity building and technical skills: Promote skills development, employment opportunities, and educational programmes for the type of professions, competencies, and skills required to create renewable energy expertise in the workforce.
- National accounts and GDP - Develop methodologies to assess the present and future contribution of those two sectors (wind and solar), and energy efficiency strategies to GDP (e.g. revenue, employment), and Bangladesh energy budget.
- Undertake annual energy budget audit, including contributions of energy sources per sector

Challenges

Currently in the coastal islands, there is no electricity due to geographical isolation except in the larger islands. Also, a lot of coal plants are being made at the moment. Coal will make 35% and renewable energy will make 10% - 15%. Currently, less than 3% is renewable energy. The government is thinking about switching away from coal which is slightly better for the environment. The goal is to produce 30% electricity from renewable energy. However, there is a knowledge gap amongst policy makers as to whether renewable energy can guarantee electricity reliably. For instance, 40 KW farms should be made for 10 KW solar to make it reliable. This poses an impediment for installing solar panels in the small islands since they do not have enough space for solar farms. Another challenge can be the high cost. The night-time is our peak time and thus, needs storage (battery) which is very costly.

C. Necessitates Blue Bond Financing

The demand for development financing is growing in Bangladesh. As mentioned above, implementation of the NDC target would require USD 172 billion by 2030. Execution of the Delta project would be likely to bill US $ 37.5 billion by 2030. SDGs costing and financing report has estimated additional spending requirement of $ 928 billion. It is clear that current mode of development financing with excessive reliance on bank financing may not be suitable for such long-term investment needs. Thus, Bangladesh must adapt its strategy to mobilise funds through developing fixed income securities or bonds. The above discussion on the growth of the sustainable bonds suggests that launching sustainable bonds – especially the green and blue bonds – should be a priority option. This echoes the finding of the Bangladesh Bank (2019) report on the necessity of bond financing.

"The fixed-income securities market plays a vital role in the economic development of a country. It presents long-term financing opportunities to the issuers by creating an alternative source of finance and provides a stable source of income to the investors. Although the stock market in Bangladesh is relatively well-established, the bond market is at an embryonic stage. Therefore, the majority of the debt financing need is fulfilled from the banking sources, which burdens the overall banking sector while presenting a major systemic risk. Therefore, the development of a well-functioning bond market would ensure financial stability by enhancing the ability of financial institutions to manage risks."

Given that the country does not have satisfactory experience in bond market development – more so with international bond financing- Bangladesh may test the water with the launching of a Blue Bond of USD $ 50 million. The pathways to launch the Bangladesh Blue Bond are discussed below.

C.1. Institutional Arrangement

Bangladesh Bank is the debt manager of Bangladesh government. Therefore, any blue bond issued by the government will be managed by Bangladesh Bank as the bond is simply a debt. GED may coordinate macroeconomic issues with Bangladesh Bank with regard to the issuance and management of blue bonds. Therefore, proper representation and coordination between two bodies are necessary. Since blue bond is a very niche and specialized sector, trained professionals from Bangladesh Bank, Ministry of Finance, and GED, Planning Commission may be deputed to the "Blue Economy Department" for the overall success of the proposed blue bond.

In this context, it may be relevant to note that the Republic of Seychelles created a Blue Economy department under the Ministry of Finance, Trade and the Blue Economy. The department is entrusted primarily with a coordination role to oversee the development of various sectors, institutions, and industries relevant to a Blue Economy. However, grants and loans are provided through the Blue Grants Fund and Blue Investment Fund, managed respectively by the Seychelles' Conservation and Climate Adaptation Trust (SeyCCAT) and the Development Bank of Seychelles (DBS).

Since it is expected that there will be burgeoning demand for funds for the blue projects over the next two decades, the blue economy department needs to be staffed with trained professional having a knowledge of effective and efficient operations of the blue bonds, including project selections/appraisals, disbursement, monitoring, verification, and reporting. Although the blue economy department will be responsible for selecting the projects, the proceeds from the Bangladesh Blue Bond maybe earmarked (at least in the initial years) for projects supporting the following components:

- Sustainable fisheries (including aquaculture and mariculture)
- Plastic pollution prevention
- Coastal tourism/eco-tourism
- Education and research (including data)
- Natural resource exploitation
- Sustainable Transport Infrastructure

C.2. Blue Bond Parameters

A number of parameters for the Blue Bond needs to be worked on. This includes the maturity period of the bond, coupon rate, instrument placing approach, etc.

• Maturity Period and Coupon Rate

The world has only two blue bonds to emulate for setting maturity period and coupon rate. The Seychelles Blue Bond has a maturity period of 10 years. It has a coupon rate of 6.5 per cent – although this declined to 2.8 per cent due to bulk purchase by World Bank and UN GEF. The Nordic Blue Bond has a maturity period of 5 years with a coupon rate of 3.75 per cent. Further dissection of the maturity period and coupon rates of a sample of 2,000 plus green bonds suggests that the average maturity period is around 8.75 years and the average coupon rate is 3.4 per cent, with an issuance yield of 3.27 per cent (Kapruan et al, 2019).

Table 6: Descriptive Statistics of Sample Green Bonds

	25%	50%	Mean	75%	95%	Sample (N)
Coupon rate (%)	1.38	3.25	3.40	5.00	8.00	2,069
Experienced	0.00	1.00	0.64	1.00	1.00	2,114
Green EX	0.00	0.00	0.21	0.00	1.00	2,114
Issue Price	99.86	100.00	100.40	100.00	111.03	1,828
Issue Yield	1.49	3.01	3.27	4.69	7.80	1,787
Maturity (Years)	4.00	5.01	8.75	10.01	29.82	2,100
Volumes ($ million)	11.02	65.55	234.22	302.07	890.04	2,111

Source: Kapraun et al (2019)

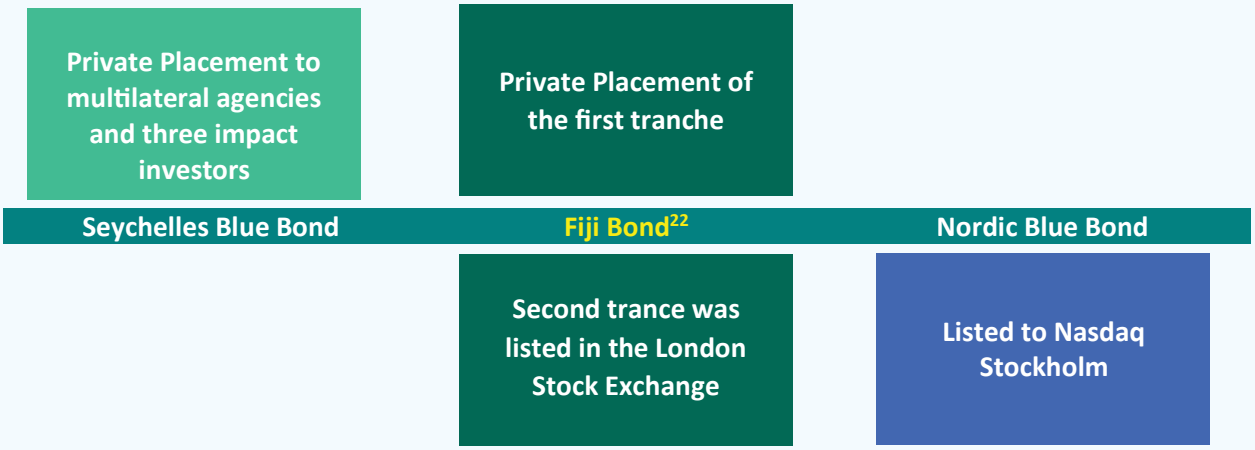
Following the above parameters, Bangladesh may set a maturity period of 9 to 10 years. The coupon rate to be paid each year may be set at 6 per cent (given Bangladesh's poor performance in the domestic bond market and not a high credit rating). However, if GoB is successful in forward selling of 50 per cent of more to some multilateral agencies such as the World Bank, ADB and UN GEF, then the effective coupon rate would decline to around 3 per cent. Such an approach was adopted in the case of the Seychelles Blue Bond.

NPVA of Interest Payment of 6 per cent coupon rate has been estimated at USD 21.6 million. The NPVA of Interest Payment declines to USD 13.6 million with placement of USD 30 million to the three multilateral agencies at 2 per cent rate. This implies a savings of around USD 8 million interest payment (Please see annex B for details on debt services and thresholds).

- **Instrument Placing Approach**

Three distinct approaches have been found to place the bond instruments: *(i) private placement to dedicated impact investors; (ii) enlistment in the sustainable stock exchanges; and (iii) a mixed approach combining (i) and (iii).*

Chart 7: Three Approaches to Instrument Placement



A safer approach for Bangladesh would be to follow the two tranches approach adopted by Fiji. The first tranche of USD 50 million may be placed privately to the multilateral agencies and impact blue or green investors. It may be desirable to place USD 30 million to the World Bank, ADB, and UN GEF at lower rates of around 1 to 2 per cent. The rest USD 20 million may be placed to some selected impact investors at a rate of 6 per cent. The impact investors may include BNP Paribas; Calvert Impact Capital; Nuveen; and U.S. Headquartered Prudential Financial, Inc.; and HSBC. Once the first tranche is handled satisfactorily, the other tranches may be listed in reputed stock exchanges such as London Stock Exchange, NY Stock Exchange, etc.

22 Fiji issued a sovereign green bond at the end of 2017, which was the first ever green bond issued by a developing country. The 100 million Fijian dollars (USD 50 million equivalent) green bond aimed at both climate mitigation and adaptation with some use of proceeds having a direct and indirect positive impact on the blue natural capital of Fiji. The first tranche was privately placed. The second dual-tranche green bond transaction included a Fijian dollars 20 million (USD10 million equivalent) tranche which will mature in 2022, and Fijian dollars 40 million (USD20 million equivalent) tranche to mature in 2030. The second tranche of the Fiji Green Bond has been listed in April 2018 on the London Stock Exchange.

6 CONCLUDING OBSERVATIONS AND WAY FORWARD

Key Observations

Blue economy is an emerging area for promoting and protection of the vast ocean resources for sustainable development. Many countries in the world have been investing time and resources to understand the most effective ways to promote and protect the ocean economy or the blue Economy. As such, sustainable development of the ocean economy is known as the Blue Economy. Projections by OECD and the World Bank suggest that it is possible to double the size of the blue economy in over 15 to 20 years. Among others, the pre-condition for doubling the blue economy is investments in different areas/projects defining the blue economy. Following the successful model for mobilizing funds for promoting the green economy through issuing green bonds, countries have launched blue bonds to develop the blue economy. Issuers and investors are referring to the launch of blue bonds as a new wave of bond financing.

When the 'Extended Economic Zone' is added to the 'Open Access Sea', the resource base of the BBE has been suggested to be larger than Bangladesh's land base. It has been argued that Bangladesh has the sovereign right to govern 118,813 sq. km of waters extending up to 12 nautical miles of territorial sea and a further Exclusive Economic Zone (EEZ) of 200 nautical miles into the sea. The size extends further if the Continental Shelf extending up to 354 nm from the Chittagong coast is considered. It is a vast area and opens up enormous commercial and economic interests together with environmental concerns. Studies conducted in Bangladesh suggest enormous potential and opportunities for the blue economy in Bangladesh. However, given the low tax-efforts, development financing relies on various fiscal, monetary, and financial instruments in Bangladesh. Still, the bond market – one of the most popular instruments for long- term financing – remains underdeveloped in Bangladesh. However, it appears that there is a realization among policy makers in Bangladesh that there is a need for a well-functioning bond market for mobilising funds for long-term development.

Against these backdrops, this exercise made an attempt to assess the current size of the blue economy in Bangladesh; estimate the future size of the blue economy based on global experiences, and examine the merits and demerits of issuing a blue bond for financing. To conclude, it may be possible to issue blue bond in Bangladesh if the stated pre-conditions are met.

Way Forward

- The Bangladesh Planning Commission may undertake a comprehensive study on the Bangladesh Blue Economy (BBE) encompassing the following: setting the BBE vision and goals; defining the scope of the BBE; better valuation of the BBE; firmer projections of the BBE (in conformity with PP 2041 time frame) and additional resource requirements; and exploring financing options including issuance of the Blue Bond. The proposed comprehensive study may include following important areas[23]:
  - A mapping of relevant stakeholders for identifying and defining their respective roles in promoting Blue Bond in Bangladesh
  - A thorough needs-based demand side assessment from the perspective of market landscape and existing capacity gaps of identified stakeholders may be conducted such that appropriate measures are in place
  - Since investment in blue economy is associated with climate risks as well as market vulnerability risks, a risk-sharing mechanism needs to be examined and developed for Bangladesh Blue Economy investment
- The scope and potential of the blue economy is not known to many local investors in Bangladesh. Thus, the Bangladesh Planning Commission/UNDP should conduct a survey on the future of the Bangladesh Blue Economy covering investors (mainly institutional investors), regulators, policy makers, environmentalists, and researchers. The survey findings will help determine the size of the Blue Bond, priority areas for investment, and coupon rates as well as barriers.
- Climate investors are a growing agent who want to invest in climate projects (such as in green, blue, and sustainability projects). They are looking for solid climate bonds – especially from emerging economies. However, many of them may not be fully aware of the potential of the Bangladesh Blue Economy. Thus, they need to be educated on BBE. GoB may ask for World Bank/ADB/UN GEF assistance in this regard. This exercise will help prepare international investors to invest in Bangladesh Blue Bond.
- GoB/UNDP may decide to undertake an education tour to either Indonesia or Seychelles to gather first-hand knowledge in the areas of defining the blue economy, assessing its potential, addressing barriers, and determining institutional arrangements for promoting BBE.
- The Bangladesh Planning Commission may decide to chalk out a roadmap for implementing the Blue Economy in Bangladesh on the basis of information gathered from the aforementioned activities.

23 These are based on Bangladesh Bank's suggestion.

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Annex

A. Estimated Cost of Projects

Potential Blue Economy Projects	Action Plan	Estimated Value for developing Blue Economy Sectors
Sustainable Fisheries (including mariculture and aquaculture)	1. Increase in Surveillance and monitoring vessels 2. Increase efficiency through skills and regulated fishing 3. Improved market integration of artisanal Fisheries who constitutes 80% of fisheries 4. R&D for high value mariculture products e.g. oysters, mussels, seaweed	10 million
Reduction of Plastic Pollution in Marine Ecosystems	1. Waste segregation and solid waste management on land 2. Circular Economy Initiatives (to reuse and reduce plastic) 3. Increase Plastic Recycling Industries across the country	10 million
Coastal Renewable Energy	1. Increase in wind and solar power 2. Capacity Building and skills development on renewable energy 3. E-waste Disposal facilities 4. R&D on other sources of RE (e.g. tidal, geothermal)	20 million
Coastal Ecotourism	1. Infrastructure facilities in Shatkhira, Potuakhali, Nijhum Dwip, Teknaf and St Martins 2. Training of eco-operators, tour companies, local communities who will be involved in community tourism (e.g. home stay), cruise liner 3. Study on Willing-to-pay to assess income generation from tourism	10 million

B. Bangladesh's Debt sustainability with the Blue Bond

Table 7: Bangladesh: Debt Dynamics, FY20-30
(Debt Maturity 10 Years & Debt Repayment by Single Year (Bullet Payment)

Scenario-1: 50 Million Sovereign Bond	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Yearly Interest Payment (in million, USD)	0.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Debt service (in million, USD)	0.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	50.0
Estimated yield rate (%)	0.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	0.0
PVA of Interest Payment (in million USD)	0.0		2.8	2.7	2.5	2.4	2.2	2.1	2.0	1.9	0.0
NPVA of Interest Payment (in million USD)	**21.63**										
Debt Sustainability Indicators:											
2041 Debt to GDP ratio	35.600		38.307	39.171	39.460	39.713	39.939	40.126	40.278	40.399	40.493
Scenario 1 Debt to GDP ratio	35.600		38.320	39.183	39.471	39.723	39.948	40.134	40.285	40.406	40.493
2041External Debt Service as a percentage of Export and Remittance)	3.584		3.654	3.876	4.430	4.606	5.400	5.540	5.686	5.837	5.992
Scenario 1 External Debt Service as a percentage of Export and Remittance)	3.584		3.659	3.880	4.434	4.609	5.403	5.543	5.688	5.839	6.031
Option-2: 20 Million Forward Sale/1 & 30 Million Loan/2	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**FY28**	**FY29**	**FY30**
Yearly Interest Payment (in million, USD)	0		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0
Debt service (in million, USD)	0		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	50
Estimated yield rate (%)	0		0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0
PVA of Interest Payment (in million USD)	0		1.7203	1.6447	1.57294	1.50482	1.4401	1.3787	1.3204	1.265	0
NPVA of Interest Payment (in million USD)	**13.65**										
Debt Sustainability Indicators:											
2041 Debt to GDP ratio	35.600		38.307	39.171	39.460	39.713	39.939	40.126	40.278	40.399	40.493
Scenario 2 Debt to GDP ratio	35.600		38.325	39.187	39.473	39.724	39.948	40.133	40.284	40.404	40.493
2041 External Debt Service as a percentage of Export and Remittance)	3.584		3.654	3.876	4.430	4.606	5.400	5.540	5.686	5.837	5.992
Scenario 2 External Debt Service as a percentage of Export and Remittance)	3.584		3.657	3.878	4.432	4.608	5.402	5.542	5.687	5.838	6.031

Notes:/1 and /2 indicate 2 percent and 6 percent coupon rate respectively

Table 8: Bangladesh: Debt Dynamics, FY20-30 (Yearly Debt Repayment)
(Debt Maturity 10 Years & Debt Repayment by Yearly)

Scenario-1: 50 Million Sovereign Bond	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Yearly Interest Payment (in million, USD)	0	2.70	2.40	2.10	1.80	1.50	1.20	0.90	0.60	0.30	0.00
Debt service (in million, USD)	0	7.70	7.40	7.10	6.80	6.50	6.20	5.90	5.60	5.30	5.00
Estimated yield rate (%)	0	5.40	4.80	4.20	3.60	3.00	2.40	1.80	1.20	0.60	0.00
PVA of Interest Payment (in million USD)	0	2.70	2.26	1.87	1.51	1.19	0.90	0.63	0.40	0.19	0.00
NPVA of Interest Payment (in million USD)	11.65										
Debt Sustainability Indicators:											
2041-Debt to GDP ratio (%)	35.600	37.100	38.307	39.171	39.460	39.713	39.939	40.126	40.278	40.399	40.493
Scenario-1: Debt to GDP ratio (%)	35.600	37.113	38.317	39.180	39.467	39.718	39.943	40.129	40.279	40.400	40.493
2041-External Debt Service as a percentage of Export and Remittance)	3.58	3.56	3.65	3.88	4.43	4.61	5.40	5.54	5.69	5.84	5.99
Scenario-1: External Debt Service as a percentage of Export and Remittance)	3.58	3.57	3.67	3.89	4.44	4.61	5.41	5.55	5.69	5.84	6.00
Option-2: 20 Million Forward Sale/1 & 30 Million Loan/2	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**FY28**	**FY29**	**FY30**
Yearly Interest Payment (in million, USD)	0.00	1.62	1.44	1.26	1.08	0.90	0.72	0.54	0.36	0.18	0.00
Debt service (in million, USD)	0.00	6.62	6.44	6.26	6.08	5.90	5.72	5.54	5.36	5.18	5.00
Estimated yield rate (%)	0.00	3.24	2.88	2.52	2.16	1.80	1.44	1.08	0.72	0.36	0.00
PVA of Interest Payment (in million USD)	0.00	4.62	4.32	4.03	3.77	3.52	3.29	3.08	2.88	2.69	2.51
NPVA of Interest Payment (in million USD)	7.22										
Debt Sustainability Indicators:											
2041 Debt to GDP ratio	35.600	37.100	38.307	39.171	39.460	39.713	39.939	40.126	40.278	40.399	40.493
Scenario 2 Debt to GDP ratio	35.600	37.121	38.323	39.184	39.470	39.721	39.945	40.130	40.280	40.400	40.493
2041 External Debt Service as a percentage of Export and Remittance)	3.584	3.561	3.654	3.876	4.430	4.606	5.400	5.540	5.686	5.837	5.992

Notes:/1 and /2 indicate 2 percent and 6 percent coupon rate respectively

List of Notable Publications by General Economics Division (GED), Bangladesh Planning Commission since 2009

1.	Policy Study on Financing Growth and Poverty Reduction: Policy Challenges and Options in Bangladesh (May 2009).
2.	Policy Study on Responding to the Millennium Development Challenge Through Private Sectors Involvement in Bangladesh (May 2009).
3.	Policy Study on The Probable Impacts of Climate Change on Poverty and Economic Growth and the Options of Coping with Adverse Effect of Climate Change in Bangladesh (May 2009).
4.	Steps Towards Change: National Strategy for Accelerated Poverty Reduction II (Revised) FY 2009-11 (December 2009).
5.	Millennium Development Goals: Bangladesh Progress Report 2009 (2009).
6.	Millennium Development Goals: Needs Assessment and Costing 2009-2015 Bangladesh (July 2009).
7.	এমডিজি কর্ম-পরিকল্পনা (৫১টি উপজেলা) (জানুয়ারি-জুন ২০১০)
8.	MDG Action Plan (51 Upazillas) (January 2011).
9.	MDG Financing Strategy for Bangladesh (April 2011).
10.	SAARC Development Goals: Bangladesh Progress Report 2011 (August 2011).
11.	6th Five Year Plan (FY 2011-FY 2015) (December 2011).
12.	Background Papers of the Sixth Five Year Plan (Volume 1-4) (September 2011).
13.	Sixth Five year Plan of Bangladesh: Technical Framework Papers Volume-1 Input Output Structure of the Bangladesh Economy 2006-07
14.	14. Sixth Five year Plan of Bangladesh 2011-2015: Technical Framework Papers Volume-2, Model Structures, Simulation Result & Related Studies, September-2011
15.	Millennium Development Goals: Bangladesh Progress Report-2011 (February 2012).
16.	Perspective Plan of Bangladesh 2010-2021: Making Vision 2021 a Reality (April 2012).
17.	Public Expenditure for Climate Change: Bangladesh Climate Public Expenditure and Institutional Review (October 2012).
18.	Development of Results Framework for Private Sectors Development in Bangladesh (2012).
19.	ষষ্ঠ পঞ্চবার্ষিক পরিকল্পনা (২০১০-১৫) বাংলা অনুবাদ (অক্টোবর ২০১২)
20.	Climate Fiscal Framework (October 2012).
21.	Public Expenditure for Climate Change: Bangladesh CPEIR 2012.
22.	First Implementation Review of the Sixth Five year Plan -2012 (January 2013).
23.	বাংলাদেশের প্রথম প্রেক্ষিত পরিকল্পনা ২০১০-২০২১ রূপকল্প ২০২১ বাস্তবে রূপায়ণ (ফেব্রুয়ারি ২০১৩)
24.	National Sustainable Development Strategy (2010-2021) (May 2013).
25.	জাতীয় টেকসই উন্নয়ন কৌশলপত্র(২০১০-২০২১) (মূল ইংরেজি থেকে বাংলায় অনূদিত) (মে ২০১৩)
26.	Millennium Development Goals: Bangladesh Progress Report-2012 (June 2013).
27.	Post 2015 Development Agenda: Bangladesh Proposal to UN (June 2013).
28.	National Policy Dialogue on Population Dynamics, Demographic Dividend, Ageing Population & Capacity Building of GED (UNFPA Supported GED Project Output1] (December 2013).
29.	Capacity Building Strategy for Climate Mainstreaming: A Strategy for Public Sector Planning Professionals (2013).

30.	Revealing Changes: An Impact Assessment of Training on Poverty-Environment Climate-Disaster Nexus (January 2014).
31.	Towards Resilient Development: Scope for Mainstreaming Poverty, Environment, Climate Change and Disaster in Development Projects (January 2014).
32.	An Indicator Framework for Inclusive and Resilient Development (January 2014).
33.	Manual of Instructions for Preparation of Development Project Proposal/ Performa Part-1 Part 2 March 2014
34.	SAARC Development Goals: Bangladesh Progress Report 2013 (June 2014).
35.	The Mid Term-Implementation Review of the Sixth Five Year Plan 2014 (July 2014).
36.	Millennium Development Goals: Bangladesh Progress Report 2013 (August 2014).
37.	Population Management Issues: Monograph-2 (March 2015).
38.	GED Policy Papers and Manuals (Volume 1-4) (June 2015).
39.	National Social Security Strategy (NSSS) of Bangladesh (July 2015).
40.	MDGs to Sustainable Development Transforming our World: SDG Agenda for Global Action (2015-2030) A Brief for Bangladesh Delegation UNGA 70th Session, 2015 (September 2015)
41.	7th Five Year Plan (2015/16-2019/20) (December 2015).
42.	সপ্তম পঞ্চবার্ষিক পরিকল্পনা ২০১৫/১৬-২০১৯/২০ (ইংরেজি থেকে বাংলা অনূদিত) (অক্টোবর ২০১৬)
43.	জাতীয় সামাজিক নিরাপত্তা কৌশলপত্র (অক্টোবর ২০১৬)
44.	Population Management Issues: Monograph-3 (March 2016).
45.	Bangladesh ICPD 1994-2014 Country Report (March 2016)
46.	Policy Coherence: Mainstreaming SDGs into National Plan and Implementation (Prepared for Bangladesh Delegation to 71st UNGA session, 2016) (September 2016).
47.	Millennium Development Goals: End-period Stocktaking and Final Evaluation Report (2000-2015) (September 2016).
48.	A Handbook on Mapping of Ministries by Targets in the implementation of SDGs aligning with 7th Five Year Plan (2016-20) (September 2016).
49.	Data Gap Analysis for Sustainable Development Goals (SDGs): Bangladesh Perspective (January 2017).
50.	Environment and Climate Change Policy Gap Analysis in Haor Areas (February 2017).
51.	Integration of Sustainable Development Goals into the 7th Five Year Plan (February 2017).
52.	Banking ATLAS (February 2017).
53.	টেকসই উন্নয়ন অভীষ্ট, লক্ষ্যমাত্রা ও সূচকসমূহ (মূল ইংরেজি থেকে বাংলায় অনূদিত) (এপ্রিল ২০১৭)
54.	EXPLORING THE EVIDENCE: Background Research Papers for Preparing the National Social Security Strategy of Bangladesh (June 2017).
55.	Bangladesh Voluntary National Review (VNR) 2017: Eradicating poverty and promoting prosperity in a changing world, (June 2017).
56.	SDGs Financing Strategy: Bangladesh Perspective (June 2017).
57.	A Training Handbook on Implementation of the 7th Five Year Plan (June 2017).
58.	7th Five Year Plan (FY 2015/16-FY 2019/20): Background Papers Volume 01: Macro Economic Management & Poverty Issues (June 2017).
59.	7th Five Year Plan (FY 2015/16-FY 2019/20): Background Papers Volume 02: Socio-Economic Issues (June 2017).
60.	7th Five Year Plan (FY 2015/16-FY 2019/20): Background Papers Volume 03: Infrastructure, Manufacturing & Service Sector (June 2017).

61.	7th Five Year Plan (FY 2015/16-FY 2019/20): Background Papers Volume 04: Agriculture, Water & Climate Change (June 2017).
62.	7th Five Year Plan (FY 2015/16-FY 2019/20): Background Papers Volume 05: Governance, Gender & Urban Development (June 2017).
63.	Education Sector Strategy and Actions for Implementation of the 7th Five Year Plan (FY2016-20).
64.	GED Policy Study: Effective Use of Human Resources for Inclusive Economic Growth and Income Distribution-An Application of National Transfer Accounts (February 2018).
65.	Monitoring and Evaluation Framework of Sustainable Development Goals (SDGs): Bangladesh Perspective (March 2018).
66.	National Action Plan of Ministries/Divisions by Targets for the implementation of Sustainable Development Goals (June 2018).
67.	Bangladesh Delta Plan 2100 (Bangladesh in the 21st Century) Volume 1: Strategy (October 2018).
68.	Bangladesh Delta Plan 2100 (Bangladesh in the 21st Century) Volume 2: Investment Plan (October 2018).
69.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 1: Water Resources Management (June 2018).
70.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 2: Disaster and Environmental Management (June 2018)
71.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 3: Land use and Infrastructure Development (June 2018).
72.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 4: Agriculture, Food Security and Nutrition (June 2018).
73.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 5: Socio-economic Aspects of the Bangladesh (June 2018).
74.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 6: Governance and Institutional Development(June 2018).
75.	Journey with SDGs, Bangladesh is Marching Forward (Prepared for 73rd UNGA Session 2018) (September 2018)
76.	এসডিজি অভিযাত্রা: এগিয়ে যাচ্ছে বাংলাদেশ (জাতিসংঘ সাধারণ পরিষদের ৭৩ তম অধিবেশনের জন্য প্রণীত) (সেপ্টেম্বর ২০১৮)
77.	বাংলাদেশ ব-দ্বীপ পরিকল্পনা ২১০০: একুশ শতকের বাংলাদেশ (সংক্ষিপ্ত বাংলা সংস্করণ) (অক্টোবর ২০১৮)
78.	Bangladesh Delta Plan 2100: Bangladesh in the 21st Century (Abridged Version) (October 2018).
79.	Synthesis Report on First National Conference on SDGs Implementation (November 2018).
80.	Sustainable Development Goals: Bangladesh First Progress Report 2018 (December 2018).
81.	টেকসই উন্নয়ন অভীষ্টঃ বাংলাদেশ অগ্রগতি প্রতিবেদন ২০১৮ (ইংরেজি থেকে অনুদিত) (এপ্রিল ২০১৯)
82.	Study on Employment, Productivity and Sectoral Investment in Bangladesh (May 2019).
83.	Implementation Review of the Sixth Five Year Plan (FY 2011-FY 2015) and its Attainments (May 2019).
84.	Mid-term Implementation Review of the Seventh Five Year Plan (FY 2016-FY 2020) May 2019.
85.	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-1 June 2019.
86.	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-2 June 2019

87.	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-3 October 2019
88.	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-4 October 2019
89.	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-5 October 2019
90.	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-6 October 2019
91.	Empowering people: ensuring inclusiveness and equality For Bangladesh Delegation to HIGH-LEVEL POLITICAL FORUM 2019 (July, 2019)
92.	Implementation Review of the perspective plan 2010-2021 (September 2019).
93.	Bangladesh Moving Ahead with SDGs (Prepared for Bangladesh Delegation to 74th UNGA session 2019) (September 2019).
94.	টেকসই উন্নয়ন অভীষ্ট অর্জনে এগিয়ে যাচ্ছে বাংলাদেশ (জাতিসংঘ সাধারণ পরিষদের ৭৪ তম অধিবেশনে বাংলাদেশ প্রতিনিধিগণের জন্য প্রণীত) সেপ্টেম্বর ২০১৯)
95.	Prospects and Opportunities of International Cooperation in Attaining SDG Targets in Bangladesh (Global Partnership in Attainment of the SDGs) (September 2019).
96.	Monograph 4: Population Management Issues (December 2019).
97.	Monograph 5: Population Management Issues (December 2019).
98.	Consultation on Private Sector Engagement (PSE) in attaining Sustainable Development Goals (SDGs) in Bangladesh: Bonding & Beyond. Proceedings (January 2020).
99.	Impact Assessment and Coping up Strategies of Graduation from LDC Status for Bangladesh (March 2020).
100.	Perspective Plan of Bangladesh 2021-2041 (March 2020).
101.	বাংলাদেশের প্রেক্ষিত পরিকল্পনা ২০২১-২০১৪ (মার্চ ২০২০)
102.	Revised Monitoring and Evaluation Framework of the Sustainable Development Goals (SDGs): Bangladesh Perspective (April 2020)
103.	Sustainable Development Goals: Bangladesh Progress Report 2020 (April 2020).
104.	টেকসই উন্নয়ন অভীষ্ট : বাংলাদেশ অগ্রগতি প্রতিবেদন ২০২০ (ইংরেজি থেকে বাংলায় অনূদিত) (এপ্রিল ২০২০)
105.	Bangladesh Voluntary National Review 2020 (June 2020).
106.	বাংলাদেশ ব-দ্বীপ পরিকল্পনা ২১০০: একুশ শতকের বাংলাদেশ (সংক্ষিপ্ত বাংলা ২য় সংস্করণ (আগস্ট ২০২০)
107.	Leaving No One Behind (LNOB) in Bangladesh; Recommendations for the 8th Five Year Plan for implementing Sustainable Development Goals (SDGs) (September 2020).
108.	A Compendium of Social Protection Researches, July 2020
109.	Midterm Implementation Review of the National Social Security Strategy, July 2020
110.	Scope of Gender-responsive Adaptive Social Protection in Bangladesh, July 2020
111.	Sector Strategy on Economic Governance in the Financial Sector in Bangladesh, December 2020
112.	8th Five Year Plan (July 2020-June 2025), December 2020
113.	অষ্টম পঞ্চবার্ষিক পরিকল্পনা (জুলাই ২০২০-জুন ২০২৫) বাংলা সংস্করণ জুন-২০২১
114.	Promoting Sustainable Blue Economy in Bangladesh Through Sustainable Blue Bond: Assessing the Feasibility of Instituting Blue Bond in Bangladesh (June-2021)

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