

## Lecture 13

# Marine and Freshwater Resources of Bangladesh



# Introduction

- Bangladesh having the 3<sup>rd</sup> largest aquatic biodiversity in Asia behind China & India;
- About 800 species of fresh, brackish & marine waters;
- Having world's largest flooded wetland (Bengal Delta) & three main river systems
  - Ganges, Brahmaputra & Meghna
- Vast water resources offer the best possibilities for food security & income generation.

## Introduction.....contd

- ▶ Bangladesh has ranked third in the world in terms of inland fish production in 2018, according to a report by the Food and Agriculture Organization (FAO).
- ▶ After ranking fifth last year, the country now only trails behind China and India, ranked first and second, respectively.
- ▶ fisheries sector contributed 3.57 percent to the national GDP in FY18.

# About the Fisheries Resources

- ▶ Fisheries and aquatic resources are economically, ecologically, culturally, aesthetically important to the nation.
- ▶ Many of these resources are in decline due to factors such as: *habitat alteration, degrading water quality, invasive species, water availability, and inadequate stock management.*
- ▶ Successful conservation and restoration of these resources requires access to data and information on *fish biology, population dynamics, management, hatcheries, water quality, and aquatic habitat and ecosystems.*

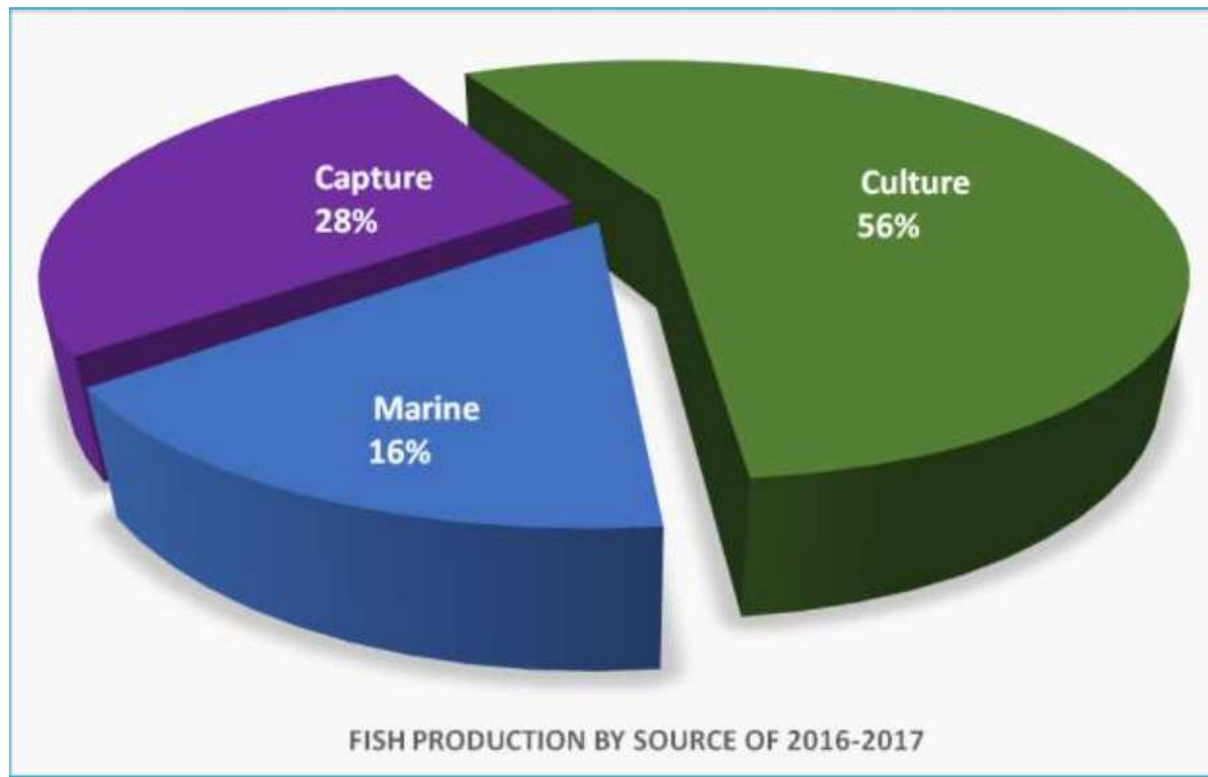
# About the Fisheries Resources....

- ▶ From the global perspectives, the main issues facing by the international fishing community are over fishing and environmental degradation.
- ▶ In Bangladesh, fisheries is one of the major sub-sectors of agriculture, which play a dominant role in nutrition, employment, earning foreign currency and other areas of economy.

**Table 1. Statement of water resources in Bangladesh**

<b>Water resources</b>	<b>Area (hectare)</b>
Inland fisheries	
a. Open water bodies	2, 83 ,2792
Floodplains	1, 011, 563
River & tributaries	114, 161
Natural depressions	68, 000
<b>Total open water bodies</b>	<b>4, 047, 316</b>
a. Closed water bodies	
Ponds	146,890
Oxbow lakes	5,488
Shrimp farms	140, 000
<b>Total closed water bodies</b>	<b>292,378</b>
<b>Total inland water bodies (a+b)</b>	<b>4,339,694</b>
<b>Marine fisheries</b>	<b>16,606,600</b>

# Fisheries of Bangladesh





**TABLE 2. TOP TEN COUNTRIES IN INLAND CAPTURE FISHERIES PRODUCTION (FAO 2009)**

Country	Production ( <i>Thousand tonnes</i> )	Percentage of world production
China	2,544	25.3
Bangladesh	957	9.5
India	858	8.5
Myanmar	631	6.3
Cambodia.	422	4.2
Uganda	367	3.6
Indonesia	301	3.0
Tanzania	293	2.9
Egypt	256	2.5
Brazil	251	2.5

**TABLE 3. TOP TEN COUNTRIES IN AQUACULTURE PRODUCTION (FAO 2009)**

Producer	2004 (Tonnes)	2006 (Tonnes)	APR (Percentage)
<b>Top ten producers in terms of quantity, 2006</b>			
China	30 614 968	34 429 122	6.05
India	2 472 335	3 123 135	5.71
Viet Nam	1 198 617	1 657 727	17.6
Thailand	1 172 866	1 385 801	4.84
Indonesia	1 045 051	1 292 899	11.23
<b>Bangladesh</b>	<b>914 752</b>	<b>892 049</b>	<b>-1.25</b>
Chile	776 421	802 410	9.81
Japan	776 421	733 891	-2.78
Norway	636 802	708 780	5.50
Philippines	512 220	623 369	10.32

# What is Blue economy?

- ▶ According to the **World Bank** the blue economy is the "sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem."
- ▶ **European Commission** defines it as "All economic activities related to oceans, seas and coasts. It covers a wide range of interlinked established and emerging sectors."
- ▶ The **Commonwealth** of Nations considers it "an emerging concept which encourages better stewardship of our ocean or 'blue' resources."

# BLUE ECONOMY

The Blue Economy is sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health.

The Blue Economy encompasses many activities...

## RENEWABLE ENERGY

Sustainable marine energy can play a vital role in social and economic development.

## MARITIME TRANSPORT

Over 80% of international goods traded are transported by sea, and the volume of seaborne trade is expected to double by 2030 and quadruple by 2050.

## FISHERIES

Marine fisheries contribute more than **US\$270 billion** annually to global GDP. More sustainable fisheries can generate more revenue, more fish and help restore fish stocks.

## TOURISM

Ocean and coastal tourism can bring jobs and economic growth. Coastal Least Developed Countries and Small Island Developing States receive more than **41 million visitors** per year.

## CLIMATE CHANGE

The impacts of climate change on oceans—rising sea-levels, coastal erosion, changing ocean current patterns, and acidification—are staggering. At the same time, **oceans are an important carbon sink** and help mitigate climate change.

## WASTE MANAGEMENT

**80% of litter** in the ocean is from land-based sources. Better waste management on land can help oceans recover.





# THE BLUE ECONOMY.



uses smart shipping to lessen the impacts on the environment



is inclusive and improves the lives of all



harnesses renewable energy



is based on sustainable fisheries



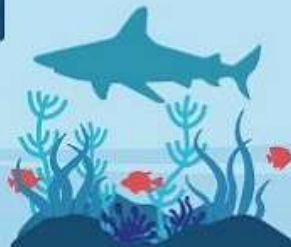
creates jobs, reduces poverty and ends hunger



protects coastal communities from the impacts of climate change



takes action against illegal fishing



conserves marine life and oceans



tackles marine litter and oceans pollution

# Blue economy and Bangladesh



# Blue Economy Growth Areas



# Components of the Blue Economy

Type of Activity	Ocean Service	Established Industries	Emerging Industries	Growth Drivers
Harvesting of living Resources	Food Security Marine Bio-technology	Fisheries	Aquaculture Pharmaceuticals Chemicals	Population Growth, Coastal Urbanization, Food Security Demands, <b>Seafood Demand</b> Healthcare, Medical Industry, Beauty Industry, Cosmetic Industry
Extraction of non-living Resources	Minerals Metals Oil and Gas	Seabed Mining Exploration	Deep Sea Mining Oil & Gas Derivative Products	Heavy Industries Demand for Minerals Manufacturing Industry Demand Existing Energy Demand, Oil & Gas Derivative Products Demands
Generation of new Resources	Energy Water	Alternative Energy Desalination	Renewable Energy Wave Energy Electrochemical Mediation	Energy Demand, International Energy Regulation Existing Fresh Water Demand, Water Stocks, Water Management
Commerce and Trade	Transport and Trade Tourism and Recreation	Shipping, Ports Infrastructure & Services Tourism and Coastal Development	Energy Source Changes, Cabotage Eco-Tourism, Marine Real Estate, Marine Heritage	Growth in Seaborne Trade, International Regulations, Globalization Growth in Tourism, Urbanization, Preservation & Conservation Demands
Response of Ocean Health	Ocean Monitoring & Surveillance Carbon Sequestrations Coastal Governance Ocean Pollution	Information Technologies National Carbon Regulations National Security Salvage & Towage	Ocean Technologies Blue Carbon Cabotage, Habitat Protection & Restoration Wreck Removals & Restoration, Pollution & Waste Technologies	R & D in Ocean Technologies International Carbon Regulations Growth in Tourism, Urbanization, Preservation & Conservation Demands



# Management and development issues

- ▶ Old fashioned fisheries management, regulation and rules, i.e. Marine Fisheries Ordinance 1983, which needs to be updated;
- ▶ Low level of monitoring, control and surveillance (MCS) of DoF;
- ▶ Inadequate management of Fisheries & Ecosystem needs to be updated;
- ▶ Resource allocation and access rights to poor fishermen;
- ▶ Co-management of small-scale fisheries;
- ▶ Inadequate research on Marine Fisheries.

# Key management measures

- ▶ **Limiting the fishing days for industrial trawlers:** The freezer trawlers are permitted for 30 days, non-freezer trawlers are permitted for up to 15 days;
- ▶ **Measure to limit discard of bi-catch:** Shrimp trawlers must have at least 30 percent fish in the total catch;
- ▶ **Control of mesh size:** Mandatory 45 mm mesh size at the cod end for the shrimp trawl nets. Since 2003, massive drive against catching of jatka (hilsa fry) by small mesh nets called “Current Jaal” during November to May;

# Key management measures...

- ▶ **Depth zone restriction of 40 m:** Restricting shrimp and fish trawling within the 40 m depth zone;
- ▶ **Declaration of hilsa sanctuary:** Four sites in the coastal area have been established as hilsa sanctuaries;
- ▶ **Restrictions on industrial trawler license:** Restricted the issue of license for industrial trawler till conducted proper survey of the EEZ;
- ▶ **Encouragement to fish beyond 500 m isobaths of EEZ:** Encourage industrial fishing fleet to fish outside 500 m isobaths within EEZ;

# Key management measures....

- ▶ **Restriction on post larvae collection:** Restricted PL collection in coastal areas in 2000, which was later reinforced in 2002;
- ▶ **Ban on throwing any fish into the sea:** Imposed restriction on throwing any catch except turtle in the sea;

# Bangladesh: Seafood Production

- Countries like Bangladesh get the importance of seafood.
- In July of 2011, a National Fisheries Week was inaugurated in Bangladesh with a target to produce 3.5 million tonnes of fish by the end of 2013 and 4.2 million tones by the end of 2021.
- This is seen as a significant step towards Bangladesh achieving food security and sovereignty. Currently, the fish sector supplies 60% of animal protein, 3% of export earning and 3.74% of the total GDP.
- The 2011 National Fisheries Week theme was: “Produce safe fish to change Bangladesh”
- Fisheries and Livestock Ministry provided support with workshops and technical trainings.
- The week also aimed to increase awareness about fish to citizens through fish fairs, publications of supplementary information in national newspapers, telecast of various programs, essay writing and a painting competition.



# Seafood Production in Bangladesh-01





# Seafood Production in Bangladesh-02





# Seafood Menu in Bangladesh-01





# Seafood Menu in Bangladesh-02





# Seafood Menu in Bangladesh-04





# Seafood Menu in Bangladesh-05

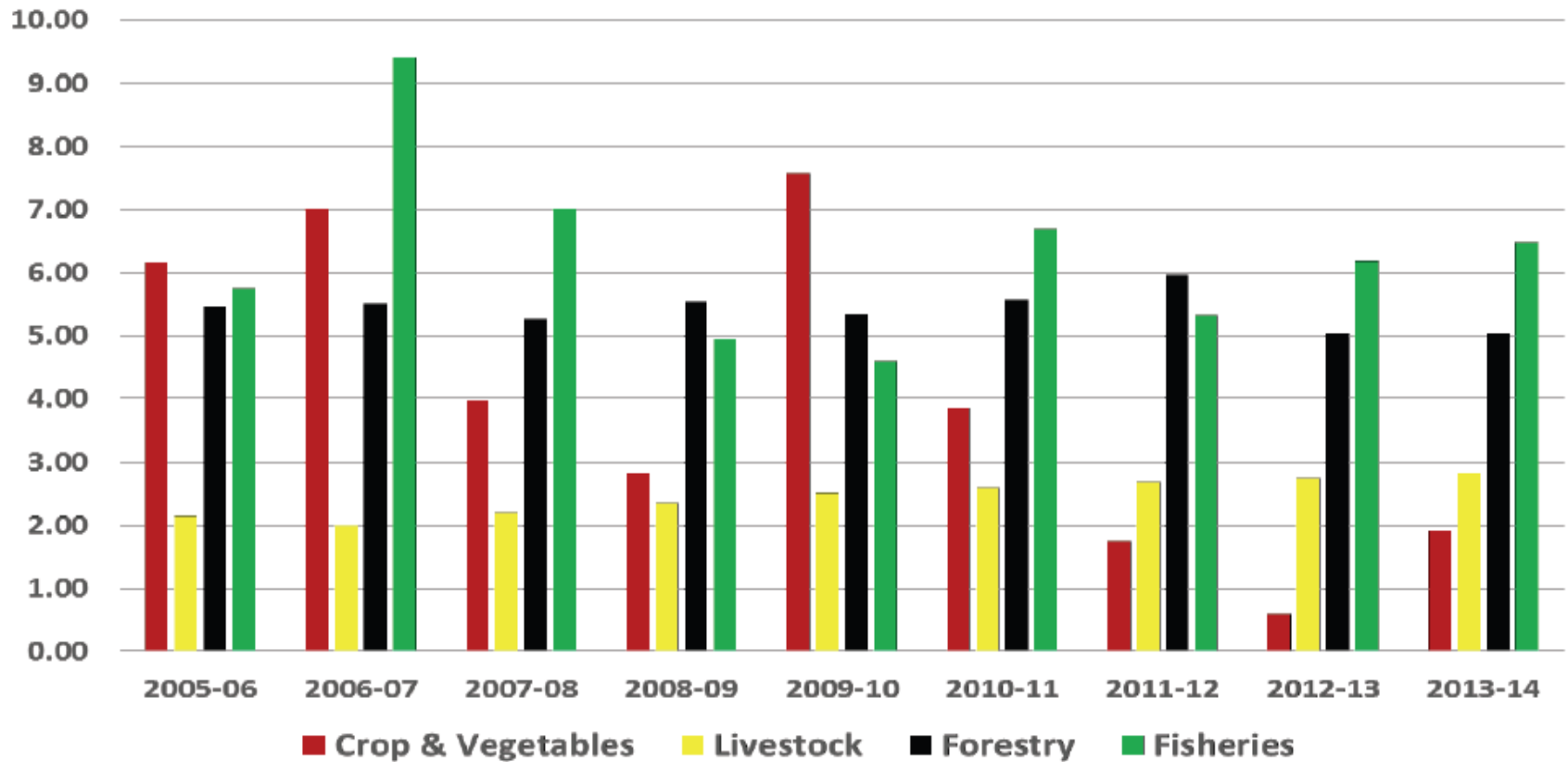


# Fisheries Contribution Trends in Bangladesh

Fisheries Contribution to National GDP 3.69%

Fisheries Contribution to Agricultural GDP 23.12%

Nine Years GDP Growth Rate (%)



# Key Challenges of Seafood Production and Blue Economy

Sub-Sector	Prospects	Challenges
<b>Economic</b>	<ul style="list-style-type: none"> <li>- Increased Productivity</li> <li>- Sustaining Coastal Economy</li> </ul>	<ul style="list-style-type: none"> <li>- Resources Depletion</li> <li>- Unpredictable Product Supply</li> <li>- Increased Market Competition</li> </ul>
<b>Social</b>	<ul style="list-style-type: none"> <li>- Increased Employment</li> <li>- Working Waterfront</li> </ul>	<ul style="list-style-type: none"> <li>- Community Vulnerability</li> <li>- Food Safety</li> <li>- Trade Association</li> <li>- Business Competition</li> <li>- Corruption and Quality Control</li> </ul>
<b>Development</b>	<ul style="list-style-type: none"> <li>- Improved Coastal Infrastructure                             <ul style="list-style-type: none"> <li>&gt; Harbor &amp; Ports</li> <li>&gt; Transport Network</li> <li>&gt; Cold Storage</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Technology</li> <li>- Industry Consolidation</li> <li>- Quality Control</li> </ul>
<b>Environmental</b>		<ul style="list-style-type: none"> <li>- Economic Sustainability</li> </ul>

# Finally,

- It is extremely important to understand and recognize the need for aquatic habitats and the adaptation of different fish and prawn populations to certain sets of hydrological conditions for breeding, feeding, migration and movement.
- While planning water resources development projects, comprehensive studies on different aspects of ecological needs of fisheries species should be undertaken.