

## Bangladesh Delta Plan 2100

Bangladesh's marine fisheries  
for Blue Economy

A tale of containerisation

Delegation satisfied over Chattogram  
port's ISPS Code implementation

Bangladesh to clock highest growth in Asia this year

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## Editorial

### Bangladesh Delta Plan 2100

A full proof plan for a prosperous Bangladesh

Bangladesh is ranked as the 5<sup>th</sup> most vulnerable country in the world in terms of risks from natural disasters. Flooding, tidal surge, salinity, erosion and cyclones are regular features of Bangladesh and pose a continuous challenge to food security. Therefore, our government has come up with the Delta plan that will be implemented for sustainable and secured development of Bangladesh till 2100. Bangladesh Delta Plan 2100, or BDP 2100 is aimed at water resources management, tackling disasters, and ensuring food and water security of Bangladesh. The ECNEC (Executive Committee of the National Economic Council) headed by the Hon'ble Prime Minister Sheikh Hasina approved the plan on 4 September 2018. According to the former Planning Minister AHM Mustafa Kamal, Bangladesh will need USD 37 billion to implement the sort-term plan by 2030. The mid-term plan will be implemented by 2050 and the long-term plan by 2100. Realising its importance, our lead article of this issue discusses the BDP 2100 in detail.

Fish and rice make us Bengalis. Numerous rivers and the Bay of Bengal have been fulfilling our eternal protein demand with their fish resources. Besides, the fisheries sector is also making a significant contribution to our national economy. The fisheries sector is Bangladesh's second export earnings sector. However, the marine fisheries sector is lagging behind in comparison to inland fisheries sector. Opportunity for the development of fisheries resources in our extended sea area has increased manifold. Now, we need quality human resources, technology and technical know-how. Considering the importance of our marine fisheries sector, we have incorporated an article on fish resources of the Bay of Bengal for our readers.

Container ships are now the largest and successful commercial seaborne vessels. About 90 per cent of non-bulk cargo worldwide is transported by container ships. To get acquainted more with container ships, we have included an article in this issue that briefly describes the evolution of containerisation.

In addition to these, the 'Newsbytes' section will inform you of all the important maritime events and developments which have taken place during the third quarter of this year.

It will be highly appreciated and we would be truly obliged if you leave your invaluable feedback and suggest new ideas for further improvement of this maritime magazine. Thank you for being with us all the while, and keep staying with us.

Thanking you

Zafar Alam

Editor

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Since long term challenges are present because of climate change in Bengal delta, the BDP 2100 will help to mitigate the challenges and integrate the short to medium term aspirations of Bangladesh to achieve Upper Middle Income Country (UMIC) status eliminating extreme poverty by 2031 with sustainable management of water, ecology, environment and land resources.



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# Bangladesh Delta Plan 2100 to ensure sustainable development of Bangladesh

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## Horizon

**Bangladesh's marine fisheries resources: a potential sector to develop Blue Economy**



The total fish production in Bangladesh was 42.77 lac metric tons against the target of 42.20 lac metric tons in the financial year 2017-18. Out of which, 56 per cent is harvested from inland close water, 28 per cent from inland open water and 16 per cent from the sea. The industrial harvesting of marine fisheries was 1.20 lac metric tons and 5.35 lac metric tons were harvested by the artisanal system.

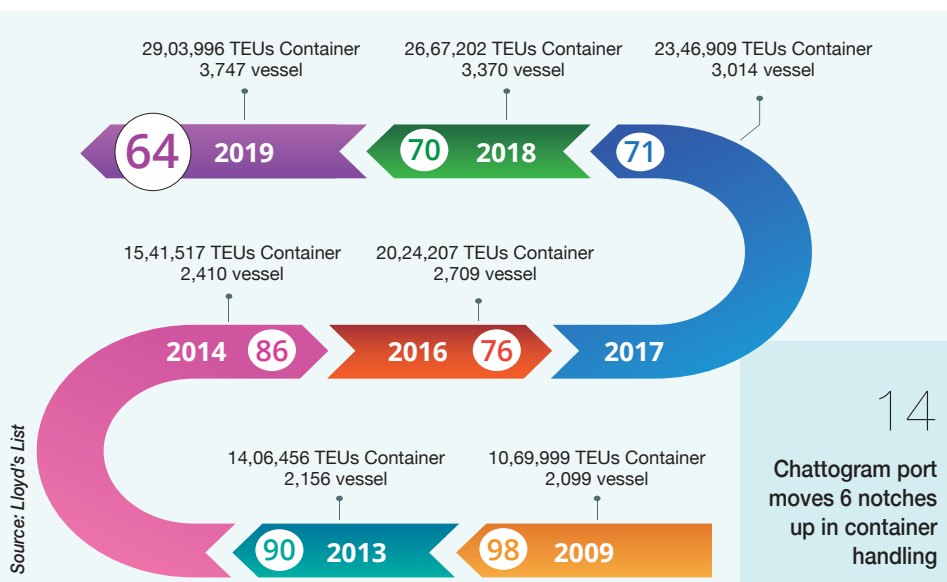
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## Panorama

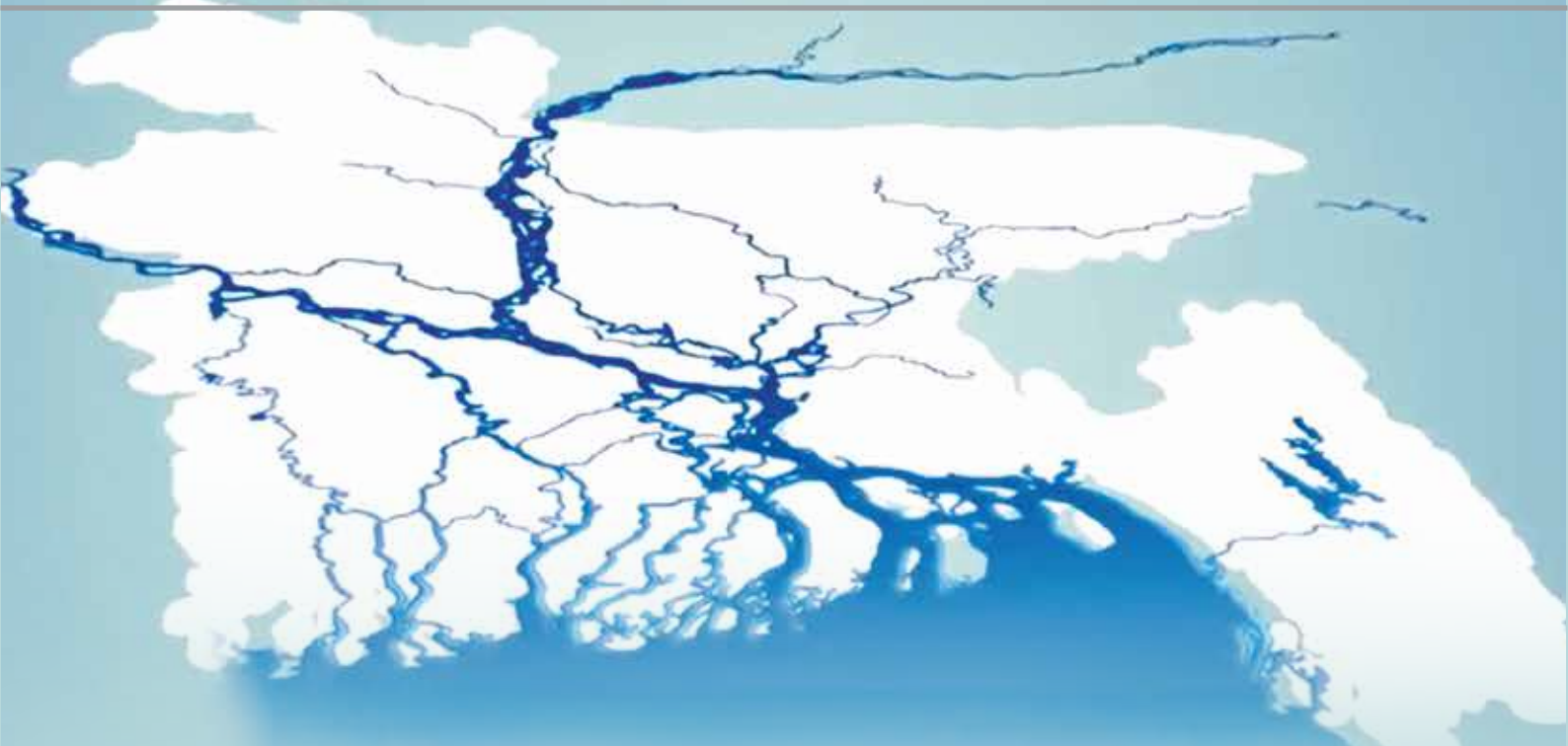
**A tale of containerisation**



Intermodal containers have been primarily used to store and transport materials and products efficiently and securely around the globe. These containers are known by different names; container, freight container, ISO container, shipping or sea container or container van or box, sea can etc.







# Bangladesh Delta Plan 2100

## to ensure sustainable development of Bangladesh

Rajeev Ahmed

*“Our goals are to ensure safety from floods and climate change related disasters, water security and efficiency of water usage, sustainable and integrated river systems and estuary management, conserve and preserve wetlands, develop effective institutions and equitable governance for in-country and trans-boundary management, and achieve optimal use of land and water resources. If we fail to properly implement the delta plan, it will be impossible to sustain development.”*

- Prof Dr Shamsul Alam  
Senior Secretary of Ministry of Planning

Bangladesh has been enjoying tremendous gains in development for the last 48 years. GDP growth has climbed from less than 4 per cent in the early 1970s to around 8 per cent in 2018; per capita income has surged from less than USD100 in 1972 to USD 1,751 in FY2018; poverty has fallen from more than 83 per cent in the early 1970s to 21.8 per cent in 2018; fertility rate has decelerated from 7.3 in 1974 to 2.1 in 2018; life expectancy has increased from 55 years in 1974 to 72.49 years in 2018; child mortality has declined from 240 per thousand in 1974 to 31 in 2018; and adult literacy has increased from 22 per cent to 72.3 per cent over the same period. In 2015, Bangladesh crossed over from a World Bank classified low-income economy to a lower-middle-income economy. These indicators of an exceptionally strong development record have inspired the country to aim even higher. The country now aspires to reach the Upper Middle Income Country (UMIC) status by 2030. Due to many sound development policies and by taking advantage of the abundant labour supply, very fertile land and plenty of water and monsoon rains, the country is moving forward with a miraculous pace. With a large and growing population base the Bangladesh Delta, the largest delta of the world, presents many advantages that the people and policymakers should convert into opportunities to secure the development.

But there are vital challenges to overcome for Bangladesh Delta. Because of the deltaic formation, crisscrossed rivers and climate change, Bangladesh is ranked as the 5th most vulnerable country in the world in terms of risks from natural disasters. Flooding, tidal surge, salinity, erosion and cyclones are regular features of Bangladesh and pose a continuous

challenge to food security. Therefore, the Government of Bangladesh has come up with the Delta plan that will be implemented for sustainable and secured development of Bangladesh till 2100. The Bangladesh Delta Plan 2100, or BDP 2100 is aimed at water resources management, tackling disasters, and ensuring food and water security of Bangladesh. The ECNEC (Executive Committee of the National Economic Council) headed by the Hon'ble Prime Minister Sheikh Hasina approved the plan on 4 September 2018. According to the former Planning Minister AHM Mustafa Kamal, Bangladesh will need USD 37 billion to implement the sort-term plan by 2030. The mid-term plan will be implemented by 2050 and the long-term plan by 2100. Prime Minister Sheikh Hasina had earlier directed the authorities concerned to frame such plan according to Netherland's Delta experience to tap the maximum potentials of Bangladesh as a deltaic region. The formulation of the plan was led by the General Economics Division of the Ministry of Planning, and is supported by the Embassy of the Kingdom of the Netherlands. Technical assistance was provided through the BanDuDeltAS consortium, bringing together cross-sectorial expertise from the Netherlands and Bangladesh.

## Initiatives and plans for the water sector

Since 1960, a lot of initiatives and plans for water sector and agricultural development have been prepared and adopted in Bangladesh. IECO Master plan (1964) for water resources sector, National Water Plan-I (1986) followed by National Water Plan-II (1991), The Flood Action Plan (FAP) after the devastating flood in 1987 and 1988, etc. have been adopted in the country. The FAP helped to form Bangladesh Water and Flood Management Strategy (1995), and the National Water Policy (NWPo, 1999), National Water Management Plan (NWMP, 2004) were formulated in line with the FAP. The NWMP is meant as an operationalisation of the NWPo. It is a comprehensive water resources plan in which 13 ministries and more than 30 agencies are involved.

Other ministries and departments of the government also have their own plans and strategies to implement.

Bangladesh is a signatory of the historic Paris Climate Agreement and Bangladesh participates in greater international efforts in support of the comprehensive implementation of the Paris deal. Bangladesh has also taken various proactive initiatives, with its own resources and international cooperation, to adapt to climate change such as,

1. The Ministry of Environment and Forest (MoEF) formulated the National Adaptation Programme of Action (2005) and the Bangladesh Climate Change Strategy and Action Plan (2009) to address adverse impacts of climate change including variability and extreme events and to promote sustainable development of the country.
2. The Master Plan for Haor areas was prepared for Haor areas located in the North-Eastern region of the country by Directorate of Bangladesh Haor and Wetland Development (DBHWD) in 2010.
3. The Master Plan for Agricultural Development in the Southern region of Bangladesh was prepared by the Ministry of Agriculture (MoA) and FAO in 2013.
4. The National Plan for Disaster Management (2008) was prepared by the Ministry of Disaster Management & Relief (MoDM&R) to reduce the risk of people, especially the poor and disadvantaged, from the effects of natural, environmental and human-induced hazards.
5. Most recently, the Local Government Engineering Department (LGED) has prepared the District Development Plan and Upazila

*Prime Minister Sheikh Hasina had earlier directed the authorities concerned to frame such plan according to Netherland's Delta experience to tap the maximum potentials of Bangladesh as a deltaic region. The formulation of the plan was led by the General Economics Division of the Ministry of Planning, and is supported by the Embassy of the Kingdom of the Netherlands.*

Development Plan.

6. The Ministry of Local Government, Rural Development and Cooperatives (LGRD&C) has prepared the National Policy for Safe Water Supply and Sanitation (1998) for providing safe drinking water and sanitation.

Furthermore, national-level strategic plans such as the Five Year Plans and Perspective Plan have been formulated by the General Economics Division (GED) of the Planning Commission. More recently, the 17 Sustainable Development Goals with 169 targets, is a new global agenda and Bangladesh is highly committed to meeting these goals. However, the challenge lies in integrating these sectorial, national and global targets and plans into long term coherent strategies taking climate change and future demands into account, as well as effective implementation of the needed interventions in a well-coordinated manner.

## Why do we need the BDP 2100?

Typically, the sectorial plans tend to be short-term oriented and independently pursued by the formulating ministries or departments. Whereas goals and targets are at the national level and climate change and natural disaster risk present major downside risks and uncertainties that require long term strategies and multi-sectorial coordinated policy management under uncertainty.

Due to the large uncertainties with respect to climate change and

On 4 September 2018, the National Economic Council (NEC) approved Bangladesh Delta Plan 2100 with NEC Chairperson and the Hon'ble Prime Minister Sheikh Hasina in the chair





socio-economic development, planning is being enriched with adaptive strategy making in several deltas in the world. Rather than providing linear recipes, robust and flexible strategies and measures have been taken, with strong institutions and a good knowledge base that allows policymakers and stakeholders to anticipate and decide on the most appropriate investments. Learning from these international experiences, BDP 2100 has been similarly developed in light of the many possible future paths and is designed to be changed over time as new information becomes available or policy priorities change. So instead of only focusing on short-term 'trial and error' actions and projects, the idea is to keep the long-term vision in mind while prioritising short-term 'no regret' actions.

## Delta opportunities and challenges of Bangladesh

Delta opportunities are many. The soil and water combination makes

*The open access to the sea is a huge advantage to Bangladesh. In addition to the port facilities that could serve the needs of the growing internal trade and commerce needs of Bangladesh.*

Bangladeshi land highly fertile with multiple cropping opportunities. The plentiful of rivers, fresh wetlands, and lakes provide ample scope for fisheries resources. More recently, Bangladesh has been increasingly exploiting the open access to the sea.

These rivers in Bangladesh provide another huge comparative advantage. Almost all districts of Bangladesh are connected with each other and with the growth centres of Dhaka, Chattogram and Khulna through riverways. More focus on river transport can provide a major opportunity to lower the cost of production, reduce environmental degradation, conserve budgetary resources and add to employment prospects for the poor.

The open access to the sea is a huge advantage to Bangladesh. In addition to the port facilities that could serve the needs of the growing internal trade and commerce needs of Bangladesh. With proper investments, Bangladesh can become a regional hub for sea transportation. In addition to ports, the prospects for converting the open

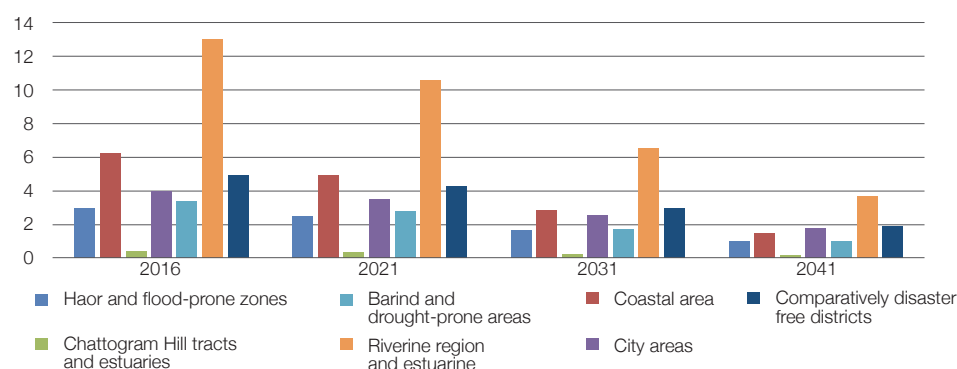
access to the sea to a major source of growth and development are also being viewed from the point of developing the Blue Economy of Bangladesh. Marine fishing is already emerging as one of the major sources of domestic food, exports, income and employment.

There is also an emerging demand for coastal tourism and alternative areas to the traditional Cox's Bazar coastal resorts are emerging. An example is the Kuakata coastal tourism in the Payra sub-division of Patuakhali. The exploitation of the Blue Economy opportunities is just emerging and the potential is huge. Other potential areas are the exploration of petroleum and other marine resources, beach mineral sand, renewable energy by wave, land reclamation by sediment management, etc.

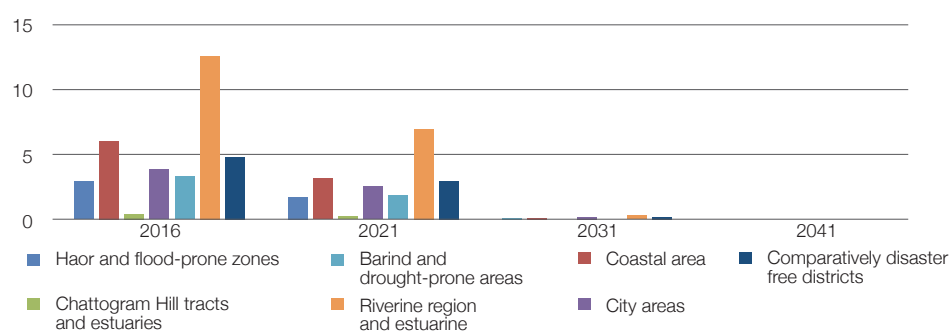
However, there are certain things to ponder. Although small in size, there are wide geological variations in different regions of the country. If one area is a hurricane-prone area, another area is drought-prone. Somewhere, the river erosion is devouring village after village. On the other hand, north-eastern Haor and adjoining areas of the country are always at risk of sudden flood. During the hot summer days, temperatures sometimes rise up to 40 degrees Celsius in the drought-prone areas of the country. The coastal areas of the country are at risk of cyclone. One severe cyclone is formed in every three years in the Bay of Bengal, most of which have destination to either Bangladesh or Myanmar. This cycle of cyclones will be intensified by the year 2050. The 43 per cent area under the risk of cyclone will be directly affected, which is 17 per cent higher than the current rate. Scientists say that as part of global warming, temperatures are likely to rise from 1.4 to 1.9 degrees celsius in the next 30 years.

Since 70 per cent area of the country is within the one-metre height of sea level, the chances of flood will increase due to sea-level rise or variations in rainfall. When sea level will rise, there will naturally be severe pure drinking water shortages in coastal areas or inside the country. By the year 2050, salinity may increase one per cent of PPT (Parts Per Thousand) in 17.5 per cent of areas and there will be an increase of 5 PPT in 24 per cent areas of the

The graphical presentation of low-income people in the hotspot area who are included in Bangladesh Delta Plan 2100



The graphical presentation of poorest people in the hotspot area who are included in Bangladesh Delta Plan 2100

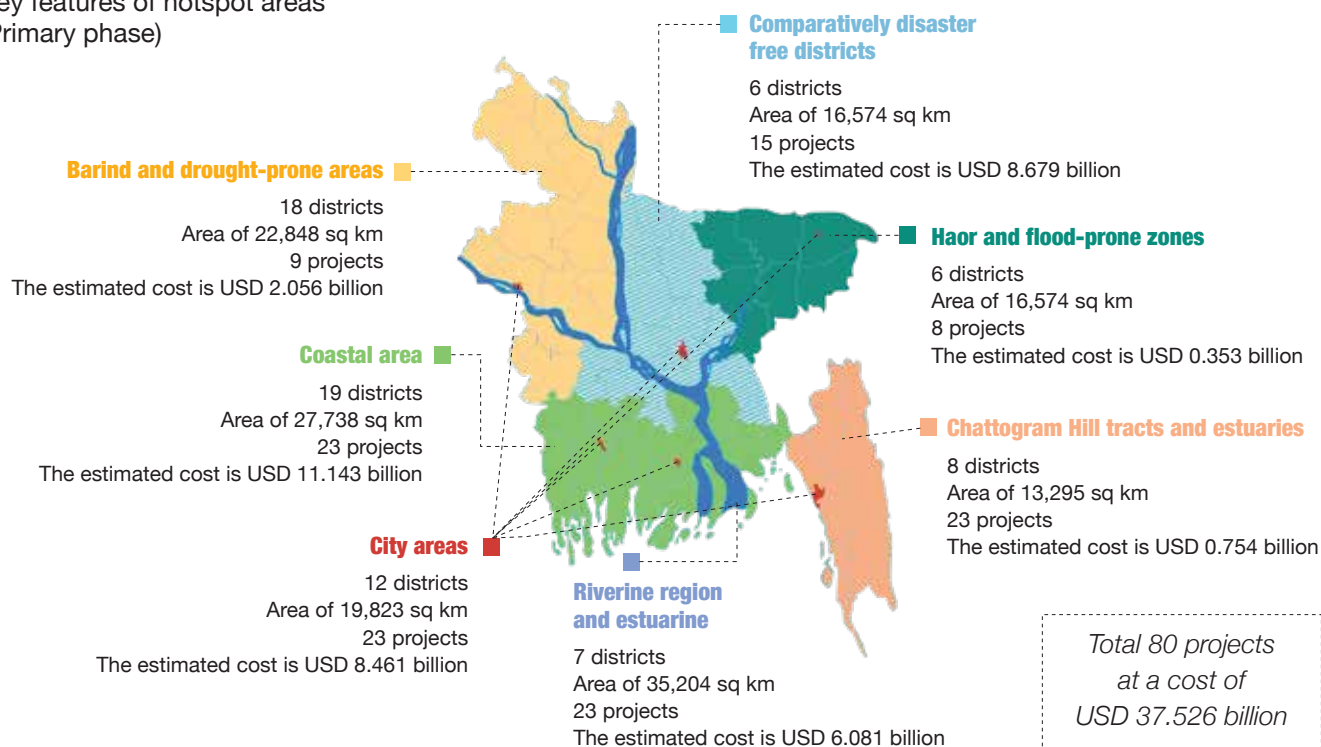


Source: BDP 2100 Projection



## Bangladesh Delta Plan 2100

Key features of hotspot areas  
(Primary phase)



country. On average, 50,000 houses per year are lost on the riverbank due to river erosion. That signifies that Bangladesh Delta Plan must include the coast, rivers, estuaries, drought-prone areas of the country, i.e. all the districts with equal importance. Of the 64 districts of the country, only 6 districts - Gazipur, Narsingdi, Mymensingh, Jhenaidah, Magura and Sherpur – are not at risk of natural disasters because of their distances from the sea and major rivers. In fact, each district deals with climate or climate change in different ways. With these factors in mind, BDP 2100 has become an adaptation-based technical and economic plan where water resources management, appropriate use of land, impact of environment and climate change and their interaction are considered.

### Hydrological regions and hotspots

Since natural hazard and climate change risks affect almost the entire Bangladesh owing to its Deltaic formation and since integrated water management in the context of its

interaction with climate change, environment, ecology, biodiversity, agriculture and land management is an integral part of the BDP 2100, the Plan has adopted the most expansive definition of the Delta Region. For water resource planning purposes, Bangladesh has been divided into 8 hydrological regions, which are the Northwest (NW), Northeast (NE), North-central (NC), Southeast (SE), South-central (SC), Southwest (SW), Eastern Hills (EH) and the main Rivers and Estuaries (RE). Using the 8 hydrological zones as the starting point, the BDP 2100 sharpens the focus on the magnitude of the natural hazard vulnerabilities facing each of the hydrological regions. This has led to a modified grouping of districts and areas facing similar risks of natural hazards. These groups are called “hotspots” that simply define a broad grouping of districts and areas facing similar natural hazard risks. Dictionary meaning of Hotspot is-a place of significant activity or danger. Hotspots are prototypical areas where similar hydrological and climate-change vulnerability characteristics and problems converge (such as sea-level rise, river erosion, intensity of

*Hotspots are prototypical areas where similar hydrological and climate-change vulnerability characteristics and problems converge (such as sea-level rise, river erosion, intensity of flooding, water shortages, siltation constraints, etc.).*

flooding, water shortages, siltation constraints, etc.). These are broad definition and the intensity of hazard and underlying risks can vary considerably among districts and sub-districts within the hotspot zone.

### Goal and objectives of BDP 2100

The goal of the hundred-year long planning is to develop an impact-tolerant delta against climate change. In addition, the Planning Commission's report stated that, “By ensuring robust, integrated, and adjustable with time strategies and establishing equitable governance in water resources management, long-term water and food security, economic growth and environmental sustainability, the BDP 2100 aims to deal with natural disasters, climate change impacts and other issues regarding the Bangladesh delta.”

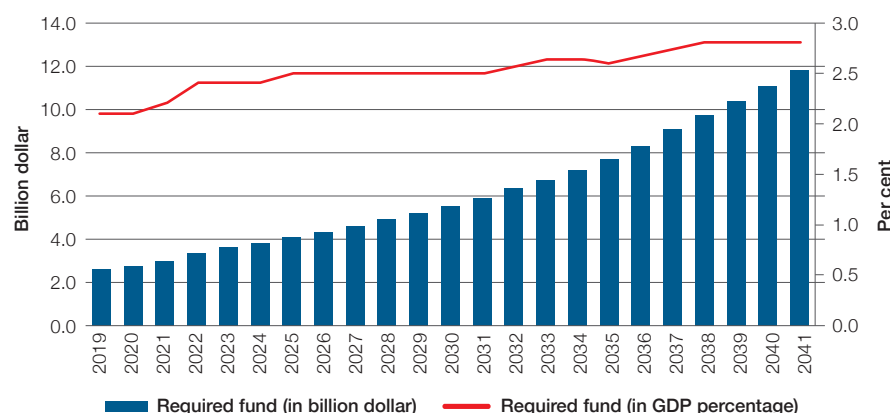
The BDP 2100 has 9 objectives including 3 high-level objectives,

#### 3 high-level objectives

- Eradication of extreme poverty by 2030



## Estimated expenditures for disaster management and adaptation (2016-2041)



Source: BDP 2100 Projection

- To achieve higher-middle class country status by 2030
- To achieve status of a prosperous country by 2041

### BDP 2100 objectives

- Safety and security of Bangladesh from climate change related disasters
- Water security and skill enhancement in water use
- Development of integrated and sustainable river areas and estuarine management
- Protection of wetlands and ecosystems with sustainable uses
- To build effective institutions to govern and manage territorial and extraterritorial water resources
- To ensure the sustainable use of land and water resources

*The BDP 2100 also details the need for large capital dredging, alluvial land management, safe and reliable shipping facilities along the river.*

## Different strategies for different hotspots

According to the BDP 2100, the strategy of managing water resources at one hotspot will be different from the other. To solve long-term crises, the BDP 2100 prioritises issues like floods, droughts, acute water crisis in Barind region during the dry season, river erosion during the monsoon season, drinking water crisis due to coastal tides and salinity, sudden water erosion from the hills, waste management in urban areas and water crisis of Chattogram Hill Tracts (CHT) area. Here list of strategies to mitigate climate and environment issues,

1. The first is the flood risk management strategy. Crops are the backbone of an agricultural economy. The new plan has ensured the protection of the country's economic and important infrastructure such as embankments, hospitals, power plants, educational institutions. For the coming days, there are several specific action plans for flood management and drainage in the fastest time. In this regard, issues like the preservation of natural reservoirs like canals, water bodies, ponds, lakes, reform of embankments and other water resource management structures, river dredging will be of paramount importance. It will also be financially viable for the government if the existing infrastructure is revived or reused.

2. Climate change is becoming a big challenge for the government to ensure access to safe water for all. As a solution, it has been recommended

in the BDP 2100 to construct embankments on river banks in different places of the country. Also, new irrigation projects in major rivers, recovery of river-wetlands, conservation biodiversity, and tighten the use of groundwater have been recommended. In addition, a special cell will be set up for waste management and pollution control.

3. The BDP 2100 also recommends for effective management of existing boulders in the cyclone-prone coastal areas to prevent saltwater intrusion, restoration of new land in coastal areas and conservation of the Sundarbans. At the same time, it has been recommended to be more efficient in reducing waterlogging to increase river navigability and to restore land are by tidal management.

4. Talks with neighbouring countries, including river basin development in drought-prone areas, will be the priority of the government to ensure and enforce water distribution systems.

5. In Haor regions, only one crop is produced in a year due to long term flood. Projects under Bangladesh Delta Plan 2100 will be protecting the crops and farmers from the flood, and ensuring availability of drinking water. If water and land resources are managed through integrated planning, it will play a positive role in preserving the region's unique biodiversity.

6. Hilly and adjacent coastal plains have been taken into consideration in the hotspot of Chattogram Hill Tracts. Extreme sedimentation in coastal areas and mountain landslides are responsible for frequent dredging at the mouth of rivers. As a strategy to tackle, it has been recommended for conservation of the environment and suggested prohibition of deforestation and hill-flattening to build houses.

7. The BDP 2100 also details the need for large capital dredging, alluvial land management, safe and reliable shipping facilities along the river.

8. By the year 2045, more than half of the country's population will live in cities. In order to mitigate the pressure of overpopulation, the Delta Plan recommends all types of waste management including industrial and medical waste to control water pollution in urban areas.

## Sector-wise GDP growth rate (according to the BDP 2100)

Sectors	GDP growth rate				
	2016	2020	2021	2031	2041
<b>Agricultural sector</b>	2.37	2.66	2.66	2.77	2.77
Grain crops	0.50	0.54	0.54	0.56	0.56
Commercial crops	0.50	0.54	0.54	0.56	0.56
Livestock-poultry-fish farming	5.24	6.37	6.37	6.88	6.88
Forestry	5.13	5.31	5.31	5.31	5.31
Other agriculture	0.50	0.55	0.55	0.55	0.55
<b>Productive Sector</b>	<b>10.43</b>	<b>11.63</b>	<b>11.63</b>	<b>12.05</b>	<b>12.29</b>
Processed food	10.43	12.00	12.00	12.99	13.25
Leather	10.43	11.77	11.77	12.06	12.31
Cloths and readymade garments	10.43	11.99	11.99	12.72	12.98
Fertilizer	10.43	11.59	11.59	11.82	12.05
Parts	10.43	11.99	11.99	12.23	12.47
Petroleum	10.43	10.86	10.86	11.07	11.30
Other	10.43	11.21	11.21	11.43	11.66
Construction sector	8.87	9.94	9.94	10.24	10.24
Service sector	6.82	7.87	7.87	8.11	8.11
<b>Total local growth</b>	<b>7.1</b>	<b>8.0</b>	<b>8.0</b>	<b>8.2</b>	<b>8.4</b>

Source: BDP 2100 Projection



## Internal shipping will be accelerated

Including rivers and canals, there are about 24,000 kilometres of rich waterway network in Bangladesh. Naturally, the benefits of transporting goods by waterway are immense. Some recommendations have been put in the Bangladesh Delta Plan-2100 to make the internal shipping system more efficient.

- In view of the actual situation of the flow of water in the rivers of upstream, construction of embankment at suitable places will be started after negotiating with the concerned country
- Diplomatic efforts should be continued for a peaceful solution to water-sharing problems and preventing conflict
- The diplomatic process for Teesta water sharing will continue
- It is recommended to formulate a joint plan for the management of trans-boundary rivers and basins by involving multilateral or bilateral development partners
- Development of basin-based flood forecasting method is also suggested.

## How much will the Blue Economy be benefitted?

The ocean handles USD 1.5 trillion of the global economy. About 350 million people are directly involved in the marine fisheries industry. By the year 2025, about 34 per cent of the world's crude oil will come from offshore. Soon after the solution of maritime boundary disputes with two

neighbours India and Myanmar, an outline of the Blue Economy was formulated to harvest sea resources in the Bay of Bengal. Currently, the Blue Economy will add a new dimension to the economy of the country by coordinating with the BDP 2100. In this regard, domestic shipping, coastal shipping, seaports, shipbuilding and recycling, marine fisheries harvesting, coastal tourism, tidal and wind energy production, land recovery, maritime resources surveying and surveillance will get priority. Recommended strategies for this purpose are:

- Faster completion of the multidimensional survey of marine resources
- Increase the number of coastal vessels and modernisation of ports to enhance capacity
- Strengthen fishing activities in deep and shallow seas
- Introduction of eco-tourism in public and private enterprises at coastal areas
- Keep the coast and port area free of pollution

In addition, detailed instructions are available in BDP 2100 for earthquake prevention, renewable energy, cross country water distribution system, agriculture, food security, nutrition and livelihood as well as proper use of land. 23 projects for coastal areas, 9 projects for Barind and drought-prone areas, 6 projects for Haor and sudden flood-prone areas, 8 projects for Chattogram Hill Tracts, 7 projects for rivers and estuaries, 12 projects in urban areas and 15 projects have been identified for

*The total amount of investment in this sector is 35 per cent of the total BDP 2100 investment. On the other side, 25 per cent of total BDP 2100 investment will be required in water and waste management in urban areas. In rural areas, the requirement is 20 per cent investment.*

comparatively safe areas from natural calamities.

## BDP 2100 investment scenario

Most of the government funding for the Delta Plan will be required for flood protection, river erosion control, river management, river governance, navigability, river water management, water supply and waste management in urban and rural areas, and urban flood control as well as the drainage system.

River management including flood control, river erosion, dredging, river governance, navigation, inland water transport is now the highest priority investment sector in Bangladesh. The total amount of investment in this sector is 35 per cent of the total BDP 2100 investment. On the other side, 25 per cent of total BDP 2100 investment will be required in water and waste management in urban areas. In rural areas, the requirement is 20 per cent investment.

With the implementation of new projects and development and maintenance of existing infrastructure, implementing BDP 2100 will require 2.5 per cent of the country's income every year. At present, this expenditure is 0.8 per cent of the gross domestic income per year.

According to BDP 2100, out of 2.5 per cent of the gross domestic income 0.5 per cent and 2 per cent should be financed by the private sector and the public sector. After spending almost 0.5 per cent of the maintenance and management expenses of 2 per cent of the total domestic income from the public sector, 1.5 per cent of the country's gross income will be spent under BDP 2100 investment plans. Currently, maintenance and management are much neglected and the expenditure will not be more than 0.1 per cent of the country's income.

After evaluating the investment plan for BDP 2100, a total of 80 projects have been proposed to be implemented in the first phase. Among them, there are 65 physical infrastructure projects and 15 institutional capacity building, skill development and research projects. The total investment cost of the project is BDT 2,978 billion.

**Comparison of public investment under Bangladesh Delta Plan 2100 for the period 2019-2031**  
(In billion dollars)

Sector for investment	Short term (2019-2021)	Mid term (2022-2031)	Total	Percentage of total investment
Institutional development	42	322	364	5
Environmental sector	20	125	145	2
Rivers and riverine areas, estuaries, inland shipping and coastal protection	255	2291	2546	35
Urban and rural areas	159	1368	1527	21
City Corporation Area (water supply, waste management, sewerage management and flood control)	190	1628	1818	25
Disaster management	23	195	218	3
Irrigation supplies	40	251	291	4
Environment and ecosystem	35	329	364	5
<b>Total</b>	<b>764</b>	<b>6509</b>	<b>7273</b>	<b>100</b>

Source: BDP 2100 Projection



## Institutional reforms are required

To implement the BDP 2100, the institutional reform needs to be based on the following three main goals:

- Establish an effective organisation for coordination and monitoring of inter-sectorial plans and programmes.
- To create a better expansive vision about delta related problems and challenges, including climate change, environment, conservation of biodiversity, agriculture, fisheries, forestry, internal water transport and land management and water resources management
- Transforming into a strong organisation with adequate technical expertise in the field of climate change and environmental management, agriculture and land management, institute management, evaluation and knowledge management.

Other recommendations are,

- Reformation of the legal framework of water management
- Coordination of monitoring and evaluation of the BDP 2100
- Creation of Bangladesh Delta Fund

*Coordination and cooperation among implementing agencies, as well as cooperation with upper riparian countries, are considered crucial for the successful implementation of BDP 2100 since formulation and implementation of BDP 2100 is inclusive of all the stakeholders.*

- Domestic water management reforms
- Introduction of Delta legislation
- Strengthening the main Delta organisations
- Initiation of inter-border dialogue and strengthening of relevant institutions
- Creation of Delta knowledge bank
- Information and knowledge management according to BDP 2100 perspectives
- Regular review and update of BDP 2100

Formulation and approval of BDP 2100 are not enough. Financing of its investment plan; capacity building of the implementers who will take the plan in the field; coordination of agencies and ministry/divisions; aligning delta implementation works with Annual Development Programme (ADP); and several other issues should be addressed with appropriate attention. Coordination and cooperation among implementing agencies, as well as cooperation with upper riparian countries, are considered crucial for the successful implementation of BDP 2100 since formulation and implementation of BDP 2100 is inclusive of all the stakeholders.

## Conclusion

To move articulately and in a structured fashion, good planning and strategies have significant importance. In view of the best practice of Dutch delta management experience, Bangladesh sought Dutch technical assistance in developing this BDP 2100. We have seen that Vision 2021, the 10-year perspective plan (2010-2020) and the 7th FYP (FY2016-FY2020) are all parts of the government's ongoing fruitful national development strategies. Since long term challenges are present because of climate change to the Bangladesh delta, the BDP 2100 will help to mitigate the challenges and integrate the short to medium term aspirations of Bangladesh to achieve Upper Middle Income (UMIC) status eliminating extreme poverty by 2031 with sustainable management of water, ecology, environment and land resources.

Rajeev Ahmed  
Senior Editor, CPA News



# A tale of containerisation

Dr Khandakar Akhter Hossain, PhD



*Today, in the world of trade, the shipping industry holds a significant role for transportation of cargo in all forms. International shipping is fulfilling around 90% of the movement of commodities worldwide. More than 50,000 different types of merchant ships; like cargo ships, bulk carriers, tankers, LNG, LPG, and container ships are currently involved in the business transporting various types of cargos on daily basis as per the statistics of International Chamber of Shipping. Actually, the access of more container ships to the present shipping freight market has changed the pattern of international trade over the past few decades enormously.*

## Overview

Container ships are special type of the cargo ships that carry box type load in truck or lorry size intermodal containers. This is a technique called containerisation. It is a common means of commercial intermodal freight transport that carries most seagoing non bulk cargo today. An intermodal container is a large standardised shipping container designed and built for intermodal freight transport. A container can be used across different modes of transport, like ship, rail or truck without unloading and reloading cargo. Containerisation greatly reduced the expense of international trade and facilitates faster transport of consumer goods and commodities. It dramatically transformed the character of port cities worldwide. Today, container ships are known as the workhorses of global economy.

## Container and containerisation

Intermodal containers have been primarily used to store and transport materials and products efficiently and securely around the globe. These containers are known by different names; container, freight container, ISO container, shipping or sea container or container van or box and sea can etc. Intermodal containers comes with many types and sizes. However, 90% of the global container fleet is dry freight or general-purpose containers. Those are durable, corrugated steel boxes and are usually 20ft or 40ft standard length. Well known standard ISO shipping containers are 8ft wide, 8.5ft high and come in two lengths; 20ft and 40ft. Special extra tall shipping containers or high cube containers are available with 9.5ft high. On the other hand,





James Brindley designed a box boat named Starvationer with 10 wooden containers in 1766

containerisation is a system of intermodal freight transport using intermodal containers. With standardised dimensions, those containers can be loaded and unloaded, stacked, transported efficiently over long distances, and transferred from one mode of transport to another without being opened. The containers handling system are completely mechanised, so that all handling is done with cranes and special forklift trucks.

## History of containerisation

Containerisation originated few centuries ago. In the late 18th century, ships designed to carry standardised load units were used in England. Again in 1766, James Brindley designed a box boat named Starvationer with 10 wooden containers to transport coal from Worsley Delph to Manchester by Bridgewater Canal. Before the WW II, container ships were used to carry baggage of the luxury passenger train from London to Paris. However, it was not well developed or widely applied until after Second World War (WW II) when container ships dramatically reduced the costs of transport. Container ships supported the post war boom in global trade as well as globalisation. The first batch of purpose-built container vessels began operating in Denmark and between Seattle and Alaska in 1951. The first commercially successful container ship was Ideal X, a T2 tanker that carried 58 metal containers between Newark, New

*The first batch of purpose-built container vessels began operating in Denmark and between Seattle and Alaska in 1951. The first commercially successful container ship was Ideal X, a T2 tanker that carried 58 metal containers between Newark, New Jersey and Houston, Texas on its first voyage.*

Jersey and Houston, Texas on its first voyage. Ultimately it displaced many thousands of dock workers who formerly handled break bulk cargo. At the same time, it has reduced congestion in ports, significantly shortened shipping time and has minimised losses from damage and theft.

## Sizes and categories of container ships

There are seven usual size and categories of container ships: small feeder, feeder, feeder max, panama, post panama, new panama, and very or ultra large. Today there were 165 VLCS or Very Large Container Ships in the world which can carry more than 10,000 TEUs. Interestingly, 52 ports in the world can accommodate them. Panama Canal's lock chambers

limit the size of a Panamax vessel. Those lock chambers can accommodate ships with a beam of up to 32.31 m and a length overall of up to 294.13 m, and a draft of up to 12.04 m. The maximum size of new panama class container ship that can accommodate in Panama Canal is length overall 366 m and width 49 m and fresh water draft 15.2 m. So, new panama class container ships are wide enough to carry 19 rows of containers with a capacity of approximately 12,000 TEUs, which is comparable in size to a Capesize bulk carrier or a Suezmax tanker.

## Modern container ship design

There are few key points to ponder in the design of modern container ships. Container ship hull is similar to bulk carriers and general cargo ships and is built around a strong keel. Container ship's holds are usually topped by hatch covers where more containers can be stacked. Old container ships have cargo cranes installed on them. Modern container ships have specialised systems for securing containers onboard. Actually, efficiency is another key factor to design container ships. Cargo holds for dedicated container ships are specially constructed to increase speed of loading and unloading and to efficiently keep containers secure while at sea. Another key aspect of container ship specialisation is the design of the hatches; the openings from the main deck to the cargo hold. The hatch

Transferring freight containers on the London, Midland and Scottish Railway (LMS; 1928)





Today there were 165 VLCS or Very Large Container Ships in the world which can carry more than 10,000 TEUs

openings stretch the entire breadth of the cargo holds, and are surrounded by a raised steel structure or hatch coaming and top of the hatch coamings are the hatch covers. Modern hatch covers of a container ship are articulated mechanisms that are opened and closed using powerful hydraulic rams. One of the key components of dedicated container ship design is the use of cell guides and those are strong vertical structures constructed of metal installed into a ship's cargo holds. Such special structures guide containers into well-defined rows during the loading process and provide some support for containers against the ship's rolling at sea. Three dimensional systems are used for cargo plan to describe the position of a container onboard ship. First dimension or coordinate is the bay; which starts at the front of the ship and increases towards aft. Second coordinate is tier; the first tier at the bottom of the cargo holds and number increases towards top. Third dimension or coordinate is the row; starboard side is given odd numbers and port side is given even numbers and the rows nearest the centreline are given low numbers, and the numbers increase for slots further from the centreline.

## Pollution and safety

There was estimation that container ships lose around 10,000 containers annually. Generally, container over

boarded into the open sea during storms. However, there are some examples of whole ship being lost with all its containers. If any containers are dropped, it immediately becomes an environmental threat as marine debris. Again, threat of piracy cost container shipping company around USD 100 million per year mainly near East Africa. Today, there have been increased concerns that containers might be used to transport terrorist or explosive. The US government has advanced the container security initiative or CSI, intended to ensure that high risk cargos are examined or scanned at the port of departure.

*Today, approximately 90% of non-bulk cargo worldwide is moved by containers stacked on transport ships.*

*If any container is dropped in the sea, it immediately becomes an environmental threat as marine debris*



## Conclusion

Today, most of the cargos are now designed to fit precisely into containers. The reliability of containers also made faster manufacturing possible as component suppliers could deliver specific components on regular fixed schedules. Currently, approximately 90% of non-bulk cargo worldwide is moved by containers stacked on transport ships. Again, 26% of all container transshipment is carried out in China. 40ft containers are the primary container size, making up about 90% of all container shipping. Nowadays a converted container is used as an office at a building site. Actually, shipping container architecture is the use of containers as the basis for housing and other purposeful buildings. Containers can also be used as sheds or storage areas in industry, canteen, shop and even any commercial purpose. They are not only revolutionised the maritime shipping industry, but also fulfilling the demand of accommodation and industrial buildings.

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## ➤ Chattogram port receives 4 gantry cranes



Chattogram port has received four more quayside gantry cranes to enhance the port's efficiency in handling containers to and from vessels.

Chattogram Port Authority (CPA) purchased the cranes from Shanghai Zhenhua Heavy Industries Company at a cost of Tk 238.63 crore for its New Mooring Container Terminal.

These four cranes came from China on vessel De Bo-3, which arrived at the port's outer anchorage on 20 July 2019.

It took two weeks to unload the four on the jetty and a month more to install and bring into operation.

With the addition, the terminal possesses 10 such cranes.

## ➤ South Korea is keen to increase investment in Bangladesh

South Korean Prime Minister Lee Nak-yeon expressed interest in investing in Bangladesh's infrastructure, power, ICT, deep sea fishing, construction, shipbuilding and energy sectors to deepen ties between the two countries.

The trade between Bangladesh and Korea needs to be increased beyond the textile and garment sectors, Nak-yeon said in the Korea-Bangladesh Business Forum, organised by the Federation of Bangladesh Chambers of Commerce and Industry (FBCCI) and the Korea International Trade Association (KITA) at the Hotel InterContinental in Dhaka on 14 July 2019.

Ministers, diplomats, exporters, importers, businesspersons and trade body leaders attended the forum to explore trade opportunities.

"Some big Korean companies have already invested in Bangladesh, but there is a scope for further business expansion here," Nak-yeon said.

In a meeting with Prime Minister Sheikh Hasina in Dhaka on that day, Lee also said Korea will expand trade benefits for Bangladesh products to address a trade imbalance between the two countries.

Lee arrived in the Bangladesh capital 13 July 2019 for a three-day visit. He became the first South Korean prime minister to visit the country in 17 years.

## ➤ Chattogram port moves 6 notches up in container handling



Chattogram port, the country's main seaport, has advanced six notches in container-handling in the 2019 edition of Lloyd's List.

According to the Lloyd's List survey

report posted on its website, Chattogram port secured the 64th position in 2019 among top 100 ports across the world. The rank of the port was the 70th in the year 2018.

In the 2018, Chattogram port handled 29,03,996 TEUs (twenty-foot equivalent units) of containers, up 8.90 percent from 26,67,223 TEUs in 2017.

The Chinese port Shanghai and the Singapore port have taken the first and the second positions respectively while the Chinese ports Ningbo-Zhoushan, Shenzhen and Guangzhou were respectively in third, fourth and fifth positions.

Indian Jawaharlal Nehru port secured the 28th position while Mundra port was in the 36th position. Chattogram Port is ahead of Pakistan's Port of Karachi, which was ranked 83rd.

## ➤ Ministry of Shipping has implemented about 100% projects

The Ministry of Shipping has spent 99.69 per cent funds allocation in favour of the projects included in the Revised Annual Development Programme (RADP) in the financial year 2018-19. The rate was 99.6 per cent in the 2017-18 financial year.

The implementation rate of the projects is 94.36 per cent in 2018-19 financial year. The Ministry of Shipping will implement 49 projects in the Annual Development Programme (ADP) for the fiscal year 2019-20. For this, the cost has been estimated at BDT 48,133,100,000.

On 22 July 2019, these were reported in a meeting of RADP at the Ministry of Shipping conference room in the Secretariat. State Minister for Shipping Khalid Mahmud Chowdhury presided over the meeting. It was also attended by the Secretary of the Ministry Abdus Samad and heads of other organisations under the ministry.

## ➤ 2.9 million containers handled in last fiscal year

Chattogram Port Authority has handled 2.919 million units of containers in the last fiscal year. Compared to the previous year, the growth is about 4 per cent. In 2017-18 fiscal year, the number was 2.808554 million. According to the port officials, installation of 6 new quay gantry cranes at NCT terminal, expansion of container capacity to 49,018 units by yard extension, increased backup facility and modern port management have made it possible to grow at 4 per cent rate. Chattogram port will be able to withstand the pressures of economic development and investment of the country if the new four gantry cranes are added and PCT starts operation in due time. At present, 92 per cent of the country's import-export containers are handled in Chattogram port.



## ➤ Chattogram port is not responsible for the traffic jam – CPA Chairman



The main reasons behind the traffic jam on the Chattogram airport road are adverse weather and road closure, renovation of the Port Connecting Road, excavation of WASA from the Barak Building to Fakirhat and the narrowing of roads in the cement crossing area due to elevated expressways. Chairman of the Chattogram Port Authority (CPA), Rear Admiral Zulfikar Aziz said these at a press conference on 26 July 2019 in the conference room of Bandar Bhaban.

On an average, 4,000 TEUs containers are handled in Chattogram port every day. In Ramadan, the number was 4,800, and after the cyclone Fani, it was 5,600.

## ➤ Container handling record in Chattogram port

Chattogram port has set a record for handling 2 lac 92 thousand 455 TEUs containers in the month of September. On an average, 9,748 TEUs containers were handled daily. Earlier, the highest record was in November 2018 with a handling of 2 lac 65 thousand TEUs containers. On the other hand, No.3 berth of Chattogram port's New-mooring Container Terminal (NCT) has recorded 4,279 TEUs container handling in 64 hours. On 20 September 2019, the ship 'MV Delaware Trader' arrived at NCT-3 jetty with 2,000 TEUs container from the port of Colombo. On 23 September 2019, the ship left the port with 2,279 TEUs containers. The ship stayed at the port jetty for 73 hours and container handling took 64 hours. The same ship had a record of 4,185 TEUs containers handling within 90 hours on 5 September 2019.

## ➤ Chattogram port has taken decision to impose additional fine for delivery delay

Authorities have decided to impose increased penalties in order to handle normal operational activities as the container cargo capacity of the import yard has been exceeded in the port yard. A circular was issued on 8 July 2019 in this regard.

The total storing capacity in the port yard is around 50,000 containers. To keep regular management activities, 30 per cent of the capacity is left unused. The quantity of containers in the yard has increased more than 40,000 TEUs due to clusters of undelivered containers. Of these, there are 33,000 FCL (Full Container Loaded) containers of imported goods.

To improve the situation, the administration has decided to impose an additional fine on the fifth day of delivery from a container ship.

## ➤ BIMOX 2nd edition expo-2019 held in Dhaka

Second edition of Bangladesh International Marine and Offshore Expo (BIMOX)-2019 kicked off at the International Convention City Bashundhara (ICCB) of the capital on 19 September 2019.

Savor International with an international alliance with Fireworks Trade Media Group of Singapore organised the second edition of the exhibition here.

The exhibition was held from 19 September to 21 September 2019. It showcased ship building, ship repairs, shipping, maritime engineering, offshore engineering and technology, ship breaking equipment, ship recycling, offshore, oil and gas support, fishing vessels and fishery.

In the exhibition, companies from around 14 different countries including Bangladesh exhibited their products, technologies, and services in more than 160 booths.

## ➤ Chattogram port is building a service jetty

Chattogram port is building a service jetty on the banks of the Karnaphuli river in the Baric Building area of the city. That 225 metres long and 20 metres wide jetty is being built at a cost of BDT 88 crore 34 lac.

Under the service jetty project at No.1 port jetty, land development, shore protection, dredging work are underway. 136 piles of 32 metres long and 900 millimetres in diameter were brought from China. Two cranes with 150 tons and 70 tons capacity have been brought for piling. Construction work is underway across 6,672 sq.m. area.

## ➤ LGRD Minister unveils master plan to prevent river pollution



On 21 July 2019, the government unveiled two decade-long masterplans to protect five rivers in Dhaka and two in Chattogram against grabbing and pollution, and enhance their navigability.

The masterplan on the Dhaka rivers - Buriganga, Turag, Balu, Dhaleswari and Pungli - proposes 24 primary and 180 supplementary measures, and includes 39 canals connected with these rivers. The one on Chattogram's Karnaphuli and Halda suggests 45 primary and 167 supplementary measures.

Minister for Local Government Division Md Tajul Islam revealed the masterplans through a press conference at Bangladesh Secretariat. He said nine causes of pollution were identified in the plans, and measures are underway to prevent release of industrial and domestic waste into the rivers.

According to the plans, the conservation measures include one year of crash programme, three years of short-term programme, five years of mid-term programme, and a decade of long-term programme. Actions will also be directed at analysing the status of the tributaries and canal networks of the said rivers in adjoining districts.



## ➤ Delegation satisfied over Chattogram port's ISPS Code implementation



A three-member US Coast Guard delegation who arrived to monitor the progress of the Chattogram port in implementing the ISPS Code expressed satisfaction over the security of the port. At the same time, they made five recommendations including the importance of cyber security to improve the security of Chattogram port. The delegation visited Bangladesh on 25-26 August 2019.

The delegation, led by US Coast Guard Lieutenant Commander Christina Jones, held separate meetings with senior officials, including port chairman Rear Admiral Zulfikur Aziz, member (Harbour and Marine) Captain M Shafiu Bari on 25 August 2019. They suggested relocating the delivery yard that is situated inside the port, increasing cybersecurity and scanning export containers of customs, as well as installing sophisticated state-of-the-art equipment, proper surveillance, regular patrols and coordinated operation with all parties concerned.

## ➤ Advance cargo manifest begins for speedy clearance

National Board of Revenue makes submission of advance cargo manifest mandatory from 1 July 2019 to facilitate international trade and speedy clearance of imported goods.

Under the mandatory provision, carrier of goods including shipping agents and airline operators have to submit the cargo manifest online before the carrier of goods leaves the port of call to destination port. Cargo manifest is a document, filed by carrier of goods to customs authorities, containing the details of shipper, importers, exporters, number and types of packages, description, quantity and value of goods, origin and destination of goods and some other important documents. Previously, shippers and airlines had to submit the documents within 24 hours of arrival.

## ➤ CPA implemented 100% dresscode

The provision of dress code to identify the entry of Chattogram port and to ensure safety for 12 thousand workers, employees, drivers and users has been in effect since 1 August 2019.

As part of the implementation of the International Ship and Port Facility Security (ISPS) code, international quality security system is available in Chattogram port. The International Maritime Organisation (IMO) is implementing this ISPS code in consultation with the United States to prevent any terrorist activities in disguise of sea trade. According to this ISPS code, everyone who enters the port is required to wear specified dress.

## ➤ Japan conducts feasibility study for a port in Mirsarai

Japan starts its feasibility study to build a port adjacent to Mirsarai Economic Zone. To build the port, Japanese delegations held two meetings with Chattogram Port Authority. The feasibility study will be completed within the next four to five months. If the result of the study is positive, the task of setting up the port will also begin.

Employment opportunities for about 3 million people are being created by setting up 350 industrial factories in 618 industrial plots on about 30,000 acres of land in Mirsarai. Seaport building plan is underway to take a huge step forward surrounding the ambitious Mirsarai Economic Zone.

Japan is allocated with 1,000 acres of land in the Mirsarai Economic Zone to build the EPZ. The country submitted the project to the BEZA (Bangladesh Economic Zones Authority) to build a port there. Beside Japan, it is being planned to accommodate other ventures of the economic zone so that they can use the port.

## ➤ Bangladesh and South Korea discuss maritime investment opportunity

South Korea expressed their interest to invest in the development of Bangladesh's shipping sector, especially in the establishment of Chattogram port's Bay terminal and Liquefied Natural Gas (LNG) terminal.

The country informed Bangladesh about their interest in these sectors during a meeting between Bangladesh's state minister for shipping Khalid Mahmud Chowdhury and South Korea's ocean and fisheries minister Moon Seong-hyeok at Seoul's Glad Hotel on 29 August 2019.

The two countries have discussed several issues and interests on each other, and also covered issues such as Bangladesh's blue biotechnology, tidal energy, woman safety, training in maritime sector, jobs for mariners and shipbuilding.

Abida Islam, Bangladesh's high commissioner in South Korea, along with Chattogram Port Authority Chairman Rear Admiral Zulfikur Aziz, joint-chief of Bangladesh's ministry of shipping Rafique Ahmed Siddique, joint secretary Md Muhidul Islam and senior information officer Md Jahangir Alam Khan were present in the meeting- while the director general of Korea's ocean and fisheries ministry Kim Seong-bum with the director Chang Ki-uk, attended the meeting on behalf of Korea.

## ➤ Chattogram Customs House collects BDT 43.5 thousand crore revenue

Traders have received 78.5 million tons of imported goods through Chattogram port in 2018-19 fiscal year with a market value of BDT 3 lac 3 thousand 800 crore. The government has received BDT 43.5 thousand crore as the revenue. Of this, BDT 21 thousand 958 crore are collected as Value Added Tax (VAT). Besides, Chattogram Customs House has collected Customs Duty (CD) of BDT 14 thousand 639 crore, Regulatory Duty (RD) of BDT 942 crore 76 lac, Advance Income Tax (AIT) of BDT 6 thousand 42 crore 45 lac, Supplementary Duty (SD) 4 thousand 985 crore 11 lac and ATV (Advance Trade VAT) of BDT 4 thousand 370 crore. Additionally, Chattogram Customs House has collected a fine of BDT 62 crore from the merchants for not importing the goods as per the declaration.

## ➤ Bangladesh to clock highest growth in Asia this year



The Bangladesh economy will grow at 8 per cent this fiscal year, which would be the highest in Asia, as per the latest forecast of the Asian Development

Bank. The forecast is close to the government target of 8.2 per cent growth in fiscal 2019-20. Last fiscal year, Bangladesh pulled off 8.13 per cent GDP growth. The Manila-based multilateral lender disclosed the growth forecast while releasing its 'Asian Development Outlook 2019 Update' at its office in Dhaka on 25 September 2019.

"Buoyant exports, robust private consumption, higher remittance, accommodative monetary policy and ongoing reform to improve business climate and high infrastructure spending helped Bangladesh attain high growth," the report said.

Bangladesh continues to be among the fastest growing economies in Asia and the Pacific, said Manmohan Parkash, ADB country director.

On the supply side, higher expansion in industry and services lifted the robust growth. Despite a weaker global growth, favourable trade prospects are expected to continue. Export and remittances are likely to be further strengthened. Strong public investment due to continued policy environment and expediting implementation of large infrastructure projects are also envisaged. On the downside, private investment, which would propel the next level of growth, remained stagnant in 2019, Parkash said.

## ➤ Govt mulls inviting int'l bidding for onshore, offshore gas exploration

The government is planning to invite international bidding within a year for oil and gas exploration in both onshore and offshore areas of the country, said State Minister for Power, Energy and Mineral Resources Nasrul Hamid on 8 August 2019.

"We've revised the existing mode of production-sharing contract (PSC) with increased gas price to attract International Oil Companies (IOCs) as the response from them was not positive in the past due to low gas price," the state minister said.

Recently, the Cabinet Committee on Economic Affairs approved two separate modes of PSCs for offshore and onshore gas blocks in this regard.

Explaining the matter, Energy Secretary Abu Hena Rahmatul Munim said the government updated the PSC with new terms and conditions to attract the IOCs.

According to him, the government will simultaneously move for inviting international bidding for oil exploration and conducting 2D seismic survey through multi-client seismic firm. "We'll separate some of the blocks for bidding while some will be specified for multi-client survey on priority basis," he said.

## ➤ UAE businesses promise USD 10 billion investment in Bangladesh

The UAE-based investors have lined up a number of new projects including five free economic zones and USD 10 billion worth of investment in Bangladesh.

Those investments will be made in Bangladesh's energy, ports, power and infrastructure sectors in an effort to help fuel the economic growth.

The investors discussed those projects with Salman F Rahman, Prime Minister's Adviser for Private Industry and Investment, at the Bangladesh Economic Forum in Dubai on 15 September 2019.

Salman headed a 20-strong Bangladesh delegation at the forum. He also met a number of large UAE-based business groups that have expressed interest in developing economic zones and hi-tech parks in Bangladesh.

Earlier in February, Bangladesh and the UAE signed four MoUs on establishing a port, industrial park, supply and setting up of a liquefied natural gas (LNG) terminal, power plants, and a special economic zone in Bangladesh during Prime Minister Sheikh Hasina's visit.

Bangladesh is developing 100 economic zones and 28 hi-tech parks for greater and faster inflow of Foreign Direct Investment that jumped 68 per cent to USD 3.61 billion last year.

## ➤ Decision on Bay Terminal at final stage

State Minister for Shipping Khalid Mahmud Chowdhury said that the government was to take final decision soon regarding construction of Bay Terminal, the long-awaited mega project of Chattogram port.

"The government is at the final stage on Bay Terminal. We are going to take final decision any time in this regard," said the state minister while talking to reporters after the first meeting of the recently-reshuffled body of Chattogram Port Advisory Committee in the port city on 4 September 2019.

The four-hour meeting, that started at 10 am was held at the auditorium of Chattogram Port Authority (CPA) Training Institute, with Khalid Mahmud in the chair.

CPA Chairman Rear Admiral Zulfikur Aziz moderated the meeting, also attended by information minister Dr Hasan Mahmud.

CPA took the project several years back to construct a mega container terminal, after a huge land mass emerged from sea bed near Halishahar coast, creating a six-kilometre long channel for vessel movement.

## ➤ Private ICDs agree to hike tariffs by 10%

Private inland container depots (ICDs) agreed to raise container handling charges by 10 per cent with effect from 1 October 2019. CPA Chairman Rear Admiral Zulfikur Aziz sat in an urgent meeting with all the stakeholders on the premises of the CPA on 22 September 2019.

Stakeholders from Bangladesh Inland Container Depot Association (BICDA), garments owners' association BGMEA, Chattogram Chamber of Commerce, Bangladesh Freight Forwarders Association and Bangladesh Shipping Agents Association were present in the meeting. In addition to increasing the charge of ICD, it was decided to return the extra charged amount from 16 September 2019.



## Bangladesh's marine fisheries resources A potential sector to develop Blue Economy

Farhana Ahmed

*Fish is an important component of Bengali culture. The first day of Baishakh, Poush Sankranti, also known as Makar Sankranti - an annual celebration in the subcontinent, marriage and in various occasions, cooked fishes are consumed in accordance with the tradition and culture. So, fish and rice make us Bengalis. If there is no single piece of fish in our meal, we don't get culinary satisfaction. Numerous rivers and the Bay of Bengal have been fulfilling our eternal protein demand with their fish resources. Not only that, but the fishery sector is also making a significant contribution to our national economy. The fisheries is Bangladesh's second export earnings sector. However, marine fisheries are lagging behind in comparison to inland fisheries. Potentiality for the development of fisheries resources in our extended sea area has increased manifold. Sufficient importance has been given to marine fisheries resources in the Sustainable Development Goal 14 (SDG) of the Government of Bangladesh and in the Blue Economy policy. As a result, industrial fishing in the oceans has increased by 10.7 per cent in the last financial year compared to the previous one. With proper harvesting strategies, conservation and sustainable management, marine fisheries can become an important pillar of the Blue Economy of Bangladesh.*

### Marine fisheries resources for the socio-economic development of Bangladesh

The fisheries sector is one of the major sectors that plays an important role in the socio-economic development of Bangladesh. About 3.57% of the national GDP and 25.30% of the agricultural contribution to GDP comes from the fisheries sector. Bangladesh is now self-sufficient in fish production. According to a recent FAO (Food and Agriculture Organisation) report, Bangladesh ranks third in fisheries harvesting from domestic natural sources, 25th in marine fisheries harvesting and fifth in overall fisheries cultivation. By keeping the current growth, Bangladesh can become the top fisheries harvesting country by 2022.

Over 11% of Bangladesh's total population is directly or indirectly involved in the

fisheries sector for their livelihood. 5.16 lac fishermen are directly involved in the marine fisheries sector. About 7 lac metric tons of fish are caught annually against the total reserves of 80 lac metric tons of fish within Bangladesh's own sea area. The total fish production in Bangladesh was 42.77 lac metric tons against the target of 42.20 lac metric tons in the financial year 2017-18. Out of which, 56 per cent is harvested from inland close water, 28 per cent from inland open water and 16 per cent from the sea. The industrial harvesting of marine fisheries was 1.20 lac metric tons and 5.35 lac metric tons were harvested by the artisanal (traditional) system.

The extent of marine fisheries is not only limited to creating a safe livelihood of the vast majority of the coastal population, but it is also playing a vital role in food security,

especially nutrition, throughout the country. Apart from this, it is playing a vital role in empowering women in small scale fisheries industries, including creating huge employment opportunities through a variety of auxiliary activities in fisheries harvesting and management. A large project, called Sustainable Coastal and Marine Fisheries Project, has recently been undertaken by the Ministry of Fisheries and Livestock for the development of this sector in Bangladesh, and to develop coastal and marine fisheries resources with the assistance of USD 240 million loans from the World Bank.

While inland fisheries harvesting is much higher than marine fisheries harvesting, there are huge possibilities and opportunities for rapid growth in the marine



fisheries sector due to the newly expanded water area of 118,813 sq. km. If proper management plans, sustainable exploration strategies and conservation policies are formulated to protect and manage this vast sea area and its resources, it will further accelerate the socio-economic development of Bangladesh.

## Biodiversity of the Bay of Bengal

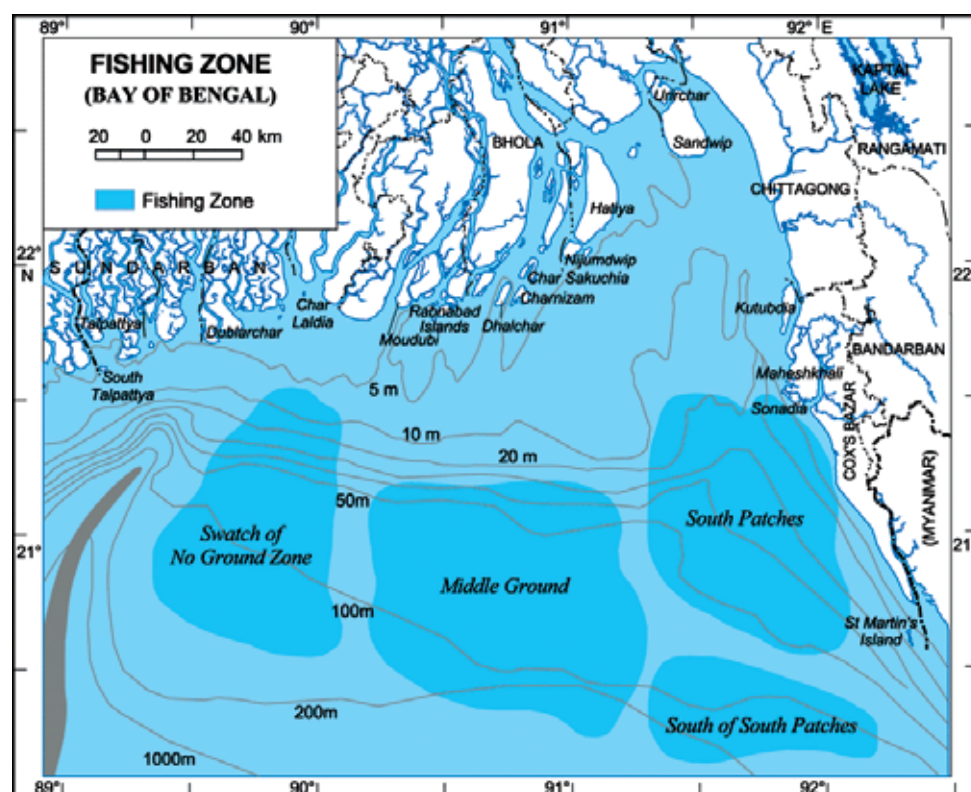
Among world's 67 largest marine ecosystems, the highest amount of river water and sediments fall into the Bay of Bengal. The geographical location, climate, rainfall and nutrient-rich water of many rivers have enriched the Bay of Bengal with unique biodiversity. Our vast assembly of biodiversity within our sea area includes fish, shrimp, crabs, snails, mammals, corals, algae, etc. The main commercial species of these are Hilsa, Sardines, Mackerel, Pomfrets, coral, Ribbonfish, Bombay duck fish, Croaker, Indian salmon, Indian Pellona, Red seabream, Crayfish, Chaga shrimp, Bagachama shrimp, Horina prawn.

St. Martin, the only coral island in the country, is home to a wide range of natural beauty, including aquarium fisheries. The coastal mangrove area adjacent to the Sundarbans is of particular importance as a natural breeding and nursery area of all species of fresh, slightly saline water and marine fishes. Within the depth of 200 meters of the Economic zone, there are plenty of tropical fishes, and tuna or tuna type fishes are abundant in the deep sea.

### The number of major species in the Bay of Bengal

Species name	Number
Fishes	475
Shrimps	36
Lobsters	5
Crabs	15
Turtles	5
Corals	13
Sharks, Rays, Skates and Dolphins	21
Shellfishes (Univalves and bivalves)	350
Seaweeds	165

Source: Department of Fisheries, 2018



The wide fish harvest area in the Bay of Bengal makes Bangladesh potential for Blue Economy

## Time for Blue Economy

Recently, the Blue Economy has emerged as an widely acceptable development policy in the world. The spread of such an economy effectively influences the sustainable development of a country. In fact, the Blue Economy refers to management that ensures the conservation of ocean resources and it's maximum and sustainable use. Its main goal is to move from scarcity to abundance.

This concept has now become an integral part of the maritime development strategy, and many coastal countries, developed and developing countries, as well as Small Island Developing States (SIDS), are making plans based on the economic growth and conservation of maritime resources. The FAO is also encouraging sustainable development to ensure food security and poverty alleviation.

The idea of the Blue Economy is new to Bangladesh and it is very prospective. Bangladesh's development and economic growth can be significantly enhanced by exploiting the potential of the Blue Economy in the newly expanded water area in the Bay of Bengal. In

*Recently, the Blue Economy has emerged as an especially acceptable development policy in the world. The spread of such an economy effectively influences the sustainable development of a country.*

this regard, marine fisheries, biotechnology, renewable energy, oil and gas exploration and extraction, maritime construction, tourism, shipping, ports and maritime trade and commerce can play important roles. Especially, by advancing the technological and infrastructural development, by building research of academic institutions and by curbing down the pollution and illegal trade, Bangladesh will be able to take the fishery sector forward.

## EEZ of Bangladesh

Bangladesh's Exclusive Economic Zone (EEZ) in the Bay of Bengal can be divided into four main fishing areas - 1) South Patch, 2) South of South Patch, 1) Middle Ground and 3) Swatch of No Ground. The South and South of South Patch cover an area of 6200 sq km, Middle Ground 4,600 sq km, and Swatches of No Ground covers an area of 3,600 sq km.

## Marine fisheries resources of Bangladesh

Bangladesh sea area consists of 20 per cent coastal area, 35 per cent shallow shelf sea area and the remaining 45 per cent is the deep-sea



area. Almost all of the marine fisheries are harvested in coastal and shelf sea areas. Within Bangladesh's sea area, 255 industrial trawlers are engaged in fishing. Due to the absence of high-powered vessels and modern technology, fishing in the deep sea is not feasible.

With the acquisition of modern fish technology, huge foreign exchange can be earned by harvesting deep-sea tuna and other tuna-like fish. For this purpose, 10 longliners and 7 purse seiner trawlers have been allocated to harvest tuna in the deep sea. According to the report of the Department of Fisheries report of 2017, a total of 67,669 artisanal vessels is engaged in fishing on the shallow coast and in Shelf Sea. Of these, 32,859 were mechanical and 34,810 were non-mechanical. Artisanal vessels and most industrial trawlers are putting a lot of pressure on coastal fisheries and biodiversity. Unregulated harvesting is diminishing commercially important demersal species such as Datinas, Threadfins, and Crokers.

The hilsa is predominant in marine fisheries. Bangladesh produces about 60 per cent of the world's hilsa. The total production of hilsa during the financial year 2017-2018 was 5.17 lac metric tons. About 2.84 lac metric tons of hilsa is harvested from the sea and around 25 lac people live on it.

Another notable harvest is the shrimp. Most of the fish harvested from the sea are sold in local markets. The dried fish is made with a significant portion of the harvested fish. This year, traders are expecting to export about BDT 400 crore dried fish after meeting the country's demand.

The coastline of Bangladesh is 710 sq km. Marine fisheries have expanded mainly to the coastal areas of the country. Shrimps are generally cultivated along the coast. Almost all the fish exports are shrimp export. According to a survey conducted by the Department of Fisheries, in the fiscal year 2016-2017, crayfish production was 68,272 metric tons that brought USD 456.91 million of foreign currency. However, because shrimp is traditionally cultivated in shallow waters, shrimp production in our country is relatively low compared to shrimp producing countries like Thailand and Vietnam. The use of advanced technology in shrimp farming system will greatly increase

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its production. According to Department of Fisheries, 119 species of shrimp, 312 zooplankton and 31 species of white fish are being destroyed because of the traditional way to collect brood with mosquito net or with something similar to mosquito net. This is adversely affecting the marine environment. In order to overcome this situation, the government of Bangladesh has taken various initiatives. A national shrimp policy was formulated in 2014. According to that policy, sustainable shrimp farming system can be developed by expanding the environment-friendly shrimp farming technology and increasing the quality of services, providing training to the farmers, managing exhibition farms.

In order to ensure disease-free and quality shrimp supply in the field level, a joint initiative has been taken by the Department of Fisheries and World Fish for the identification of germs, to make PCR protocols and to increase awareness about PCR tested brood reserves. In addition to increasing the depth of the reservoir or pond to make shrimp farming more profitable and environment-friendly, initiatives have been taken to raise awareness about stocking brood in pond through PL nursing of shrimp.

### Potentials in dormant fisheries cultivation

In addition to harvesting marine shrimp and fish, sustainable harvesting and modern cultivation can be introduced for dormant marine species such as lobster, crab, kuchiya, algae, snail-oyster etc. By cage cultivation, the production of barramundi and bol fish can be increased. The only coral reefs in the

country, St. Martin, where a study to find the utility of sea cucumber, oyster and seaweed cultivation can be conducted. Effective survey and research activities should be carried out in fisheries cultivation. The production of Bangladesh's marine fisheries will increase manifold by making the illegal/harmful harvesting system obsolete through proper legal process and modernisation of Monitoring, Control and Supervision (MCS).

### Survey activities on the management of marine fisheries resources

It is very important to know the existing species, abundance, habitat, life cycle and activities for proper growth, development and prosperity of the sea fisheries. Therefore, various survey activities have been carried out on different marine fisheries resources. Through these surveys, we have obtained various data on our marine biodiversity, their reserves and their fields. This has created an opportunity for us to make the right decisions at the right time in harvesting and conserving our fisheries.

**1958-1971:** An exploratory survey on species diversity and fishing areas was conducted to assess the feasibility of harvesting of sea fish. The survey concluded with finding 475 species of marine fisheries and 5 fishing areas.

**1979-1980:** Dr Fritzoff Nansen operated a ship and conducted a survey of the fish reserve. According to his findings, there was a shrimp reserve of 2,000-5,000 metric tons; seabed fish reserve was 150,000-160,000 metric tons and

*The government commenced 'National Shrimp Policy 2014' to make shrimp farming more profitable and environment-friendly*





shallow water fish reserve was 60,000-120,000 metric tons within the water of Bangladesh.

**1981-1985:** During this period fisheries survey was conducted by RV Anushandhani with the help of the World Food Organisation and UNDP. The result is similar to the former.

**1987-2000:** By RV Anushandhani, the Government of Bangladesh conducted irregular fisheries surveys. As RV Anushandhani was disqualified for surveying in 2000, it was not possible to carry out survey work for many days.

**2016-Running:** In 2016, a research ship called 'Meen Shondhani' was included in the survey work in the Bay of Bengal under the supervision of the Department of Fisheries (DoF) of the Government of Bangladesh. Already, the research ship has identified 364 species of fish, 33 species of shrimp, 21 species of crabs and 12 species of snail-oysters by conducting 24 cruises. (Source: Department of Fisheries)

## Development of human resources in the marine fisheries sector

Human resource development is the most important thing for any sector. Although there are several training programmes for inland fish cultivation, it is inadequate for harvesting marine fisheries. There is no doubt that the fisheries harvest and fisheries protection will be greatly enhanced if special training and related technology are given to the fishermen. Realising marine fisheries potentials, the government has taken various initiatives and projects for human resource development in the fisheries sector. At present there is one fisheries training academy, six fisheries training centres and 4 fisheries diploma institutes. Apart from that, construction of three fisheries institutes in Bangladesh is underway.

## Impact of climate change on the harvesting of marine fisheries resources

Climate change is an ongoing process and it is changing rapidly due to man-made causes. It is threatening living species of the world

including humans. Climate change is an internationally important issue. Therefore, everyone is working to control the causes of climate change to maintain the world's stable

environment. Natural disasters such as floods, droughts, cyclones, tidal waves and abnormalities caused by climate change have increased, and the coastal lowlands of the country are flooding more with increasing

### The impacts of climate change and its potential outcomes in marine fisheries

Type of changes	Climatic variable	Impacts	Potential outcomes for fisheries
Physical environment	Ocean acidification	Negative effects on calciferous animals, including slowed rates of coral growth	Declines in production
	Warming of upper ocean layers	Poleward shifts in plankton and fished species	Changes in production and availability of fished species
		Changes in timing of phytoplankton blooms Changing zooplankton composition	Potential mismatch between prey (plankton) and predator (fish species) and declines in production
	Sea level rise	Loss of coastal habitats. Saline intrusion into freshwater habitats	Reduced production of coastal marine and freshwater systems and related fisheries
Fish stocks	Higher water temperatures	Changes in physiology and sex ratios of fished species Altered timing of spawning, migrations, and/or peak abundance	Changes in timing and levels of productivity across marine and freshwater systems
		Increased invasive species, diseases and algal blooms	Reduced production of target species in marine and fresh water systems
	Changes in ocean currents	Effects on fish recruitment	Changes in abundance of juvenile fish
Ecosystems	Increased frequency of El Nino Southern Oscillation (ENSO) events	Changes in timing and latitude of upwelling	Changes in pelagic fisheries distribution
	Higher water temperatures	Increased frequency and severity of coral bleaching event	Reduced coral reef fisheries productivity
		Changes in stratification, mixing, and nutrients in lakes and marine upwellings	Changes in productivity
Coastal infrastructure and fishing operations	Sea level rise	Coastal profile changes, loss of harbours and homes, increased exposure of coastal areas to storm damage	Costs of adaptation make fishing less profitable, increased costs of insurance and/or rebuilding, increased vulnerability of coastal households.
	Increased frequency of storms	Fewer days at sea, increased risk of accidents Aquaculture installations (coastal ponds, sea cages) at greater risk of damage	Reduced viability of fishing and fish-farming as livelihood options for the poor; reduced profitability of larger-scale enterprises, increased costs of insurance.



Industrial fisheries harvest was 10.7 per cent in the last financial year

seawater levels. In these disasters, people are dying, resources are being wasted. It is also having a negative impact on our fisheries resources. Under the changing circumstances, appropriate measures to maintain a favourable environment for fisheries and aquatic species have become vital for the sustainable development of the country's Blue Economy.

According to a report submitted to the United Nations Framework Convention on Climate Change (UNFCCC), the sea level will rise by 3.5 to 34.6 inches between 1990 and 2100, resulting in salinisation in coastal groundwater, water bodies, and endangering coastal communities. This threat is more difficult to deal with limited resources of a developing country like Bangladesh.

Due to the changing climate, natural and man-made fisheries, our country's fishery resources are shrinking. Coastal habitat is being destroyed. Besides, climate change is obstructing reproductive facilities, increasing mortality, decreasing production, and causing extinction of many fish and aquatic species. As a consequence of climate change, marine environment and ecology is being adversely affected.

## Government initiatives for the development of marine fisheries resources

An important component of achieving the Sustainable Development Goals (SDGs) is the Blue Economy.

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According to the SDG mapping published by the Planning Commission, the Ministry of Fisheries and Livestock is directly involved with the 6 goals of the SDG-14. Marine fisheries resources of Bangladesh have been directly or indirectly helping to achieve hunger and poverty-free country status as mentioned in SDG goals 1 and 2.

Already, various steps have been taken to implement these goals. Research and surveys are being conducted to determine the fisheries resources in the Bay of Bengal and the feasibility for sustainable fisheries harvest. 3,188 sq km area of the coast adjacent to Nijhum Dwip has been identified as a Marine Protected Area (MPA). Through the Department of Fisheries (DoF), the Ministry of Fisheries and Livestock has taken initiatives to enrich the marine fisheries resources. Major government initiatives are,

**Marine fisheries growth:** Effective implementation of policies to stop Illegal, Unreported and Unregulated (IUU) fishing in the Bay of Bengal by 2020 in order to increase the stock of marine fisheries.

**Stock assessment in the Bay of Bengal:** research vessel 'Meen Shandhani' with the technical and financial support of FAO and in cooperation with DoF is performing stock assessment and biodiversity surveys in the Bay of Bengal.

**Enacting acts, regulations and policies to regulate fishing pressure in BoB:** Marine fisheries act-2018 has been approved

and now undergoing vetting at Law ministry. Marine fisheries policies 2016 has been updated and waiting for Ministry approval.

**Development of Monitoring Control Surveillance (MCS) system:** one vessel tracking monitoring office has been established at Patenga, Chattogram. Vessel Tracking Monitoring System (VTMS) equipment has been installed in 133 industrial trawlers for proper monitoring.

**Mesh size and gear control:** in industrial trawlers, minimum mandatory mesh size is 45mm at the cod end for shrimp trawl nets and 60 mm at fish trawl nets are being regulated. Use of ESBNs (Estuarine Set Bag Net) are banned from 7 April 2017.

**Ban period:** To restore the wild stock in the Bay of Bengal, from 2015, every year there is a ban period on all type of fishing from 20th May to 23rd July. For the fiscal year 2018-2019, the government has sanctioned 16,591.36 MT of VGF relief for 414,784 fishermen of 42 upazillas of 12 districts during this ban period.

Every year, 22 days of a fishing ban are being imposed in marine water during major breeding season of hilsa.

**Fishing license regulation:** No fishing license for industrial fishing vessels is provided since 2015 to control overfishing and manage fish stocks.

**Marine Protected Area (MPA):** In the year 2000, Government declared 698 sq.km as MPA in the Bay of Bengal to protect and conserve the breeding grounds of marine fisheries. In 2014, the Swatch of No Ground was declared as an MPA to safeguard whale, dolphin, sea turtles and other oceanic species under the wildlife (conservation and security) act 2012. Another 3000 sq km of Marine Protective Area (MPA) has been proposed to be established near Nijhum dwip area of Hatia Upazilla.

**Indian Ocean Tuna Commission (IOTC) membership:** To facilitate tuna fish export, Bangladesh has achieved membership of the Indian Ocean Tuna Commission (IOTC) in 2018.

## Introduction of maritime zone law

In order to protect maritime resources, the government of Bangladesh is going to introduce a

maritime zone law. The draft law has been proposed to set up a special tribunal to deal with any illegal fishing, piracy, robbery or violent incidents that may take place inside the sea area of Bangladesh.

Death penalty, life sentence and even confiscation of property have been proposed for such crimes. A maximum of 14 years in prison and a fine of BDT 2 crore have been proposed for the crimes like smuggling and violence. The proposed law emphasised on maritime zone demarcation, prevention of pollution, IUU fishing, surveillance of domestic and foreign vessels and protection of maritime resources. A maximum of 1 year in prison or a fine of BDT 80 lac or both have been proposed as punishment for illegal fishing. It will be a comprehensive law on the conservation of maritime resources of Bangladesh, Blue Economy and scientific research in the maritime sector.

### The foremost requirement is an inclusive maritime policy

The fisheries sector is the largest source of livelihood for the marginal people of the coastal area. It spreads from the coast of Cox's Bazar-Teknaf-Shahpori's island-St Martin's island -Elephant Point to Khulna's Dublar Char-Heron Point covering an area of 1800 km which is the entire southern part of the downstream region.

As a result, the vast sea and coast area of Bangladesh can become the

main resource for economic prosperity. But first of all, an inclusive maritime policy is needed. To formulate the policy, the present government has taken important initiatives.

A Blue Economy Cell is formed under the Ministry of Power, Energy and Mineral Resources. In April this year, the Ministry organised an international conference titled 'Blue Economy for Sustainable Development' jointly with the Department of Oceanography of the University of Dhaka and Greentech Foundation. In March, a seminar titled 'Blue Economy and Sustainable Development Goal 14: Bangladesh perspective' was chaired by the State Minister for Shipping Khalid Mahmud Chowdhury.

### Suggestions and recommendations for marine fisheries management

1. For better management, sufficient information and data are needed. So, existing fish stock assessment, study of their biology and behaviour are the prerequisite to establish a better management plan, i.e. setting up of CPUE (Catch Per Unit Effort) or catch limit or ban period.
2. More research is needed on biology and behaviour of straddling commercial species for setting proper management strategies.
3. To control overfishing, all kind of fishing vessels should be taken under the registration and licensing system.

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4. Monitoring control surveillance (MCS) systems of fishing vessels have to be more developed and equipped to regulate overfishing.

5. Dependency on the wild for brood of tiger shrimps, crabs, sea basses should be reduced by developing technologies to create broods in captive water.

6. New overseas markets should be explored to export commercially important high valued fishes like tuna, marlin fish.

7. Mariculture expansion of some unconventional but high demand species, i.e. seaweeds, oysters, mussels.

8. Initiatives should be taken to introduce offshore mariculture of commercially important species. For that, appropriate techniques and knowledge should be disseminated to extension workers and interested farmers.

9. Awareness building programme should be arranged among the local fishermen about the protection and conservation of resources and also need to generate alternative income source for them during ban period.

Bangladesh has enormous potentials for harvesting fisheries in the huge economic zone of the Bay of Bengal. However, due to the depletion of resources, land and sea pollution as well as climate change, we are observing an adverse effect on the abundance and biodiversity of Bangladesh's fisheries. To overcome this situation, under the strong leadership of the Honourable Prime Minister Sheikh Hasina, the government has taken various steps for exploration and exploitation of sea resources. Also, Bangladesh is one of the countries who signed the regional and international rules, protocols, guidelines, conventions or agreements for proper management of marine fisheries and it's sustainable harvesting. These initiatives will open a new horizon for the development of sustainable marine fisheries resources for Bangladesh and play an important role in the development of our potential Blue Economy.

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Asst. Director  
Department of Fisheries

Fishermen piling hilsa fish for a bulk sale







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