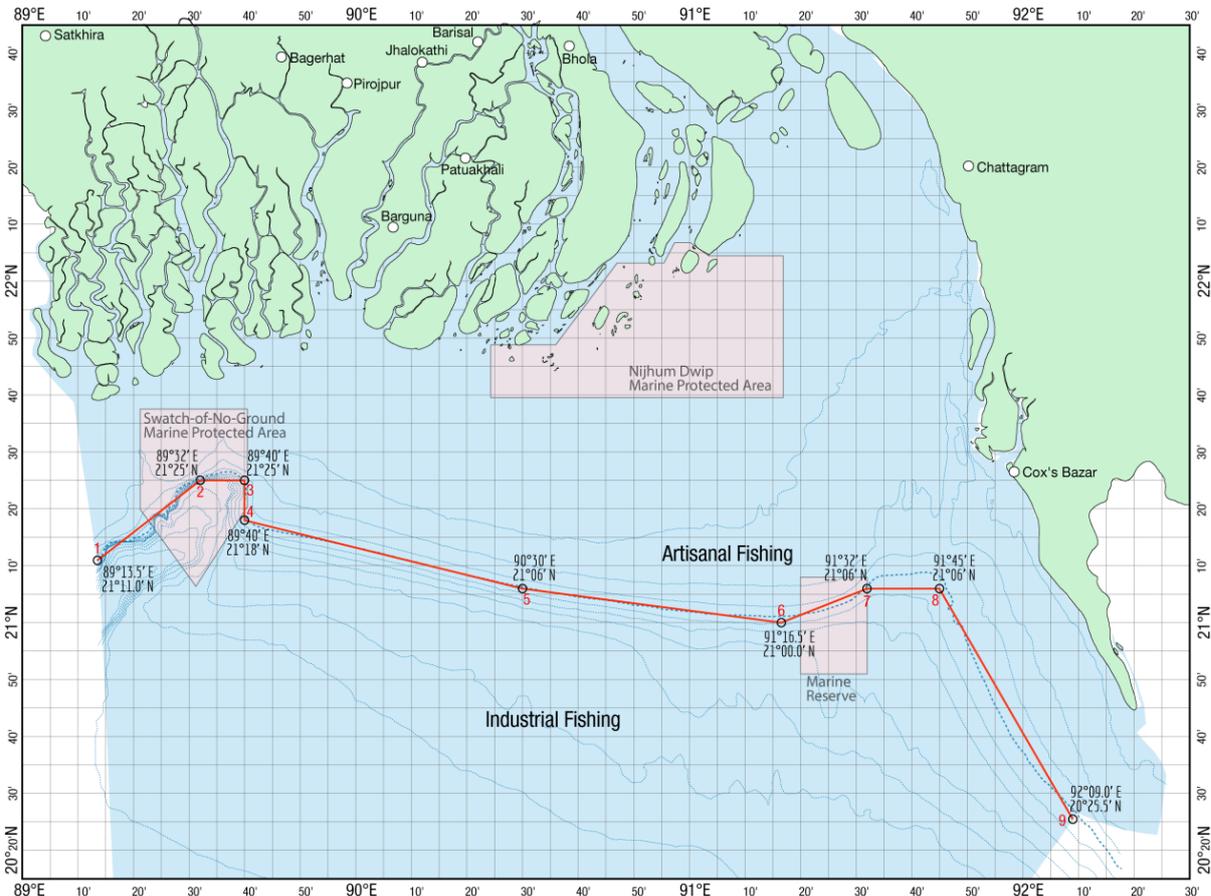


# Bangladesh Marine Fisheries Management Plan: Part 2-Artisanal

Based on the Ecosystem Approach to Fisheries Management (EAFM)



Department of Fisheries  
Ministry of Fisheries and Livestock

September 2023

## Abbreviations

ABNJ	Area beyond National Jurisdiction
AIS	Automatic Identification System
BCG	Bangladesh Coast Guard
BFDC	Bangladesh Fisheries Development Corporation
BFRI	Bangladesh Fisheries Research Institute
BMD	Bangladesh Meteorological Department
BMFA	Bangladesh Marine Fisheries Association
BN	Bangladesh Navy
BOA	Boat Owners Association
CMC	Co-Management Committee
CPA	Chittagong Port Authority
CPUE	Catch per Unit Effort
DoF	Department of Fisheries
DoS	Department of Shipping
EAFM	Ecosystem Approach to Fisheries Management
ECA	Ecologically Critical Area
ECDIS	Electronic Chart Display Information System
ECL	Effort control and licencing management strategy
EEZ	Exclusive Economic Zone
ESBN	Estuarine Set Bag Net
ETS	Endangered &Threatened Species
EU	European Union
FAB	Fisheries Advisory Body
FMP	Fisheries Management Plan
FPI	Fisheries Performance Indicator
FV	Fishing Vessel
GoB	Government of Bangladesh
HACCP	Hazard Analysis Critical Control Point
HCR	Harvest Control Rule
HFMP	Hilsa Fisheries Management Plan
IUU	Illegal, Unreported and Unregulated
JMC	Joint Monitoring Cell
JMC-CC	Joint Monitoring Cell-Coordination Committee
KPI	Key Performance Indicator
MCS	Monitoring, Control and Surveillance

MFA	Marine Fisheries Act 2020
MFO	Marine Fisheries Office
MFR	Marine Fisheries Rules 2023
MFSC	Marine Fisheries Surveillance Check Post
MFSMU	Marine Fisheries Survey Management Unit
MMO	Mercantile Marine Office
MoFL	Ministry of Fisheries and Livestock
MPA	Marine Protected Area
MR	Marine Reserve
MSY	Maximum Sustainable Yield
NPOA	National Plan of Action
PSO	Principal Scientific Officer
SCMFP	Sustainable Coastal and Marine Fisheries Project
SDF	Social Development Foundation
SDG	Sustainable Development Goal
SOP	Standard Operating Procedure
TAE	Total Allowable Effort
TAC	Total Allowable Catch
VMS	Vessel Monitoring System

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## 1 SECTION A: Introduction and Background

### 1. The status of this document

This document presents the artisanal marine Fisheries Management Plan (FMP) based on the ecosystem approach to fisheries management (EAFM) for sustainable harvests of marine fisheries resources by artisanal and mechanised fleets defined in the Marine Fisheries Act 2020. It is the second document of two, and the other is the industrial marine FMP. These two documents outline comprehensive fisheries management plans for all marine fisheries in Bangladesh from 2021 to 2027.

### 2. Vision and overall objectives

The marine fisheries of Bangladesh provide economic benefits and livelihoods through sustainable management of fisheries resources and conservation of ecosystem health. Management of marine fisheries under the ecosystem approach to fisheries management (EAFM) includes consideration of human well-being, ecosystem health, and good governance through a comprehensive co-management planning process.

### 3. Marine capture fisheries overview

Although Bangladesh has over 118 thousand square kilometres of sea area in the Bay of Bengal to a depth of about 2200 meters, its known marine fisheries resources are presently limited to the shallow shelf-sea, to a depth of about 80 m, which constitutes only about 36% of the Exclusive Economic Zone (EEZ). Only about 14,600 km<sup>2</sup> (12%) are fishing grounds of commercial significance within the shelf sea area. Only a small fraction of the several hundred known species of fishes, shrimps, crabs and other animals caught in this multi-species fishery are of economic and fishery significance.

The Blue Economic Development aspiration of the nation mandates to achieve Sustainable Development Goal (SDG)-14 targets as stipulated by the United Nations' SDGs. Moreover, fulfilling other international obligations on the one hand and relatively small area and finite fisheries biomass on the other, striking a balance between fisheries resource economy and long-term marine fisheries sustainability will require carefully crafted fisheries policies, strategies and plans.

Research surveys by RV Meen Shandhani and stock status analysis in recent past years (2016-2019) indicate that most of Bangladesh's commercially important marine fishes have depleted to varying degrees<sup>1</sup>. Current stock status analysis in 2023 indicate some degree of stock recovery of several commercially important marine fishes such as Pomfret, Bombay duck, Savalai hairtail & Coromandel ilisha. However, none of the economically significant marine shrimp stocks appears to be capable of recovery under the current fishery regime<sup>2</sup>. Due to various uncertainties, including the short available time series data and lack of current length-frequency data, the results are uncertain. The results of stock status may change once more recent data across the fisheries become available. The overfishing situation could likely worsen in a few years unless effective and restrictive fisheries management plans are enforced.

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<sup>1</sup> DoF 2019, Fanning P., et al. Marine fisheries survey reports and stock assessment.

<sup>2</sup> DoF 2023, Medley P., et al. Bangladesh Marine Fish Stock Assessment Summary Report.

In the last five years (2018-2022), the total annual marine fish catches from Bangladesh waters are 655-706 thousand MT. The majority (80.6% recently) comes from the large number of artisanal vessels (around 30 thousand) predominantly operating in shallow waters (<40 m).

#### **4. Specific fisheries management principles**

The following management principles were recognised and promoted in developing and establishing the FMP. Management principles support efficient fisheries management plans with high compliance and are reflective of and adaptable to the uncertainties in fisheries. These are:

- Good governance practises facilitate fisheries rules and regulations and adequate resources and arrangements for compliance and enforcement.
- Fish stocks and communities are finite; thus, their annual biological production limits their potential yield, which must be scientifically estimated annually for fish stock management purposes.
- The biological production of a fish stock depends on the size of the fish stocks and the ecological environment. Management functions must set target reference points through data collection and monitoring fisheries assessment and environmental impacts.
- A sense of "ownership" and a long-term stake in the resources for those (individuals, communities or groups) with access are most conducive to maintaining responsible fisheries. A system of adequate and appropriate access rights must be established and enforced.
- Active cooperation and coordination across government agencies to oversight and deter illegal marine fisheries activities;
- Adaptive management that embraces change through learning and adapting;
- The precautionary approach does not delay action because of a lack of information and manages the fisheries cautiously when uncertainty exists;
- Reorient sector performance towards "Volume to Value", reducing pressure on fishing;
- Effective participation in the management process by fully-informed users is consistent with the democratic principle, facilitates the identification of better management systems and encourages compliance with laws and regulations through communication.
- Establish clear and rational key fisheries performance indicators (KFPI) for the fundamental fisheries management measures, regularly monitored and appraised.

The fisheries management plan (FMP 2 Artisanal) is a "living document" and will be biennially updated to guide fishery management and be responsive to policy adjustments.

#### **5. Scope of the FMP**

The FMP 2 applies to all marine capture fisheries conducted by the country's artisanal & mechanised fishing vessels. This plan outlines the current rules, regulations and management measures governing the artisanal fishery. It is intended to be used by DoF and other stakeholders and explain the management measures necessary to conserve and regulate the artisanal fishery.

#### **6. Implementation**

Although this FMP covers the fishing years 2023-2024 to 2026-2027 inclusive, it may be reviewed biennially based on the best scientific information available and the fishery's performance, achieving

stipulated targets against indicators and benchmarks set in the plan. The plan will be amended as required based on the biennial reviews. Department of Fisheries (DoF) and other concerned agencies from the maritime domain & stakeholders will implement the measures specified in the plan. Biennial reviews will be presented to stakeholders through the consultative process.

## **7. The National context of the FMP**

The marine fisheries of Bangladesh consist of 231 active industrial trawlers primarily operated from Chattogram and an artisanal fleet of over 30,000 smaller vessels (frame survey, SCMFP, 2022). These two major marine fleets are managed separately. However, fisheries management recognises they share many resources and are interdependent. The Government of Bangladesh (GoB) has recognised the need to sustainably manage and conserve marine fisheries resources to achieve SDG-14 (life below water) targets and harness the potential of blue growth initiatives.

The FMP 2 applies to all marine capture fisheries conducted by the country's artisanal & mechanised fishing vessels. This fishery is mostly limited to the 40 m depth contour area. The FMP-2 covers the full range of all small and large pelagic species, demersal fish and shrimp species, and non-target and dependent species (endangered and threatened) fished by artisanal fishers.

## 2 SECTION B: The Marine Fisheries Resources

### 1. The state of the marine resources

Four significant fishing grounds are identified in Bangladesh's marine water, comprising 14,600 sq. km. (Figure 1). Species composition on the different grounds varies somewhat, as shown in Table 1.

Table 1 Major species on marine fishing grounds (adopted/updated from Hussain, 1982)

Name	Location	Major commercial species
South Patches	90°10' - 90°50'E 21°10' - 21°40'N	Indian salmon, Hilsa, Pomfret, Ribbon fish, Bombay duck, Eel, Croaker, Catfish
South of South Patches	90°30' - 90°40'E 20°45' - 21°10'N	Pomfret, Red snapper, Croaker, Carangids, Grunter, Ribbon fish, Shrimp, Mackerel, Tuna
Middle Ground	90°00' - 90°40'E 21°00' - 21°25'N	Hilsa, Snapper, Grouper, Croaker, Shrimp, Arius, Tuna
Swatch of No Ground	89°00' - 89°50'E 21°00' - 21°40'N	Hilsa, Pomfret, Ribbon fish, Bombay duck, Croaker, Shrimp, Tuna

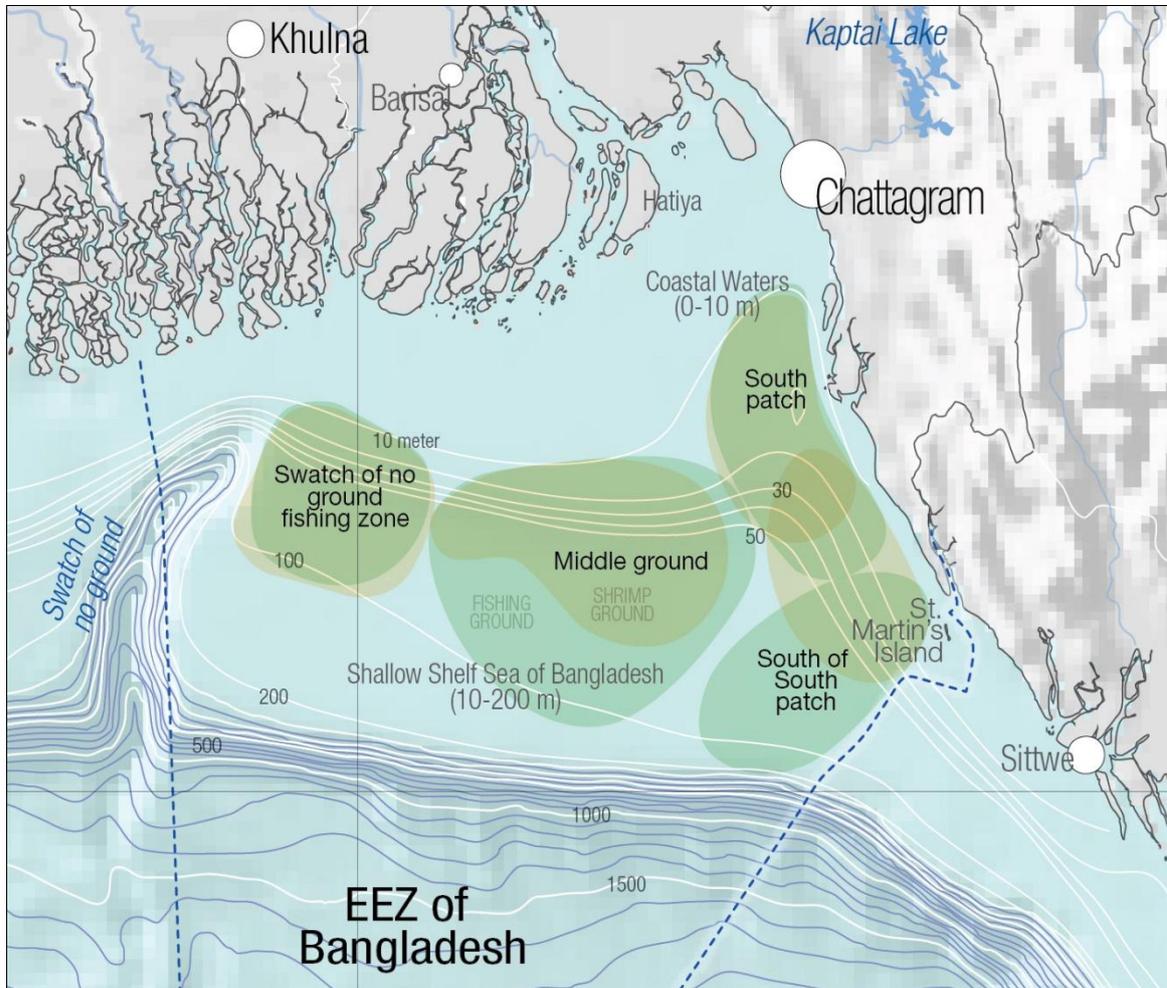


Figure 1 Named fishing grounds on the Bangladesh continental shelf.

The industrial sector shall operate only in waters beyond the geo-fence (fisheries boundaries). Geographic coordinates for the geo-fence are shown in figure 7. The artisanal fleet shall fish in waters inside the geo-fence, excluding the marine protected areas (MPA).

## 2. Science-based fisheries management

Recent past stock assessment analyses (2016–2019) have indicated the state of the marine fisheries resources without specific quantitative estimates analyses due to research limitations. They provide solid and consistent indications that marine fisheries are generally overfished. The trend of increasing total landings is reducing economic value overall and is unsustainable in the longterm. This advice is formulated under the new consensus that sustained fisheries are less prescriptive but more process-oriented and adaptive.

The analyses indicated mixed trends for different finfish groups, with increased catches of small pelagics, especially sardines, offsetting to some degree the depletion and overfishing of larger-sized and more valued species groups. Mortality estimates for sardines suggest the group is being overexploited and is somewhat depleted. The increase in shrimp catches by the midwater trawlers reveals they are being operated on the bottom, negating the potential selectivity benefits of that gear type. The overall shrimp biomass trend has been consistently downward over 30 years. More detailed information on species mix in the industrial shrimp catches since 2005 show the catch rates for tiger shrimp (most valuable) and brown shrimp are declining steadily.

The overall observation from the previous stock assessment work (2019) was that marine fisheries resources are heavily exploited, with some species severely depleted and in urgent need of rebuilding. The most heavily overexploited species groups include many larger and more valuable species, such as Indian salmon and large croakers. The results for Indian salmon (*Leptomelanosoma indicus*), the most valuable finfish species in Bangladesh, showed it was severely depleted, and overfishing was ongoing. Species in this condition are at significant risk of commercial extinction and could be extirpated without specific management protection.

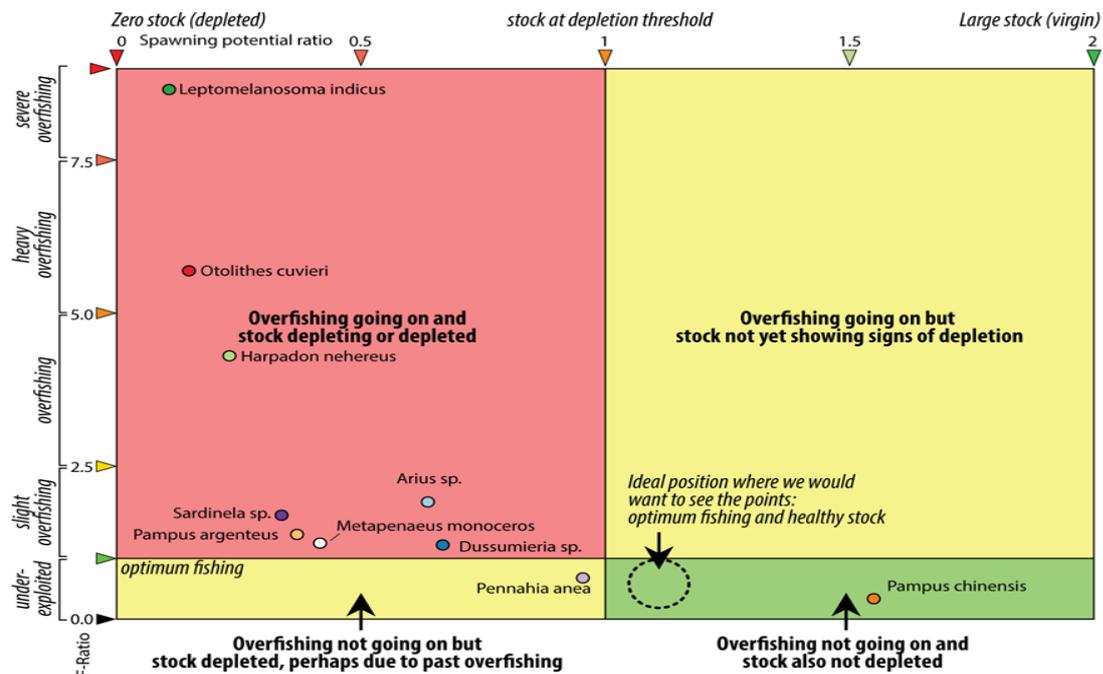
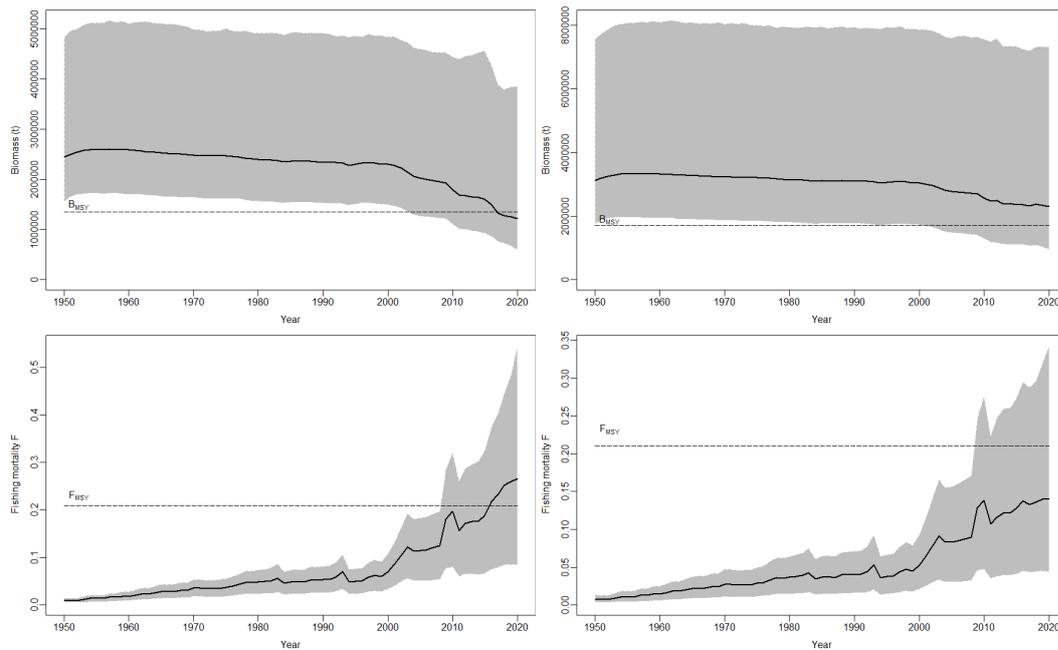


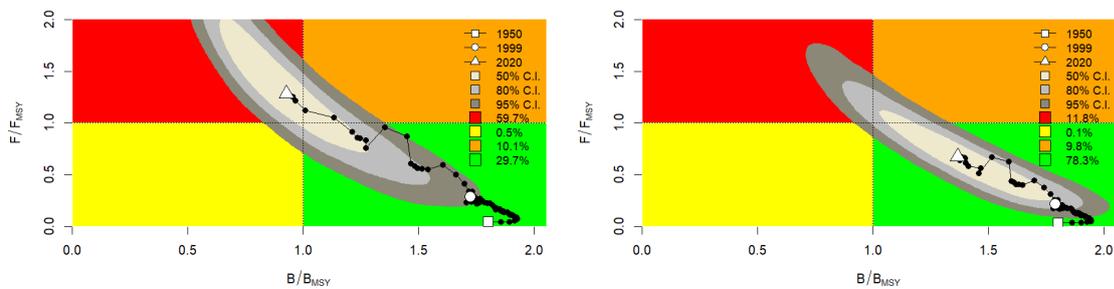
Figure 2 Phase plot of the status 2019

The overall observation from the most recent work indicate some degree of stock recovery of several commercially important marine fishes such as Pomfret, Bombay duck, Savalai hairtail & Coromandel ilisha. The report suggested that most of the finfish species are probably not overfished, but shrimp may be (Figure 3-6)<sup>3</sup>. The report suggested action to prevent the fishery from reducing the diversity of the catches as less productive species are removed. The length frequency and catch-effort data provided conflicted results on the status of hilsa shad. Therefore, an improved assessment of hilsa shad with more recent data is required.

In the management considerations, it was noted that the current management practice permits excessive and increasing fishing effort and recommend measures to stop artisanal fleet growth. Even decisive management intervention will require years of consistent and effective control to see the resulting benefits.



**Figure 3** Estimates of finfish biomass (top) and fishing mortality (bottom) relative to the MSY levels for the industrial (left) and artisanal (right) index scenarios. For the Schaefer model, MSY is 50% unexploited stock size (K).



**Figure 4** Finfish “Kobe” plot showing past stock status trajectory mean and credible intervals for the industrial (left) and artisanal (right) models. While the stock is not likely to be heavily overfished, the probability of the overall populations of finfish being in an overfishing / overfished state is significant.

<sup>3</sup>DoF 2023, Medley P., et al. Bangladesh Marine Fish Stock Assessment Summary Report.

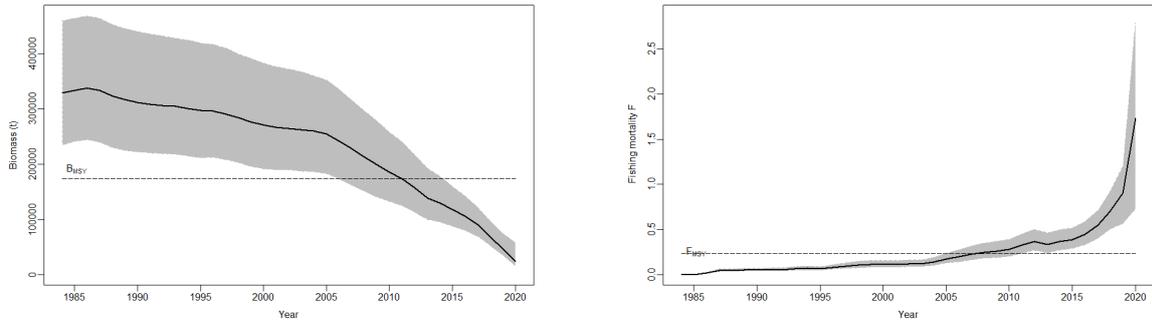


Figure 5 Estimates of biomass (left) and fishing mortality (right) relative to the MSY levels. For the Schaefer model, MSY is 50% unexploited stock size (K).

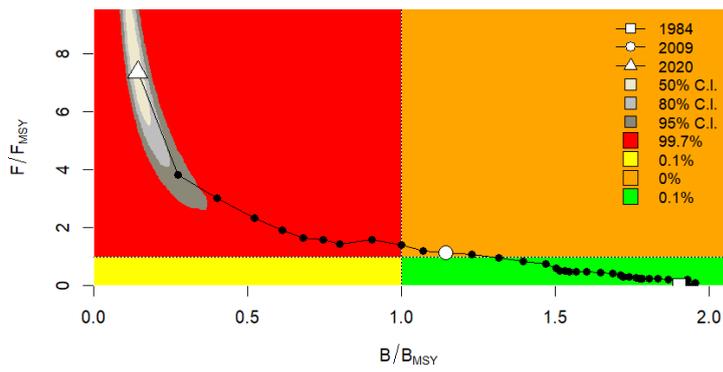


Figure 6 Shrimp “Kobe” plot showing past stock status trajectory mean and credible intervals for the current status. The shrimp stock is highly likely overfished.

### 3 SECTION C: The Development of Artisanal Fisheries in Bangladesh

#### 1. The development of marine fisheries in Bangladesh

The artisanal marine sector accounts for almost 80% of the marine fisheries and about 12% of national fish production, as highlighted in Table 2 below.

Table 2 Reported national and marine fisheries production in Bangladesh 2021-22

Fisheries Sector	Production (MT)	Percent of total production	Percent of marine production
Inland fisheries total (capture & culture)	4052,701	85.17%	
Industrial marine fisheries	137,170	2.88%	19.43%
<b>Artisanal marine fisheries</b>	<b>568,860</b>	<b>11.95%</b>	<b>80.57%</b>
Marine fisheries total	706,030	14.83%	
National total	4,758,731		

Source: Yearbook of Fisheries Statistics of Bangladesh, DoF, 2021-22

The fisheries sector's contribution to the national GDP, including aquaculture and inland and marine capture fisheries, is 2.43%, and 22.14% to the agriculture GDP involving 12% of the nation's population, directly or indirectly in the fisheries sector.<sup>4</sup>

Table 3 Marine fisheries production (MT) historical summary and recent trends in Bangladesh

Time frame	1993-94	2003-04	2013-14	2017-18	2018-19	2019-20	2020-21
Industrial	12,454	32,606	76,885	120,087	107,236	115,354	119,121
Artisanal	240,590	422,601	518,500	534,600	552,675	555,750	562,118
<b>Total</b>	<b>253,044</b>	<b>455,207</b>	<b>595,385</b>	<b>654,687</b>	<b>659,911</b>	<b>671,104</b>	<b>681,239</b>

Source: Yearbook of Fisheries Statistics of Bangladesh, DoF, 2021-22

Although the gross production of marine capture fisheries continues to increase due to a decades-long expansion of the fishing fleet, it has slowed down, as shown in Table 3 and Figure 7. The catch rates (catch per unit effort, CPUE) in Table 4, show stable CPUE for the industrial and artisanal mechanised fleets. The hilsa stock recovery has benefited the artisanal mechanised boats, which have increased their share in the total hilsa catch by 10% or from 80% to 88% in recent years.

Table 4 Annual average CPUE development by fleet groups 2015-16 to 2020-21 (MT)

Time Frame	2015-16	2020-21	Change
Industrial trawlers; annual average CPUE	427	509	16.1%
Artisanal Mechanised Vessel; annual average CPUE	14	15.7	10.8%

Source: Yearbook of Fisheries Statistics of Bangladesh, DoF, 2020-21

<sup>4</sup> Yearbook of Fisheries Statistics of Bangladesh 2021-22

Table 5 shows the average annual increase of the marine fishing fleet over almost a decade to be just over 5.7%, and the total fish catch grew annually by 2.5 %. The fleet growth is double the growth in catch volume. The figures show a tremendous fleet expansion over a relatively short period. Over the period, more than one new trawler was added to the fleet every two months.

Table 5 Numbers of artisanal boats and industrial fishing vessels in Bangladesh

Time Frame	2010-11	2020-21	Change
Industrial trawlers	158	234	48%
Artisanal Mechanised Fishing Vessel	21,726	32,859	51%
<b>Total annual marine catch (MT)</b>	<b>546,283</b>	<b>681,239</b>	<b>23%</b>

Source: Yearbook of Fisheries Statistics of Bangladesh, DoF, 2020-21

These figures in Tables 3, 4 and 5 indicate strong overfishing and overcapitalisation in the marine capture fisheries. They align with the findings of recent scientific fisheries surveys conducted by DoF. The total annual catch for artisanal and industrial fleets has stagnated despite the increased effort, as shown in Figure 7. The lines show how the annual catch by fleet groups levels out after the 2013-14 fishing season despite the drastic fleet expansion.

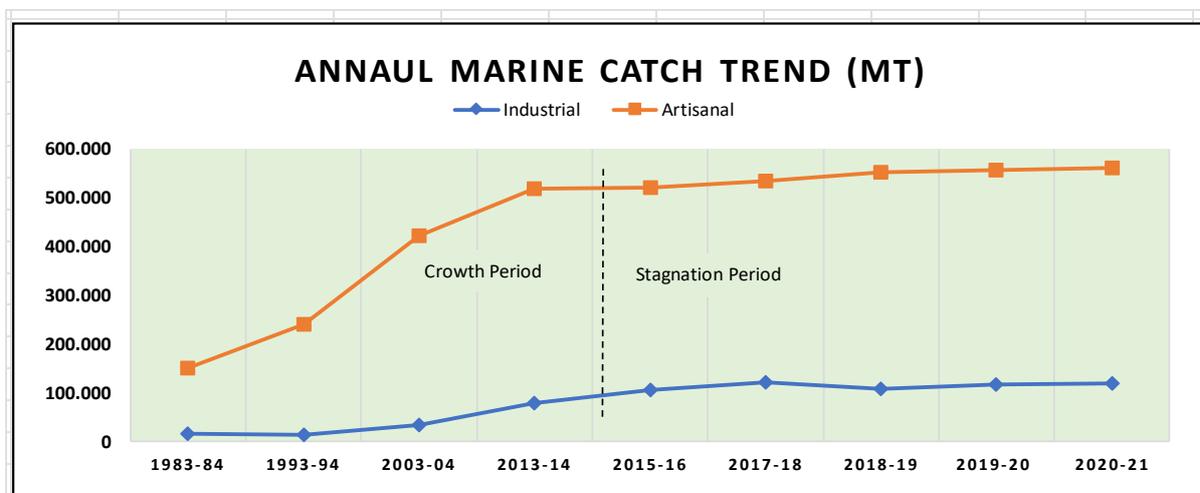


Figure 7 Total annual marine catch development 1983-84 to 2020-21 (DoF, 2020 - 21)

## 2. Artisanal marine fisheries

According to the frame survey conducted by SCMFP, DoF in 2021-2022, the artisanal fishing fleet consists of over 30 thousand primarily wooden-hulled vessels using passive fishing gears like gillnets, trammel nets, set bag nets, beach seine nets, and longline to catch fish. Among gear groups the most predominant gear is drif gill net or other forms of gill net comprising more than 85% of total gear used followed by the set bag net (12%). Around one-third of the artisanal fishing fleet operates in shallow waters for daily fishing. Rest of the vessels operates mostly within 40 meter depth zone for multi-days (generally 2 to 13 days) fishing.

## 3. The fish catch

The marine annual fish catch by fleet groups is shown in Table 6. The table shows how artisanal fishing vessels are the dominant group in marine fish catch production. They catch over 80% of the total volume, almost 97% of the hilsa and 93% of the shrimp catch. This group also generated the

most landed catch value due to the high level of hilsa and shrimp in their catch, or close to 85% of the total annual marine catch value in the 2020-21 fishing season.

Table 6 Marine fish catch (MT) by species and fleet group 2020-21

Species	Hilsa	Shrimp	Other	Total	%
Industrial fleet	7,781	3,069	108,271	<b>119,121</b>	17.4 %
Artisanal fleet	305,812	43,228	213,078	562,118	82.6 %
<b>Total</b>	<b>313,593</b>	<b>46,297</b>	<b>321,349</b>	<b>681,239</b>	

The artisanal vessels are the main fleet in marine fisheries, delivering most of the total catch and an even higher share of the annual landed catch value. The artisanal fleet also creates the most employment in marine fisheries. The average number of crew on one boat is 11. Thus the artisanal fleet employs hundreds of thousands of fishers every year. The artisanal boats in the hilsa gillnet fishery are the most profitable fleet segment in the Bangladesh marine fisheries.

#### 4. Challenges in artisanal fisheries

##### 4.1. Overfishing and overcapacity

The state of the marine fish resources is unsatisfactory. The need to reduce the fishing pressure on the most valuable fish stocks is urgent. The signs of fishing down the food chain, as small and lower-value fish species in the fish catch substitute higher-value, slow-growing fish species, are alarming. The challenge is balancing the future of the marine fish stocks and the lives in the coastal communities of fishers and families dependent on the fish resources. The present fishing pressure from these communities on the fish stocks must reduce to conserve marine fish resources.

##### 4.2. Post-harvest fish quality

A considerable post-harvest loss is evident in artisanal catch leading to economic and food quality loss and increased fishing pressure. Post-harvest fish quality is one of the areas in need of improvement. Fish catch handling onboard artisanal fishing vessels need to be improved to preserve the catch's quality from the catching to the offloading at the landing site. The objective is to ensure that all fish captured reach the market as safe, high-quality food products as possible. Improving the sector's economic performance is essential if higher-quality fish fetches better market prices.

##### 4.3. Illegal, unreported, and unregulated (IUU) fishing

Illegal fishing is one of the major challenges of the artisanal fleet. Several unregistered artisanal fishing vessels threaten the fisheries' governance. IUU fishing destroys the fisheries management regime's purpose by breaking the rules of responsible fishing practices and resource conservation objectives. When a group of fishers can repeatedly ignore and break the rules without proper consequences, law-abiding fishers feel the authorities have let them down. IUU fishing also includes banned fishing methods that can destroy the habitat.

##### 4.4. Weak fisheries management governance

Fisheries management governance for the past years has been weak due to a lack of adequate information for well-structured management decision-making and inadequate human resources,

knowledge and enforcement capability. The following are major causes of weak artisanal fisheries governance:

- Absence of co-management arrangement, except for hilsa fishery management, in managing shared resources,
- Less consultation and agreed decisions among various marine fisheries associations for the sustainability of resources,
- Insufficient institutional research and development activities in marine fisheries,
- Weak coordination among different marine domains for proper enforcement,
- Inadequate MCS for artisanal fisheries and data asymmetry,
- Insufficient human resources to enforce and oversight MCS.

A well-structured governance environment ensures that decision-making is transparent, informed (evidence-based), representative, and non-arbitrary. When such a governance level is established, a sense of ownership and compliance with management decisions is higher, reaching management objectives is more likely, and controlling costs are lower.

#### **4.5. Discards, pollution, and environmental considerations**

Destructive and illegal fishing practices lead to excessive bycatches and discarding, as well as causing habitat damage. It imposes significant and wasteful mortalities on juveniles, endangered or threatened species, and major economic losses on fisheries. Water pollution, particularly from fishing vessels, must be minimised to an acceptable level. The artisanal FMP envisaged increased environmental awareness in Bangladesh's marine fisheries. All fishers, other workers, and contributors in the fishing sector shall keep the marine environment clean and healthy. The challenge is that all fishing vessels should operate with the highest environmental standards.

#### **4.6. Inadequate fisheries data and information**

Fisheries data collection from Bangladesh marine waters meets some minimum requirements, which are based mainly on manual processes and are subject to delays and errors. Because of the manual data aggregation, only a small part of the recorded data can be analysed. Comprehensive, near-real-time, and accurate fisheries data are required from industrial and artisanal fisheries to support MCS and provide scientific advice and stakeholder involvement. Comprehensive data on marine fisheries, such as data on stock status, the quality of fish, biological data, catch and effort data, ex-vessel price of fish, prices at different stages in the value chain, costs of fishing, employment etc., are required to assess the stock and socioeconomic contributions of the fisheries as well.

### **5. Adaptation to climate change**

Climate change is pressing countries worldwide to mitigate the consequences of global warming. Forecasts predict a decline in food production worldwide due to climate change<sup>5</sup>. Many countries and organisations, i.e., the EU Climefish project and FAO, have begun studying the effects of climate change on fisheries and preparing action plans for the fisheries sectors to counter a new environmental reality by adapting to and mitigating the unavoidable change. The approach assesses risks to fishing and evaluates opportunities to adapt to the foreseeable and likely change. The focus is on the oceans, changing dynamics in the flow of currents, increased seawater temperature, higher

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<sup>5</sup> EU Clime fish Project. <https://climefish.eu/climate-changes/>

acidity levels, more severe weather events like cyclones and changes in flora and fauna. The artisanal fishers community of Bangladesh are more vulnerable to climate change affecting their livelihood.

## **6. Employment and socioeconomic status in artisanal fishing communities**

The fisheries sector, including aquaculture, employs over 17 million people, full-time or part-time, including 1.4 million women. Fishing at sea is challenging, with a high level of occupational hazards. The working days and hours are irregular and very dependent on weather and other natural conditions in the seas leading to uncertainty in income. Moreover, low wages of fishers propel overfishing and hinder fishers' social mobility. The Artisanal FMP-2 and the Sustainable Coastal and Marine Fisheries Project (SCMFP) of DoF aim to strengthen the coastal areas and the fisher's communities by conserving the marine fisheries resources, increasing the safety of life at sea, and strengthening the communities through a social support program including vocational training, access to finance and livelihood transformation to reduce fishing pressure. Moreover, DoF is continuing the registration of fishers and issuing ID cards to ensure their access right to fishing.

## 4 SECTION D: The artisanal fisheries management plan 2024-2027

### 1. Implementation arrangement to the marine fisheries management

#### 1.1. The Marine Fisheries Act 2020

Good fisheries management regimes balance environmental and socioeconomic objectives through technical, functional, reliable, and sustainable measures. The beginning of the quest for such balance is creating fisheries law tailored to the local situation. The law encompasses all these issues and describes how they are defined, connected, and implemented. The law also institutes the authority to manage governmental institutions to carry out all necessary functions to achieve the objectives. The Marine Fisheries Act 2020 (MFA) establishes the Bangladesh fisheries management regime on licensing fishing vessels, regulated fishing and conservation measures.

#### 1.2. The Marine Fisheries Rules 2023

The Marine Fisheries Rules 2023 (MFR) translate the MFA 2020 into action. It explains how the fisheries sector must comply with the legal framework and FMP's objectives with adherence to the rules. The rules are officially published in the GoB Gazette and formally in force from that date or any other date specified in the rules.

#### 1.3. The Marine Fisheries Management Plan for Artisanal

DoF develops the Marine Fisheries Management Plan for the artisanal fisheries (FMP2) in consultation with stakeholders. It explains fish resources' status based on scientific research and subsequent fisheries harvesting- and management actions for the artisanal fisheries in the following years. It is based on EAFM, a multi-species fisheries management approach to environmental, co-management and socioeconomic concerns in the ecosystem. EAFM also addresses non-targeted, endangered species, minimising waste and pollution, protecting biodiversity, and coastal communities' welfare. The FMP2 is an instrument that describes the harvesting plan and another aspect of artisanal marine fisheries management that all fishers and others in the sector must abide by.

#### 1.4. Institutional framework

The DoF is the sole executive authority of FMP under MoFL. Other concerned departments/institutions under the Ministry engaged in fisheries are the Bangladesh Fisheries Research Institute (BFRI), Bangladesh Fisheries Development Corporation (BFDC), and the Marine Fisheries Academy (MFA). DoF has the oversight and responsibility of executing the FMPs through the Marine Fisheries Office (MFO), with coastal District and Sub-district (Upazila) Fisheries offices.

#### 1.5. Enforcement and implementing agencies

The primary enforcement and implementing agencies of marine fisheries management include DoF, Bangladesh Navy (BN), Bangladesh Coast Guard (BCG), River Police, Mercantile Marine Office (MMO) Port Authorities, National Board of Revenue (NBR) and many other concern marine domains. The coordination for improved enforcement and compliance with the fisheries rules be supported by the Joint Monitoring Cell (JMC) established by DoF.

## 2. Specific management objectives

### 2.1. Resource Conservation

The GoB objective is to ensure the conservation of all marine resources in Bangladesh, restore stocks in depletion conditions and protect the marine environment and its biodiversity for generations to come. The main controlling measures are: effort control, gear and spatial restrictions, seasonal fishing moratorium, marine protected areas, marine reserves, access control through licensing of fishing vessels and enhanced compliance monitoring and surveillance.

### 2.2. Ecosystem Management Approach

The FMP2 is based on the EAFM. It includes holistically studying and monitoring marine ecosystems and the dynamic forces through productivity, biodiversity, and habitat. Moreover, the EAFM includes a thorough dialogue with stakeholders and the broader community of higher levels than before, a consultation process throughout all policy and management planning levels.

### 2.3. Fisheries Performance Indicators

The EAFM is used to create the FMP2 for the artisanal marine fisheries considering specific environmental-economic and social parameters to shape the plan, set objectives and describe expected outputs resulting from the FMP2. A set of fisheries performance indicators (FPI) was created to evaluate the effectiveness and objective of the plan. The plan's effectiveness is observed by monitoring these indicators and adjusting as required. The key indicator for the marine resources in the FMP2 artisanal is the CPUE for various marine fisheries resources. Lowering CPUE indicates overfishing and high fishing pressure, while higher CPUE indicate stronger, healthier fish stock. Many other specific FPI indicators will be developed through the BSCMFP to measure the FMP1 and FMP2. The FPIs are a method to assess the state of artisanal and industrial marine fisheries in terms of ecological, economic and social performance.

### 2.4. Resource harvesting

The artisanal FMP acknowledge the goals of the present GOB's National Fishery Policy 1998 and National Fisheries Strategy 2006 and Marine Fisheries harvest Policy, 2022. These are comprehensive policies for the whole fisheries sector, including aquaculture, inland fisheries, and marine fisheries, with specific policies for the different branches of fisheries. The overall objectives of the sector are as follows:

- Enhancement of fisheries production.
- Poverty alleviation through creating self-employment to improve socioeconomic conditions of the fisheries
- Meet the demand for animal protein.
- Achieve economic growth through earning foreign currency by exporting fish and fisheries products.
- Maintain ecological balance, conserve biodiversity, ensure public health provide recreational facilities.<sup>6</sup>

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<sup>6</sup>The National fisheries Policy 1998, Ministry of Fisheries and Livestock

## **2.5. Hilsa fisheries management**

The main element of HFMP is the spatial protection of four critical spawning grounds and five juvenile hilsa or 'jatka' nursery grounds through seasonal fishing bans. The key to the successful implementation of the HFMP is the active involvement of all stakeholders in rebuilding the stock.

## **2.6. Protected and endangered species**

Protected and endangered species (PES) and non-targeted marine species can tangle in all fishing gear. It is the objective of FMP2 to protect PES species in Bangladesh waters. Catching and killing such species is forbidden and should be avoided. Devices for trawl gear and long lines to avoid catching and killing endangered and untargeted marine species shall always be used. Such species caught in gillnets must be released unharmed. GoB has adopted the Convention on International Trade in Endangered Species of Wild Fauna and Flora, known as CITES.

## **2.7. Marine pollution**

Marine pollution caused by fisheries mainly consists of lost fishing gear, greenhouse gasses, general waste and the disposal of oil and other harmful liquids into the seawater. Bangladesh fisheries, in general, must minimise pollution from their activities. GoB aims to encourage pollution minimisation in fisheries through a regulatory framework, awareness campaigns and disposal facilities at landing sites.

## **2.8. Monitoring, Control and Surveillance**

The success of the FMP depends on adequate information and sound decision-making and implementation through a cost-effective and robust Monitoring, Control and Surveillance (MCS) system. MCS is critical for implementing a successful fisheries management strategy and plans to support sustainable and effective fisheries management.

## **2.9. Community Co-management forums**

A community-based fisheries management forum (CBFMF) is one of the steps GoB is taking to improve marine fisheries conservation and harvesting in Bangladesh. The CBFMF is a step towards the direct involvement of a broader range of stakeholders, the people in the fishing communities along the coast of Bangladesh. A forum beyond the current stakeholder associations better connects governmental fisheries management agencies and the fishing communities. A forum for exchanging information, knowledge and expertise helping to guide the fisheries management actions to reach common goals of conservation and rational exploitation of the marine resources and improving the livelihood in the coastal communities.

It is not a replacement for the current fisheries management structures and stakeholders' involvement but rather an extension to a higher degree of community participation in adopting fisheries management plans and enforcing fisheries rules. The CBFMF requires the implementation of democratically organised community representative structures and regular communication procedures between involved parties. A CBFMF program needs to be developed gradually through existing communication channels between involved parties in each fisheries district area and the BSCMFP.

### **3. Artisanal fisheries management measures 2024-2027**

#### **3.1. Science-based fisheries management**

In marine fisheries management, the fisheries act, the fisheries rules, the management plan, and the government managing institutions come together and form a unified governmental controlling strategy to manage the marine fisheries. Incorporated are restrictions and limitations to the artisanal and industrial fisheries and an extensive institutional gathering of information on marine resources and the development of fishing activities. The data contributes to developing a science-based fisheries management regime, which will help the industry reach harvesting and conservation goals for Bangladesh's marine fisheries. It also contributes to decision-making on management plans through participatory processes with stakeholders in forming a future fisheries policy. The data collection and analysis is vital for the success of the fisheries management regime and need to be supported by all who participate in the fisheries sector.

##### **3.1.1. Fisheries stock assessment and research**

Fisheries research and fish stock assessment are the groundwork for the science-based fisheries management of Bangladesh marine resources. The research includes collecting and analysing fisheries data from coastal and marine landing site enumeration and stock assessment surveys. The fishing effort and catch data, systematically collected at all landing sites, is necessary for the artisanal fisheries FMP. The information obtained through the observation and enumeration work provides, through analyses by specialists, a good knowledge of the development of the fisheries and the status of fish stocks complemented with scientific stock surveys and evaluations by DoF scientists. The statistical information analysis helps scientists, fisheries managers, and politicians shape and develop future science-based fisheries, manifested in the national FMP and the MCS strategy. The fishing sector must understand the importance of data collection and collaborate and contribute by reporting as required.

##### **3.1.2. Scientific advice**

Based on the outcomes of the fisheries research and stock assessment analyses, the DoF's scientists annually report on the state of the marine fisheries resources. These reports guide the conservation measures and harvesting levels for the artisanal and industrial FMPs. These reports do not yet have specific quantitative estimates for all commercially important marine fish and shrimp due to a lack of past collection strategy and research information gaps. However, they provide a consistent and reliable indication that marine fisheries are overfished. The overall observation from the most recent work indicate some degree of stock recovery of several commercially important marine fishes such as Pomfret, Bombay duck, Savalai hairtail & Coromandel ilisha. However, overall status of shrimp stocks are still overfished. The trend of increasing total landings is reducing economic value overall and is unsustainable in the longterm. This advice is formulated under the new consensus view that sustained fisheries are less prescriptive but more process-oriented and adaptive fisheries management is required.

#### **3.2. Fisheries control and restrictions**

The management measures for the artisanal fisheries to reduce the fishing pressure on marine resources are based on a multiple-control approach. The fundamental change is issuing licenses for all mechanized boats over 15 net tonnages in size and fishing permits for artisanal boats under 15 net tonnage in size. The fishing effort is controlled by limiting fishing time and the use of gear. Fishing area restrictions by establishing marine protected areas and seasonal restrictions by total fishing ban

periods are established to protect spawning- and fish nursery grounds. Introduce fishing gear size and technical restrictions to protect juvenile fish and endangered species. The management measures aim to simultaneously conserve marine resources and pave the way for their rational exploitation.

### 3.3. The Hilsa management plan

Hilsa is an economically and culturally important fish in Bangladesh. The HFMP has been in effect since 2003, resulting in the successful conservation of hilsa while allowing a 100% increase in production over the last 16 years and supporting the livelihoods of around 0.5 million fishers. The main element of the strategy is the spatial protection of four critical spawning grounds and five juvenile hilsa or 'jatka' nursery grounds through seasonal fishing bans. A compensation package to affected fishers under a GoB safety net program encourages high compliance.

**Table 7 Fishing ban areas and periods specified under the Hilsa Fisheries Management Plan**

Ban Area	Locality	Ban period
North East	Mayani Point, Mirsarai, Chittagong in the northeast (91°32.15' E and 22°42.59' N)	4 days before and 17 days after the full moon, including the day of full moon, that is, total 22 days of the first full moon in the Bengali month of Ashwin each year
North West	Paschim Syed Awlia Point, Tajmuddin, Bhola in the northwest (90°40.58' E and 22°31.16' N)	
South East	North Kutubdia Point, Kutubdia, Cox's Bazar in the southeast (90°52.51' E and 21°55.19' N)	
South West	Lata Chapali Point, Kalapara, Patuakhali in the southeast (90°12.59' E and 21°47.56' N)	

The successful implementation of the HFMP involving all stakeholders demonstrates the feasibility and effectiveness of this fisheries management plan, underpinned by scientific information, in establishing appropriate catch and effort limitations, preventing overfishing, and rebuilding the Hilsa stock. An unregulated expansion of Hilsa fishing in marine waters is underway, leading to the growing marine catch of Hilsa, particularly by midwater trawlers. It is critical to eliminate targeted industrial trawling for Hilsa to ensure continued successful management of the Hilsa based on the existing HFMP. Measures must ensure Hilsa bycatch is kept to the minimum possible level in the industrial sector.

### 3.4. Monitoring, Control and Surveillance

The ultimate goal of fisheries management is to maximise the sustainable benefits and economic return from the country's territorial waters and EEZ. The success of the FMP depends on adequate information and sound decision-making and implementation through a cost-effective and robust MCS operation. Such a system is an integrated information collation, rulemaking and enforcement system providing tools for implementing policies, strategies and frameworks for fisheries management plans and other aspects of ocean and environmental governance. MCS is critical for implementing a successful fisheries management strategy and plan that renders sustainable and effective fisheries management.

Many MCS measures and regulations are not implemented effectively or comprehensively, primarily due to limited human and logistical resources within MFO. This plan is intended to implement several new capabilities and activities during the span of this plan.

- Establish a Joint Monitoring Cell (JMC) in the Chattogram port area interagency coordination in MCS under Standard Operating Procedures (SOP) to implement the Marine Fisheries Act and rules in the EEZ of Bangladesh.
- Establish an operational electronic fishing vessel licensing system, including IT infrastructure, training, capacity building & reporting. All registered fishing vessels and artisanal boats are included in the electronic system.
- Establish infrastructure for data collection by at-sea observers with required mobile application, virtual server, database, and back-end data management software, with user manuals and training, to support monitoring fisheries activities and report to the competent authority.
- Establish new MFSC at strategic locations in coastal districts, including facilities for high-speed patrol vessels to conduct joint monitoring and surveillance program with maritime cooperating agencies.
- Establish a new AIS tracking system for larger mechanised boats. The AIS will support recording and displaying vessel position and track data. AIS will integrate with the VMS tracking system for industrial vessels and establish a connection with JMC for strengthening MCS activities through communication & coordination with participating marine domains for inspection and enforcement. The AIS system will enhance safety at sea for artisanal fishers.
- Establish an electronic catch documentation scheme through e-reporting of catch and e-logbooks to increase the transparency of fish moving through the supply chain.

#### **3.4.1. MCS & JMC**

The MCS and the JMC are harmonised central management structures within MFO created to administer the three pillars of fisheries management, monitoring, control, and fisheries' surveillance. Enforcement is the fourth pillar jointly operated by the DoF, the Coast Guard, the Navy and the River Police. All parties have their specific roles in the enforcement process. However, the JMC is a joint monitoring cell within the Fisheries Monitoring Center (FMC) for GSM, AIS and VMS systems based monitoring of fishing activities. The JMC operates 24/7 monitoring for the systems under specific rules on information sharing on individual vessels with the other parties.

#### **3.4.2. Management cost recovery**

Governing and managing the marine capture fisheries in Bangladesh is a sizeable and costly operation. DoF resumes the primary responsibility for the operation, besides the Coast Guard and other collaborating governmental agencies. The services are mostly free of charge. The marine capture fisheries in Bangladesh are substantial in volume and value. Thus, fees and levies that DoF could charge on the fishing sector to contribute in monetary terms to its expenses related to governing the fishery could be substantial. Such fees are collected in most countries. The costliest activity in fisheries management is usually enforcement. DoF will continue to charge fees for licences. Further cost recovery levies will be considered at a later stage.

## 5 SECTION E: Key concerns and management measures

### 1. Core compliance considerations

**Challenge:** Compliance with rules and respect for the ecosystem in the artisanal fisheries need to improve. IUU fishing takes place using illegal fishing gear, gillnets with undersized mesh are used and so forth. Management measures and activities are intended to increase artisanal fishers' compliance with rules and enhance their respect for the ecosystem.

<b>Long-term Objective: Improving compliance and respect for Acts, rules and the ecosystem.</b>		
Target: Enhance compliance with rules and regulations within artisanal fishing in five years.		
<b>Compliance issues</b>	<b>Actions</b>	<b>Timeline</b>
Registration and licensing requirements for mechanized vessels >15 NT	Mechanised fishing vessels of over 15 net tonnages (NT) must be registered at MMO and have a valid Certificate of Seaworthiness to receive a fishing license from DoF. Non-compliance will lead to penalties or imprisonment as stipulated in MFA 2020.	Jan 2024 onward
Enlistment and fishing permit requirements for artisanal vessels <15NT	Artisanal vessels of 15 NT or below must be enlisted by DoF and have a valid fishing permit. Non-compliance will lead to penalties or imprisonment as stipulated in MFA 2020.	July 2024 onward
Legal fishing gear	Fishing gear used by artisanal vessels shall comply with the definition of such gear in the MFA 2020, Fish Protection and Conservation Act 1950, and subsequent rules and directives. Gillnets and set bag nets with undersized meshes are forbidden. Such nets will be confiscated and destroyed. Size, mesh and number of gear monitored and regulated.	Persistent
Closed seasons	Fishing bans must be respected at all times. Fishing licenses or permits will be cancelled or withheld, or penalties will be imposed for mechanised and artisanal vessels caught contravening fishing bans.	Persistent
Marine protected areas	Fishing in marine protected areas is a punishable crime. Fishing licenses or permits will be cancelled or withheld, or penalties or imprisonment will be imposed for mechanised & artisanal vessels caught or detected within marine protected areas.	Persistent
Reporting fish catch	Reporting of all fish caught by vessels with a license or permit is mandatory. Failure to report fish catch can lead to administrative penalties.	Jun 2024 onwards
Stop IUU fishing	IUU fishing is forbidden. Illegal fishing will lead to penalties or imprisonment as stipulated in MFA 2020.	Persistent
Enhanced monitoring and safety at sea by GSM and AIS equipment provided by GoB	AIS program for all mechanised and large artisanal vessels and GSM for small artisanal vessels catch fish in shallow waters is for	Jun 2024

	monitoring and safety of vessels and fishers. The GSM device and AIS transponder and GPS data logger must be installed as specified by DoF. The equipment is the property of the DoF and shall be well-kept or protected. Any damage, tempering, or abuse is payable by the equipment holder, or imprisonment can be imposed.	
Reduction of marine pollution	Fishers must bring all solid waste, used fishing gear, and harmful liquids to shore and dispose of them at designated sites.	Dec 2024 onward

## 2. Minimising overfishing and overcapacity

### Challenge:Overfishing

Effort control and licencing management strategy (ECL) is required to minimise overfishing and overcapacity in artisanal fisheries. The following specific measures and actions will implement the ECL management strategy.

<b>Long-term Objective: Minimising or eliminating over-fishing and over-capacity</b>			
Target: Adjust fishing effort to fishing resource capacity in five years for artisanal fishing vessels			
<b>Management Measures</b>	<b>Actions</b>	<b>Timeline</b>	<b>Responsibility</b>
All fishing vessels registered/enlisted, licensed/permited, and all relevant information available in the online licensing and registration database(s)	<ul style="list-style-type: none"> <li>- Enlistment of all mechanised &amp; artisanal fishing vessels by DoF.</li> <li>- Data of all registered &amp; enlisted fishing vessels are incorporated into the electronic system.</li> <li>- Develop &amp; commission a new electronic fishing license system for all FVs</li> <li>- All artisanal vessels brought under the fishing permit/licensing system</li> </ul>	Persistent  Jan2024  April 2024  June 2026	SCMFP, DoF MFO, DoF field offices
Maintain proper accounting of fishing vessels for licensing, fishing permit, and sailing permit purposes	<ul style="list-style-type: none"> <li>- Complete inventory of mechanised and artisanal fishing vessels- with all details with registered/enlisted, licensed/fishing permit;</li> <li>- Electronic database for fishing boats and gear fully populated and maintained.</li> </ul>	Feb 2024 onward	MFO, SCMFP, Concerned Field Offices of DoF
Electronic licence awareness campaign program	Plan and implement an awareness campaign program for the electronic fishing license system.	June 2024 onward	MFO, DoF
Precautionary fishing licence and fishing permit provision	After all formally registered/enlisted fishing vessels compliant with the MFA 2020 and MFR 2023 have received a legitimate fishing license/permit, any further issuing of new licenses and permits will depend on developing the fish resources and the artisanal fishing effort.	June 2025	DoF
Alternative Income	- Provide Vocational training to 18000 young	June 2025	SCMFP, DoF,

Generating Activities (AIGA) for Fishers to reduce fishing pressure	fishers & youth household members; - Provide AIGA training to members of 52000 fishers' households at 450 fishers' villages; - Provide revolving fund amounting to BDT 10 lac per village for AIGA		SDF
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### 3. Enhancing catch quality and value

#### Challenge: Loss of food quality and value of the landed catch

Post-harvest losses and the ecosystem-level shifts in the availability of high-value species combine to undercut the value of marine fish landings. Ensuring that all fish captured reach the market as safe, high-quality food products is essential to improving the sector's economic performance.

#### Objective: Good post-harvest practices and value addition, and reasonable prices for fishes

**Target:** 25% reduction in fish wastage and increase in the price of fish caught through improved onboard post-harvest measures by 2027 from the present level.

Management Measures	Actions	Timeline	Responsibility
Strengthen onboard post-harvest practices to retain the catch quality to fetch more prices.	<ul style="list-style-type: none"> <li>- Trained fishers onboard on post-harvest handling and preservation;</li> <li>- Maintained cool chain with ice.</li> <li>- Chilling the catch starts from retrieving the catch onboard;</li> </ul>	June 2025	SCMFP, DoF, MFO & Field Offices
Introduce plastic trays, baskets or other improved devices and preserve catch with ice.	<ul style="list-style-type: none"> <li>- Introduced proper shape and size of plastic trays, baskets or other appliances for improving the catch value chain;</li> <li>- Keep sufficient ice in the fish hold to lower fish temperature in baskets or trays.</li> </ul>	June 2025	DoF, MFO & Field Offices; Vessel/boat owners association; individual owners/skippers
Establish well-equipped fish landing centres with hygiene, sanitation, chilled room, and potable water supply facilities	<ul style="list-style-type: none"> <li>- Developed at least 10 fish landing centres with hygiene, sanitation, chilled room, and potable water supply facilities;</li> <li>- Trained workers and staff on hygiene, sanitation and good handling;</li> <li>- Gender-sensitive working environment be facilitated in landing centres;</li> </ul>	June 2026	DoF, BFDC, Associations, Local management authorities
Develop shore-based cold storage and processing facilities	<ul style="list-style-type: none"> <li>- Established shore-based cold storage and processing units (Public-Private Initiative);</li> <li>- Trained workers and staff on hygiene, sanitation and good handling;</li> </ul>	June 2027 onward	DoF, BFDC, Potential investors

#### 4. Monitoring, controlling and surveillance (MCS)

##### Challenge: IUU fishing

Successfully implementing any fisheries management plan depends on a credible and effective MCS capability. The known ability of fisheries authorities to detect and stop illegal fishing practices is one of the most important factors leading to compliance by fishing fleets. In contrast, a lack of MCS capability completely disregards management restrictions.

<b>Long-term Objective: Minimise level of IUU fishing through effective MCS</b>			
<b>Target: Reduce IUU fishing to 50% of current levels by 2027</b>			
<b>Management Measures</b>	<b>Actions</b>	<b>Timeline</b>	<b>Responsibility</b>
Implement NPOA to deter IUU fishing.	Execute the action plan defined in NPOA with coordinating partners	Persistent	DoF
Establish MoU amongst DoF, BN, BCG, Port Authorities, MMO Customs, MAU and other marine domains, and jointly strengthen MCS and other FMP provisions.	MoU signed among concerned agencies and in force for interagency collaboration and information exchange.	March 2024	MoFL, DoF& all other parties of the JMC
Establish Fisheries JMC for coordinated MCS measures.	Joint Monitoring Cellestablished and functional	June 2024	MoFL, DoF
Create a fishery monitoring database integrating registry and license information with ID information on operators, skippers, crew, and fishery infringements.	<ul style="list-style-type: none"> <li>- A fishing information database is developed;</li> <li>- Capacity building to all parties related to MCS procedure.</li> </ul>	Dec 2024 onward	DoF
Extend integrated database system with BN, BCG and DoF	Exchange of relevant information developed and functional.	Dec 2024 onward	DoF& other parties of JMC
Enhance the operational monitoring of fishing vessel operations, departures and arrivals.	Computerised recording and reporting on the issuance of fishing permission/ permit with departure and arrival details	Dec 2024	DoF
	At least 5 new MFSCs established and effective.	Dec 2024	SCMFP, DoF
	Patrol vessels perform at-sea inspections and checks of FVs.	Persistent	DoF, MFO, BCG, BN
	Assign defined color for all artisanal FVs	Dec 2027	DoF
Mandatory AIS on registered 1500 large artisanal fishing vessels	<ul style="list-style-type: none"> <li>- AIS coverage of large artisanal fishing vessels</li> <li>- GSM coverage of small artisanal</li> </ul>	June 2024	SCMFP, DoF

and GSM coverage of 8500 small artisanal fishing vessels	fishing vessels operate near shore		
	– Vessel owners, operators and association members trained on AIS.	Dec 2024	SCMFP, DoF
Stringent enforcement and legal prosecution	Effective enforcement and impose penalties as per MFA 2020, MFR 2023 and other Regulation	Persistent	DoF, JMC entities
	– All non-compliances are documented, prosecuted, and followed up. – Strengthen community monitoring system on IUU fishing	Persistent  June 2025	DoF
Raise awareness, training and support for deterring IUU fishing among fishers and boat owners	Effective awareness campaigns and necessary training designed and implemented.	Dec 2024 onward	DoF

## 5. Fisheries management governance

**Challenge: Inadequate fisheries management capacity.**

<b>Objective:</b> Strengthen marine fishery's good governance			
<b>Target:</b> An effective co-management process for fisheries management decision-making built by 2026			
Management Measures	Actions	Timeline	Responsibility
Establish credible and comprehensive co-management processes for marine fisheries	Define the mandate for an inclusive Fisheries Advisory Body (FAB) and process with representation from all marine domains, including fisheries stakeholders, environmental and social NGOs, and the scientific community.	May 2024	DoF & related stakeholders in the marine domain
	Take necessary action for establishing FAB.	June 2024	DoF & related stakeholders in the marine domain
	– A working manual will be developed for the effective functioning of FAB. – FAB to conduct stakeholder consultations on draft FMPs developed and reviewed scientific and operational assessments of FMP performance. – Regional co-management committee at Barisal, Chattogram and Khulna	June 2024	DoF & related stakeholders in the marine domain

	formed to support FAB.		
	<ul style="list-style-type: none"> <li>- Form District Fisheries Co-management Committee at 13 coastal districts</li> <li>- Form Upazila Fisheries Co-management Committee at 45 Upazilas</li> <li>- Form Village Fisheries Co-management Committee at 450 Villages</li> <li>- Assist the Fishers community in developing local-level marine fisheries management and development plan</li> </ul>	Persistent	SDF, SCMFP, DoF
		Persistent	
		Persistent	
		Persistent	
Build marine fisheries management planning capacity in DoF.	Train and deploy necessary human resources of DoF to develop fisheries management planning capacity & implement the co-management approach to FMP	Jan 2024- June 2027	DoF
Develop human capacity in the artisanal fisheries sector for effective co-management participation	Training, financial and logistic support to build awareness and capacity in the artisanal sector to participate in the co-management process.	Jan2024- June 2027	SCMFP, DoF
Community Co-management Forums	DoF, under the framework of the BSCMFP, plans to establish Community Co-Management Forums to include a broader stakeholder's participation in fisheries management in Bangladesh	Dec 2024	SCMFP, DoF

## 6. Environmental and ecosystem considerations

### Challenge: Prevent destructive fishing practices, discard, pollution, and habitat degradation

Destructive fishing practices lead to excessive bycatches and discarding, as well as causing habitat damage. It imposes significant and wasteful mortalities on juveniles, endangered or threatened species, and significant economic losses in fisheries. Moreover, pollution and habitat degradation adversely affect ecosystem health.

### Objective: Reinforce good fishing practices and eliminate destructive fishing and pollution

#### Target: Reinforce good fishing practices

Reduce or eliminate discarding at sea and catches of endangered or threatened species

Reduce the proportion of under-sized (juvenile) caught below 50% of current levels by 2027

Reduce or eliminate fishing in sensitive habitats

Reduce pollution from fishing boats by bringing all waste onshore and disposing of it at the designated site.

Management Measures	Actions	Timeline	Responsibility
Prevent the discarding of fish at sea	Discarding any fish, including juveniles, undersized and less valuable fish eliminated through observation, surveillance and enforcement.	Persistent	DoF, enforcing agencies
Regulate gillnets and set bag nets selectivity to reduce or eliminate the retention of under-size fish	Regulate the minimum mesh sizes in gillnets and set bag nets as prescribed in Marine Fisheries Rules 2023 and associated directives.	Persistent	DoF, enforcing agencies
Regulate the size, type and number of set bag nets allowed in each sector	Restrict the number of fishing vessels & gear, and adhere to fishing gear specifications as stipulated in regulations.	Persistent	DoF, enforcing agencies
Specific regulation to control the destruction of Jatka (juvenile hilsa) and other juveniles in gillnet and set bag nets fisheries	Surveillance at sea is enhanced by the joint effort of DoF, BCG and BN and imposes stringent measures as per law- even suspension of fishing licenses/permits.	June 2024 onward	DoF, enforcing agencies
	Fishing closures: Time and area closures shall be introduced when specific areas are affected by high bycatches of Hilsa.	June 2024 onward	MoFL, DoF
Introduce more seasonal and spatial closures based on research on times and areas to protect juvenile nurseries and spawning stocks of important spp.	<ul style="list-style-type: none"> <li>- Restrict/prohibit fishing in MPAs/MR as per MFA, MFR&amp; MPA management Plans.</li> <li>- Increase seasonal and spatial closure based on research findings.</li> </ul>	Dec 2025 onward	MoFL, DoF, BFRI, WorldFish
		Persistent	
Protect areas of unique or vulnerable habitat	Identify areas of unique or vulnerable habitat and protect them.	June 2025 onward	MoFL, DoF, BFRI
Prevent pollution from fishing vessels	<ul style="list-style-type: none"> <li>- Awareness building &amp; training on waste management practices on board.</li> <li>- DoF inspectors, Onboard observers, patrol of DoF, BCG &amp; BN will monitor pollution from fishing vessel.</li> </ul>	June 2024 onward	DoF
Ecosystem concern and protection measure	Control on non-selectivity fishing gears of bottom trawls and estuarine set bag nets (ESBN) and fishing damage to coral reef and seagrass ecosystems.	Persistent & strengthen from July 2024 onward	MoFL, DoF, DoE, FD, BCG & Vessel owners associations

## 7. Conflicts resolution processes

### Challenge: Conflicts between artisanal and industrial fishing operations

The primary operational means of preventing conflict between industrial and artisanal sectors has been a spatial division based on the 40 m depth contour. However, this strategy is retained; the dividing line is now specified as a geographically defined line (geo-fence). Industrial vessels must fish on the seaward side of the geo-fence line. Co-management processes to engage both industrial and artisanal sectors are also implemented to address conflict areas.

<b>Objective: Resolving conflicts between artisanal and industrial fishing operations</b>			
<b>Target:</b> Identify and minimise sources of artisanal-industrial sector conflicts.			
<b>Management Measures</b>	<b>Actions</b>	<b>Timeline</b>	<b>Responsibility</b>
Cross-sectorial fisheries co-management process in place for both industrial & artisanal fisheries	<ul style="list-style-type: none"> <li>– Central Fisheries Co-Management Committee (CMC), i.e., FAB formed.</li> <li>– Functional regional co-management committee at Barisal, Chattogram and Khulna to support FAB.</li> </ul>	April 2024	MoFL, DoF
	CMC/FAB meeting at least once a year or more if required to review conflicting issues, co-management progress, and recommend implementation strategies to avoid inter-sectorial conflict.	July 2024 onward	MoFL, DoF
Establish a geo-fence industrial fishing limit line to delimit the fishing zone for industrial FVs.	Define geographical coordinates and clarify fishing rights and restrictions in each spatial zone.	Dec 2024	MoFL, DoF
	Awareness-raising and training to vessel owners and skippers regarding spatial management system	July 2024 onward	DoF
Develop a VMS/AIS warning system to alert vessels and fisheries managers of entry into restricted geo-fenced fishing zones	<ul style="list-style-type: none"> <li>– VMS system working effectively and warning system developed.</li> <li>– Report to enforcement agencies to take action on non-compliance.</li> </ul>	Dec 2024 onward	DoF, JMC-CC
Establish Community Co-management Forums to widen the consultation process and form networking	DoF, under the framework of the BSCMFP, plans to establish Community Co-Management Forums to include a broader stakeholder's participation in fisheries management in Bangladesh	Dec 2024	SCMFP, DoF

### Fishing Zone Division Line

All artisanal mechanised boats and industrial vessels must carry and operate the Automatic Identification System (AIS) throughout fishing trips. From the start of the 2024-25 fishing season or when the legal provisions and infrastructure is ready, whichever is earlier, the industrial vessels must carry and operate Vessel Monitoring System (VMS) throughout the entire fishing trip and are required to fish beyond (seaward of) the inshore limit line defined by the coordinates given below:

Point	E Long (DMS)	N Lat (DMS)	E Long (DD)	N Lat (DD)
1	89°13'30"	21°11'00"	89.225°	21.183°
2	89°32'00"	21°25'00"	89.533°	21.417°
3	89°40'00"	21°25'00"	89.667°	21.417°
4	89°40'00"	21°18'00"	89.667°	21.300°
5	90°30'00"	21°06'00"	90.500°	21.100°
6	91°16'30"	21°00'00"	91.275°	21.000°
7	91°32'00"	21°06'00"	91.533°	21.100°
8	91°45'00"	21°06'00"	91.750°	21.100°
9	92°09'00"	20°25'30"	92.150°	20.425°

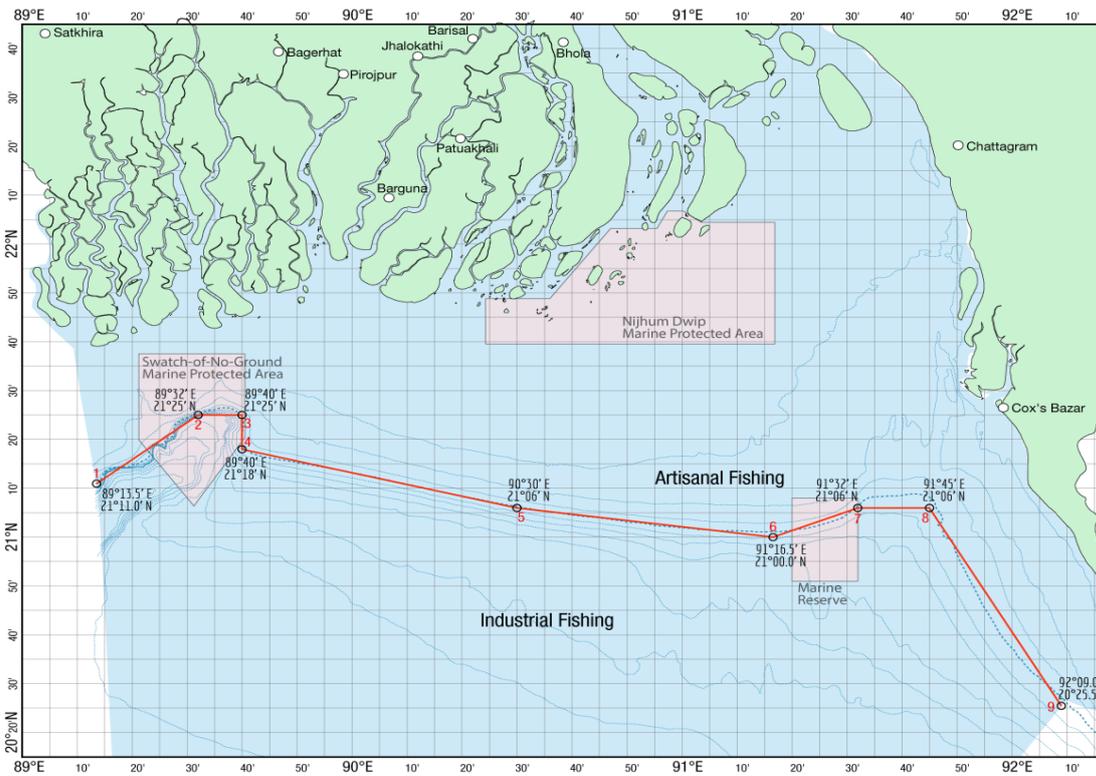


Figure 8 Spatial restrictions for industrial trawling

### 8. Fisheries data improvement

**Challenge: Asymmetry and inadequate fisheries data and information**

Comprehensive data on marine fisheries, such as data on catch and effort, average length and weight data, length-frequency data, at-sea sampling data, data on the quality of fish, the ex-vessel price of fish, prices at different stages in the value chain, costs of fishing, employment etc., are needed to assess the stock status, economic and social contributions of the fisheries.

<b>Objective: Improving fisheries data and information</b>			
<b>Target:</b> Improve data collection and information dissemination systems to a level that it can be used to monitor the performance of this FMP by 2027			
<b>Management Measures</b>	<b>Actions</b>	<b>Timeline</b>	<b>Responsibility</b>
Establish a portal, database	– An integrated database system is	Dec 2024	SCMFP, DoF

<p>and applications system that links different sources of data for use in stock assessment, fisheries management and stakeholder information</p>	<p>operational and Web-portal accessing is operational.</p> <ul style="list-style-type: none"> <li>- Updating fishing crafts and gear database by the end of each calendar year</li> <li>- Assign geocode based vessel ID and home port and alternate landing site (if any) to all enlisted artisanal vessels.</li> </ul>	<p>Jan 2024 onward</p> <p>Jan 2024 onward</p>	
<p>Establish data quality assurance by cross-validation of data from different sources.</p>	<p>Data validation systems are in place and functional.</p>	<p>June 2024</p>	<p>DoF</p>
<p>Establish biological sampling databases such as species composition, size composition</p>	<p>Database and application developed and integrated into a fisheries information portal.</p>	<p>June 2024</p>	<p>SCMFP, DoF</p>
	<p>At-sea sampling operational by observers or inspectors</p>	<p>Dec 2024</p>	<p>DoF</p>
	<p>Shore-based sampling operational and data available for stock assessment.</p>	<p>June 2024 onward</p>	<p>SCMFP, DoF</p>
<p>Establish economic and employment data collection for marine fisheries</p>	<p>Monitor market prices at landing centres, export permits and wholesale/retail distribution</p>	<p>June 2024 onward</p>	<p>DoF</p>
<p>Key fisheries management information of marine fisheries is publicly accessible</p>	<p>Stakeholder Webportal information access is operational.</p>	<p>Dec 2024</p>	<p>DoF</p>
	<p>FMP1-Industrial and FMP2-Artisanal are available online, and the status of specific limits and regulations is updated regularly</p>	<p>November 2021 &amp; Jan 2024</p>	<p>DoF</p>
	<p>Documentation of fisheries management information prepared and published at regular intervals.</p>	<p>Jan 2024 onward</p>	<p>DoF</p>

## 9. Enhanced safety at sea in artisanal fisheries

### Challenge: Prevention of injuries, accidents, and the loss of vessels and crew at sea.

Marine artisanal fishing is renowned for its occupational hazard and lack of safety. During fishing, artisanal fishers depend on the weather for their safety due to their small vessel and limited safety measures. They sometimes operated in rough seas and from open precarious beach landings sites. Official safety requirements are limited and fatal accidents such as drowning, nonfatal injuries, and occupational health problems are frequent<sup>7</sup>. The fishers of coastal Bangladesh face the challenge during fishing more often due to higher frequencies of cyclones in the concave Bay of Bengal. Other human threats like ransom by sea pirates exacerbate this natural challenge. Unlike developed nations, most fishermen and boat owners here are unaware of the safety of their lives at sea. Several specific tasks are identified and explained in the following table.

<b>Objective: Enhance good health and safety practices among artisanal fishers</b>			
<b>Target:</b> Enhance safety at sea by creating a national plan of action (NOPA) by 2025 with multiple cross-sector activities such as:			
(i) Training and awareness campaign on safety at sea,			
(ii) Enhance Occupational Safety and Accident Prevention for artisanal fishers,			
(iii) Enhance connectivity with early weather warning system,			
(iv) Use of AIS and GSM mobile phone networks to communicate weather warnings and track position,			
(v) Facilitate insurance program for artisanal fishers and vessels.			
<b>Management Measures</b>	<b>Actions</b>	<b>Timeline</b>	<b>Responsibility</b>
Training and awareness Campaign for enhanced safety	<ul style="list-style-type: none"> <li>– Prepare and launch a health and safety at sea campaign for the artisanal fishing communities;</li> <li>– Incorporate a special session on safety at sea for every training of fishers, skippers and boat owners;</li> </ul>	2024-2025	DoF/SCMFP
Occupational Safety and Accident Prevention SOP for artisanal fishers	Create a Health and Safety SOP to guide artisanal fishers in improving health and safety in their workplace.	Dec 2024	DoF
Inspection of the artisanal and mechanised fleet for communication and safety equipment	Random inspection of the artisanal and mechanized fleet, involving MFSC, on the carriage of communication, firefighting and safety equipment.	Persistent. Strengthened by Dec 2024	DoF

<sup>7</sup> A study based on a small sample among fisheries show a high rate of non-fatal injuries and health problem. See further: S. Mandal, I Hasan, NH Hawlader, et al. Occupational health hazard and safety assessment of fishermen community in Coastal zone of Bangladesh, Int J Health Econ Policy, 2 (2) (2017), pp. 63-7. Also Risk Assessment in Artisanal Fisheries in Developing Countries: A Systematic Review Sharad Shrestha et.al. American Journal of Preventive Medicine Volume 62, Issue 4, April 2022, Pages e255-e26

Improve rescue support for fishing vessels and crews	Improved communication and coordination between DoF and BCG through JMC, regional co-management committee and District Fisheries Office for better rescue support to fishing vessels and crews	Persistent. Strengthened by Dec 2024	DoF, BCG & other parties of JMC
Enhanced communication with early warning weather system (EWWS) for artisanal fishers	Enhance communication with the Bangladesh Meteorological Department (BMD) (through an MoU) for transmitting early weather warnings to skippers of artisanal vessels using Mobile network, GSM or AIS messaging or alerts.	June 2025	DoF, BMD
Use of AIS and GMS to trace the position of vessels in emergency need	- Use of AIS and GMS devise to trace the position of vessels in emergency need; - Facilitate rescue support using position data.	December 2024 onward	DoF, BCG and JMC
Insurance plan for fishers and artisanal vessels	Study and plan on how insurance policies for artisanal vessels can be provided to vessel owners and crews.	2024-2025	DoF

## Review and Update of FMP

The FMP-2 Artisanal recognises the importance of generating improved data and information to support management and policy decision-making and proposes research, studies, and adaptive changes in future management measures. Regular review and adaptation of the FMP will be based on progress against the objectives as measured by scientific and management information on fisheries performance indicators, stock assessment and biomass estimation of important marine fishes, and results of survey cruises carried out by RV Meen Shandhani. The revised measures are finalised after broader stakeholder consultations.

Biennial reviews of the FMP will take a more in-depth consideration of the FMP to identify limitations or lessons learned that need to be considered for revision of the FMP. A committee of selected academics, DoF officials, scientists, researchers, and concerned stakeholders will evaluate management measures, prepare biennial reviews to address new issues, and revise strategic goals, objectives, and actions. Proposals for revised FMP and strategies are finalised after broader stakeholder consultations.

### Biennial Review and Adaptation Plan

Sl. No	Activity	TimeLine	Responsibility
1.	Compilation and analysis of the latest available Catch & Effort data and other relevant data.	March	MFSMU, DoF (Stock Assessment Working Group, DoF)
2.	Review of progress in objectives, fisheries performance, stock assessment, biomass estimation & results of survey cruises (RV MS).	April	Assessment Working Group & Review Committee of DoF*

3.	Stakeholder consultations and meetings with FAB	May	DoF
4.	Update and adaptation of FMP in consultation with MoFL	June	DoF, FAB & MoFL

\*Note: DG, DoF will form an FMP Review Committee

## Annexe-I: Organisations and Stakeholder Associations

<b>Fisheries administration &amp; associated GoB offices</b>	
Ministry of Fisheries and Livestock (MoFL)	<p>The administrative Ministry with oversight and policy-making responsibility for fisheries through its various departments and agencies.</p> <p>MoFL is responsible for the policy regulations for managing and conserving fisheries resources in Bangladesh. It has the authority to frame fisheries policy, strategies, Acts, Rules and regulations for administering the sector.</p>
Department of Fisheries (DoF)	<p>DoF is the principal agency of MoFL, responsible for managing Bangladesh's fisheries resources, survey of resources, setting TAC and ensuring proper MCS activities for maximum sustainable yield. DoF is also responsible for drafting fisheries policy, Acts, strategies, rules and regulations and development of management plans for approval from MoFL.</p>
Marine Fisheries Office (MFO)	<p>The Marine Fisheries Office, based in Chattogram, is responsible for licensing, fishing operation regulations, catch certification, and monitoring, control and enforcement (MCS) activities. The Director (Marine) is also responsible for implementing marine fisheries' management, conservation, exploitation and development. It's role also includes catch reporting, implementing FAO/CCRF, and MCS in industrial and marine fisheries.</p>
Department of Shipping (DoS)	<p>DoS is a regulatory agency under the Ministry of Shipping, mandated as the maritime safety administration of Bangladesh, responsible for formulating and implementing the national policies and legislation to ensure the safety of life and ships at sea, coastal and inland waters.</p> <p>To ensure the safety of the inland, coastal and ocean-going vessels, including FVs, the department of shipping performs the approval of the ship's design, oversees the construction of the vessels, conducts regular surveys, and registers the ships. The Department of Shipping performs ship safety duty in accordance with the existing laws.</p>
Mercantile Marine Office (MMO)	<p>MMO, based in Chattogram, is a subordinate office of the Department of Shipping under the Ministry of Shipping. MMO is primarily responsible for the registration, survey and inspection of coastal fishing vessels, issuing Safety Equipment certificates and Seaworthiness certificates.</p>
Bangladesh Fisheries Development Corporation (BFDC)	<p>BFDC supports processing, fisheries product development, and distribution by harvesting fishery resources and developing marketing facilities.</p>

<b>Marine Fisheries Law Enforcement Agencies</b>	
Bangladesh Coast Guard (BCG)	BCG of the Ministry of Home Affairs is mandated to enforce Maritime law in the EEZ, conduct surveillance, and Protect fishery and other non-living resources from illegal exploitation.
Bangladesh Navy (BN)	BN of the Ministry of Defense is mandated to safeguard national maritime interests in the EEZ.

<b>Fisheries Institutions and associations</b>	
Marine Fisheries Academy (MFA)	Government training institutions under MoFL for training personnel for fishing vessels and providing four-year training programs lead to graduation in Navigation, Engineering and Fish Processing.
Bangladesh Fisheries Research Institute (BFRI)	BFRI under MoFL is the primary fishery, aquatic resource and aquaculture research agency of the GoB. It conducts and coordinates nationwide research efforts, standardising techniques to maximise production and improve resource management.
Technical Universities	Currently, about twelve universities in Bangladesh are providing honours Bachelor's and Master's degrees in marine science and fisheries, oceanography, aquaculture, marine biology and other allied fields relevant to the fisheries sector.
Bangladesh Marine Fisheries Association (BMFA)	BMFA represents the interests of the freezer-equipped, steel-hulled industrial fishing fleet
White Fish Trawler Owners Association (WFTA)	WFTWA represents the interests of the non-freezer, wooden-hulled industrial fishing fleet.
Boat Owners Associations (BOA)	Artisanal vessel owners are represented through the Mechanized Boats Owners' Association or the Traditional Boats Owners' Association, depending on size, engine power, and degree of mechanisation.

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