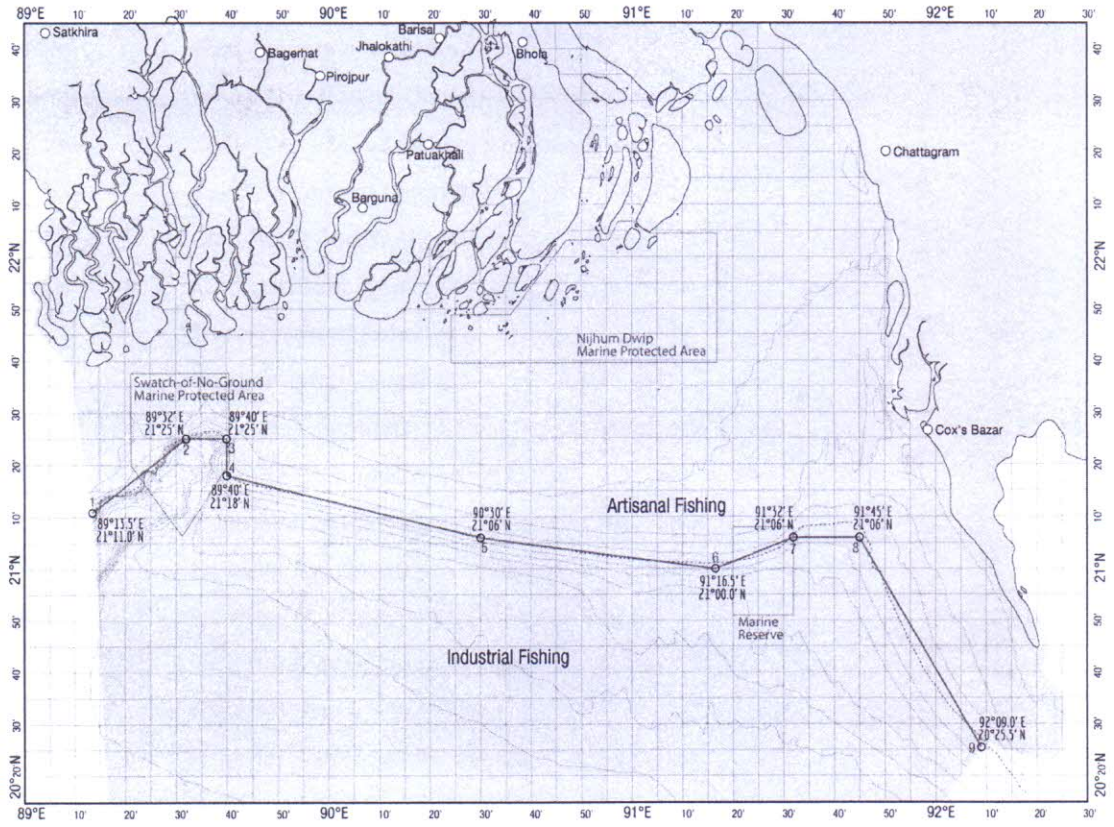
Bangladesh Marine Fisheries

Management Plan: Part 3- MCS



Department of Fisheries
Ministry of Fisheries and Livestock

JUNE 2023

Abbreviations

AIS	Automatic Identification System
BCG	Bangladesh Coast Guard
BFDC	Bangladesh Fisheries Development Corporation
BFRI	Bangladesh Fisheries Research Institute
BMFA	Bangladesh Marine Fisheries Association
BN	Bangladesh Navy
BOA	Boat Owners Association
WFTOA	White Fish Trawler Owners' Association
CBFMF	Community-based Fisheries Management Forum
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
EEZ	Exclusive Economic Zone
EFMM	Evaluation of Fisheries Management Measures
FAB	Fisheries Advisory Body
FISMIS	Fisheries Management Information System
FMC	Fisheries Management Center
FMP	Fisheries Management Plan
FPI	Fisheries Performance Indicator
GoB	Government of Bangladesh
GSM	Global System for Mobile
IUU	Illegal, Unreported and Unregulated
JMC	Joint Monitoring Cell
JMC-CC	Joint Monitoring Centre Coordination Committee
KPI	Key Performance Indicator
MCS	Monitoring, Controlling and Surveillance
MFA	Marine Fisheries Act
MFO	Marine Fisheries Office
MFSC	Marine Fisheries Surveillance Check Post
MFSMU	Marine Fisheries Survey Management Unit of DoF
MMO	Mercantile Marine Office
MoFL	Ministry of Fisheries and Livestock

MPA	Marine Protected Area
MR	Marine Reserve
SDG	Sustainable Development Goal
SOP	Standard Operating Procedure
SWOT	Strength, Weakness, Opportunity and Threat
TAC	Total Allowable Catch
TAE	Total Allowable Effort
VMS	Vessel Monitoring System

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1 SECTION A: Introduction and Background

1.1 The Status of this Document

This document presents the Marine Fisheries Management Plan (FMP-3) for Monitoring, Controlling, and Surveillance (MCS) for sustainable harvesting of marine fisheries resources by both artisanal and industrial fleets as defined in the Marine Fisheries Act 2020 (MFA). It is the third document of three. The other two are the Marine Fisheries Management Plan (FMP-1) for industrial fishing and the Marine Fisheries Management Plan (FMP-2) for artisanal fishing. Altogether these documents outline the fisheries management plans for all marine fisheries in Bangladesh from January 2024 to June 2027.

1.2 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 due consideration of human well-being, ecosystem health, and good MCS governance through comprehensive MCS of all fisheries within the Bangladesh Exclusive Economic Zone (EEZ).

1.3 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 EEZ. Only about 14,600 km^2 (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[1]. 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 harvesting and long-term marine fisheries sustainability will require carefully crafted fisheries policies, strategies and comprehensive enforcement of fisheries legislation and rules. Research surveys by RV Meen Shandhani and stock status analysis in recent years (2016-2019) indicate that most of Bangladesh's commercially important marine fishes have depleted to varying degrees. 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[2]. 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.[3]

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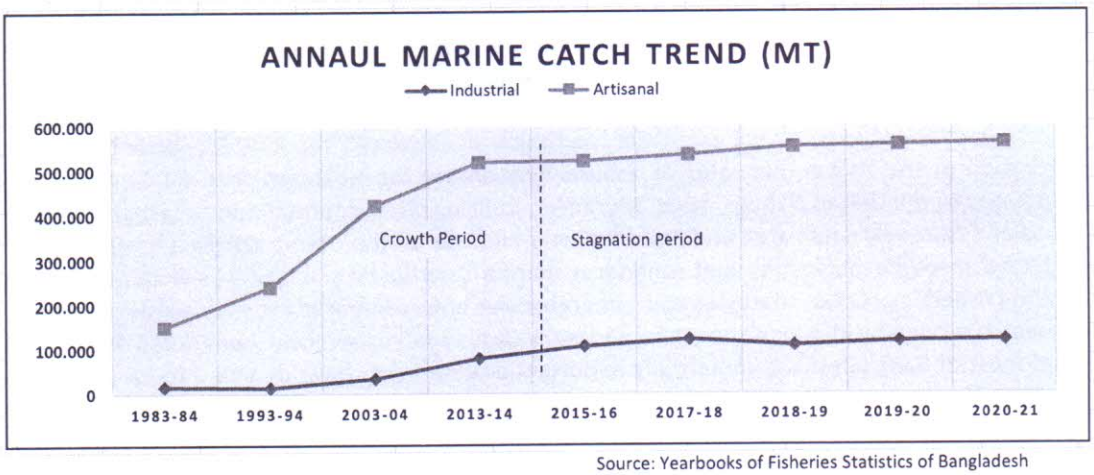
[1] DoF 2021, FMP-1 Industrial.
[2] DoF 2023, Medley P., et al. Bangladesh Marine Fish Stock Assessment Summary Report.
[3] DoF 2019, Fanning P., et al. Marine fisheries survey reports and stock assessment.

Table 1 Marine fisheries production (Thousand MT) historical summary and recent trends in Bangladesh

Fishing Period	1983-84	1993-94	2003-04	2013-14	2015-16	2017-18	2018-19	2019-20	2020-21
Industrial	14.501	12.455	32.696	76.885	105.348	120.087	107.236	115.355	119.121
Artisanal	150.382	240.590	422.601	518.150	521.181	534.600	552.675	555.751	562.118
Total	164.883	253.045	455.297	595.035	626.529	654.687	659.911	671.106	681.239

Source: Yearbook of fisheries Statistics of Bangladesh, DoF 2021

In the last four years, total annual marine fish catches from Bangladesh waters are 655-681 thousand MT. The majority (82.5% recently) comes from the large number of artisanal vessels predominantly operating in shallow waters (<40 m). The catch of 234 active industrial trawlers (2020/21), allowed to operate in waters beyond a 40m depth contour, makes up the rest. The marine fisheries show strong signs of overfishing and overcapitalization by stagnating marine catch, in line with 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 1. The lines show how the annual catch by fleet groups levels out after the 2013-14 fishing season despite the drastic fleet expansion and the same relatively limited fisheries restrictions in force for the whole period.



Source: Yearbooks of Fisheries Statistics of Bangladesh

Figure 1. Development of the Marine Fisheries

1.4 Specific Fisheries Management Principles

The following management principles were recognised and promoted in developing and establishing the FMP-3. The management principles support efficient fisheries management with high compliance but are adaptable to the uncertainties in fisheries. These are:

- Good MCS governance practises facilitating fisheries rules and regulations and adequate resources and arrangements for compliance and enforcement,
- Ensuring transparency,
- Enhancing control of all marine fisheries by issuing new licenses for the industrial and mechanized vessels and fishing permits for the artisanal vessels as stated in the MFA 2020,
- Enhancing monitoring of fisheries catch and effort data collection,

- Improving data processing and storing,
- Enhancing monitoring of industrial vessels by deploying Onboard Observers and increasing port inspections,
- Build, commission and operate a Fisheries Management Centre (FMC) and a Joint Monitoring Cell (JMC) within it engaging DoF, Bangladesh Coast Guard (BCG), Bangladesh Navy (BN), and other relevant agencies or authorities.
- Enhancing monitoring and surveillance by using remote surveillance techniques of Vessel Monitoring System (VMS) transponders in all industrial and Automatic Identification System (AIS)/Global System for Mobile (GSM) devices for mechanised and artisanal vessels,
- Enhanced surveillance of the whole EEZ based on VMS and AIS,
- Enhanced surveillance with surveillance check posts and Patrol boats,
- Enhancing enforcement by improved information gathering, processing of infringements, and moveable courts,
- Active cooperation and coordination across government agencies to oversight and deter illegal marine fisheries activities,
- The precautionary approach should not delay management action because of a lack of information when uncertainty exists,
- 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 MCS performance indicators (KPI) for the fundamental fisheries management measures, regularly monitored and appraised.

The fisheries management plan (FMP-3 MCS) will be biennially updated to guide fishery management and be responsive to policy adjustments.

1.5 Scope of the FMP-3

This plan outlines the current MCS strategy, activities, and management measures governing all marine fisheries within Bangladesh EEZ. It is intended to be used by government officials and stakeholders to explain the MCS management measures necessary to conserve and regulate the marine fishery under the Marine Fisheries Act 2020 and the Marine Fisheries Rules 2023 and by-laws.

1.6 The Implementation

The Marine Fisheries Act 2020 strengthens DoF's MCS operations, aiming towards a higher level of monitoring, controlling, and surveillance of the marine fisheries. Under the SCMFP, the following MCS reforms and activities are ongoing under the provisions of the new fisheries act:

(i) Institutional and regulatory capacity building of MCS activities in monitoring, controlling, and surveillance of the marine fisheries,

(ii) Improved information sharing and coordination with BCG, BN, Mercantile Marine Office (MMO), port authorities, and other concerned authorities,

(iii) Improved Co-management with stakeholders' associations and fishers communities co-management committees,

(iv) Improved evidence-based enforcement operations,

(v) Improved prevention and deter Illegal, Unreported, and Unregulated (IUU) fishing of national and foreign-flagged vessels,

(vi) Established FMC and within it a JMC for better Monitoring of fishing activities.

(vii) Provision of technical assistance and services for capacity development, training, procedures, and JMC operation manuals.

(viii) Developed an MOU among concerned authorities for the functioning of JMC.

(ix) Strengthened patrolling and surveillance through procurement of new high-speed patrol boats, construction of new marine fisheries surveillance check-posts (MFSC), and deployment of necessary manpower.

(x) Hiring and deploying additional staff of enumerators, onboard observers, inspectors, and technical staff for the operation.

(xi) A database for registration & licensing/fishing permit of all fishing vessels and a data base for Fishers ID cards developed and maintained.

The MCS capacity building, including procurement of tools and technology, training of staff, and establishing standard operating procedures, will strengthen fisheries monitoring, fisher's compliance with rules and deter IUU fishing. The JMC brings new dimensions monitoring controlling and surveillance of marine fisheries. The VMS monitoring of industrial vessels will protect the resource and the marine environment and deter vessels from fishing illegally in protected and closed areas. Enhanced monitoring by the JMC and the MCS processing information from other additional sources will transform Bangladesh's marine fish resources and environmental conservation. The AIS search and rescue program significantly improves safety at sea for artisanal fishers on motorised boats. GSM also serves fisheries management by recording the movement of small-scale fishing boats.

Although this FMP-3 covers the fishing years 2022-2023 to 2024-2025 inclusive, it may be reviewed biennially based on the performance of the MCS operation 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.

1.7 The National Context of the FMP-3

The marine fisheries fleet of Bangladesh consists of 231 active industrial large trawlers mainly operated from Chattogram and about 30 thousand artisanal smaller vessels (according to a recent frame survey by SCMFP, DoF) operated from over two hundred landing sites along the coast of the country. These two major marine fishing fleets harvest Bangladesh's marine resources jointly but under different management plans and rules. The FMP-3 MCS plan, however, is for both fleet

segments and aims to sustainably manage and conserve marine fisheries resources to achieve SDG-14[4] targets by ensuring compliance with fisheries acts, rules and legislation by the GoB.

[4] Goal SDG-14 refers to life below water.

2 SECTION B: The MCS Management Structure

2.1 The EEZ and Fisheries Boundaries

The EEZ and the whole coastal areas are the geographical theatres for the MCS operations. It covers monitoring, controlling, and surveillance of all fishing activities in the area, covering 16 districts and four significant fishing grounds, all marine protected areas (MPAs), landing sites, adjacent markets and fishers' villages .

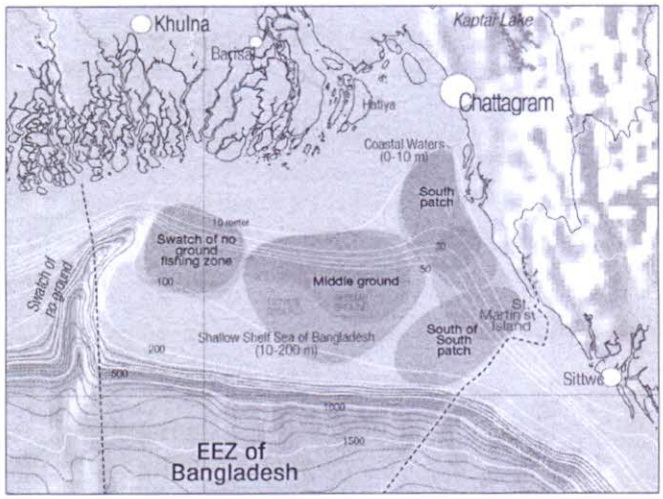


Figure 2. Most significant fishing grounds

The industrial sector shall operate only in waters beyond the geo-fence (fisheries boundaries). Geographic coordinates for the geo-fence are shown in Annex 6.2. The artisanal fleet fishes in waters inside the geo-fence, excluding the MPA)/marine reserve (MR).

2.2 The Context of Fisheries Management

The goals in fisheries management can be divided into four subcategories: biological, ecological, economic and social, where social includes political and cultural goals. Effective fisheries governance transforms policies, laws, and rules through governmental institutions into shaping and controlling daily activities in the fishing sector. The government structure that develops and implements those rules functions and abide by a code of governance defined by the law. The fisheries management authorities, a crucial part of the governance structures, represent the state by law and perform specific fishery management functions. Stakeholders, fishers, boat owners, and other secondary industries and NGOs participate in the fisheries governance institutional framework. Policies define the course set of choices of actions of a government or decision-making body and should influence future decisions or actions.

2.3 The Fisheries Management Cycle

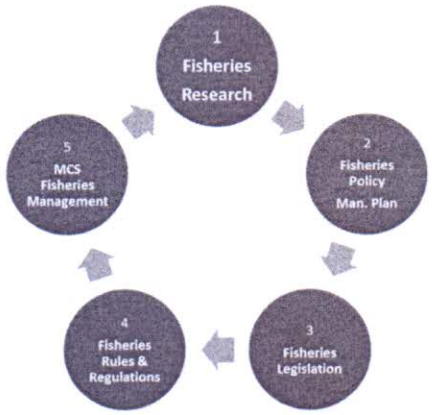


Figure 3. The Fisheries Annual Management Cycle

The MCS operations are the last stage in the fisheries management cycle before taking another annual round, as shown in Figure 2. The first stage is the fisheries research which then affects fisheries policy and the management plan, which influence the fisheries law, rules and regulations which govern the MCS operation. Annually performing a stock assessment and marine research activities might require changing fisheries management plans and rules that might need amendments to the fisheries Act. Consequently, the MCS operation will adapt to such changes by issuing new fishing practice directives based on new rules through the consultative process. Hence compliance and enforcement activities will change accordingly. This process will repeat itself annually to respond to environmental changes in the marine ecosystem and other socioeconomic implications for the marine fisheries.

2.4 The Role of MCS

The three pillars of MCS operations are monitoring, controlling, and surveillance, and comprehensively managing in keeping the rules and order in marine fisheries. All three pillars cover a specific area of the fisheries management tasks independently. Yet, they rely on close cooperation and seamless flow of information in their endeavours to enforce compliance with rules and regulations. Figure 3 shows these three MCS operations' three pillars and their respective tasks.

MCS is the executive arm of fisheries management plans, laws, and rules through:	Monitoring	Compliance
		Enumeration
		Observation
	Controlling	Licensing
		Managing the fisheries
		Enforcement
	Surveillance	Inspection
		Patrol
		FMC/JMC Monitoring Centre

Figure 4. MCS Roles and Responsibilities

2.5 The MCS Management Structure

DoF's MCS operation is shared between three sections/subordinate offices under its auspices, the Marine Section at headquarters in Dhaka, the MFO in Chattogram, and the MFSMU in Chattogram. MFSCs (5 nos.) will serve as MFO's outposts providing FMO's services along the coast with staff for

enumeration and inspectors patrolling on land and sea. The FMC & JMC will work under the MFO. JMC will be jointly managed under an MOU among parties (nine governmental agencies). Figure 4 shows the organisational structure of the MCS operation in Bangladesh.

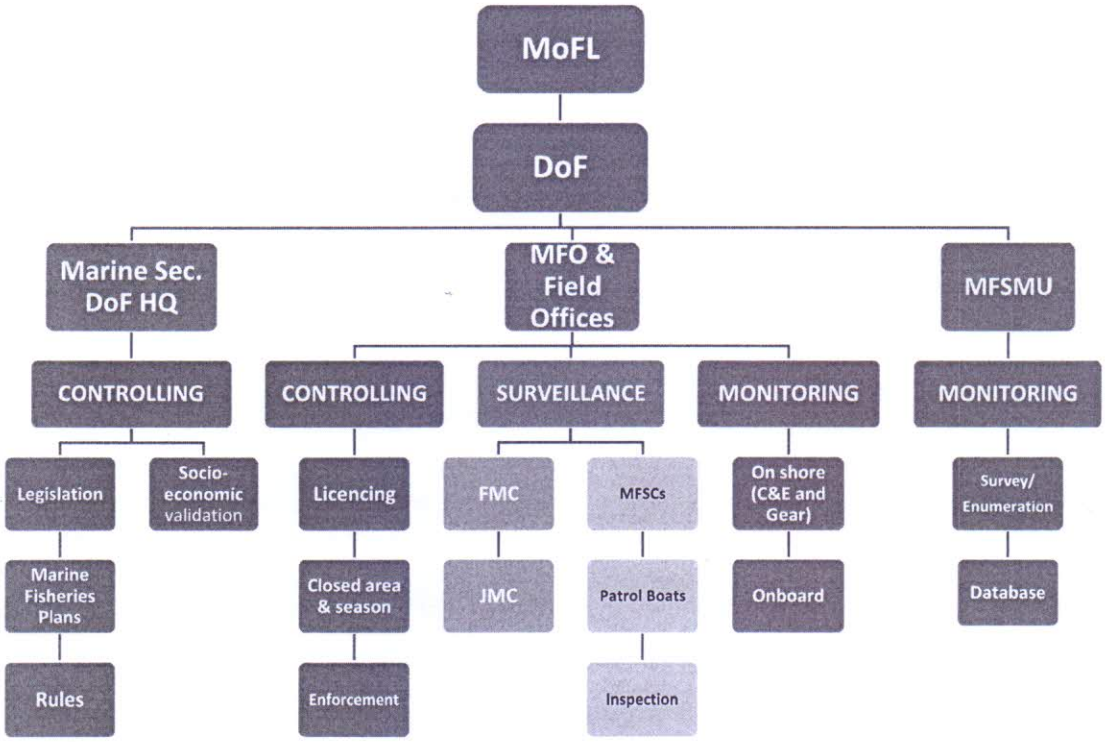


Figure 5. The MCS Management Structure

The marine section of DoF, in consultation with MFO & MFSMU, is responsible for preparing the legislation, marine fisheries plans, rules and validation of socioeconomic aspects of the management measures as a part of the MCS controlling activities.

The MFO is responsible for the licencing, enforcement, investigation, and prosecutions of the controlling activities, the MCS surveillance activities in cooperation with the JMC partners and the inspection, onshore catch and gear monitoring, and onboard observers' operators program of the MCS activities.

The MFSMU is responsible for enumerations, various surveys & stock assessment, and database management as a part of the monitoring of MCS activities.

3 SECTION C: The MCS Fisheries Management Plan 2024-2027

3.1 Implementation of the MCS Marine Fisheries Management

3.1.1 The Marine Fisheries Management Plan Three (FMP-3 MCS)

DoF developed the FMP-3 MCS plan for the marine fisheries in consultation with stakeholders. It explains how the FMP-3 is influenced by the status of fish resources, as established by scientific research. It is based on EAFM, a multi-species fisheries management approach to the ecosystem's environmental, co-management, and socioeconomic concerns. The FMP-3 addresses planned MCS and enforcement measures in Bangladesh marine fisheries including functions of FMC and JMC from January 2024 to June 2027. It is an instrument explaining DoF's MCS activities, ensuring compliance with the marine fisheries acts & rules that fishers and other sector participants must comply.

3.1.2 Enforcement and Coordinating Agencies

The primary enforcement, and coordinating agencies of marine fisheries management include DoF, Bangladesh Navy (BN), Bangladesh Coast Guard (BCG), Local administration, Bangladesh 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 to the fisheries acts & rules be supported by JMC established by DoF.

3.2 Specific Management Objectives and Strategy

3.2.1 Resource Conservation

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

3.2.2 Ecosystem Management & Co-management Approach

The FMP-3 has been prepared considering the EAFM. It includes holistically reviewing 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 and a consultation process throughout all policy and management planning levels. This will ensure the involvement of all concerned parties in the marine domain.

3.2.3 MCS Objectives

The MCS is a systematic management approach to monitoring, controlling and surveillance the progress of artisanal and industrial marine fisheries and compliance with legislation and rules. The eventual goal of fisheries management is to maximise the sustainable benefits and economic return from the country's EEZ. The success of fisheries management depends on adequate information, sound decision-making and successful implementation of MCS operation. MCS is an integrated information gathering, rulemaking and enforcement governmental operation implementing policies,

strategies and frameworks for fisheries management. The overall objectives of the MCS operation under the MFA 2020 are as follows:

- Monitoring all marine fisheries and gathering sufficient and reliable data for fisheries research, stock assessment, and regulating purposes.
- Controlling all marine fisheries activities through instruments of licencing, effort restrictions, closure of areas for fishing, restricting and managing the use of fishing gear, studying and measuring the socioeconomic performance of the marine fisheries sector.
- Conduct complete 24/7 surveillance of all fishing activities within the EEZ.
- Store, process and guard all fisheries data.
- Maintain law and order, transparency, and good governance in the marine fisheries.

3.2.4 MCS Strategy

The MCS strategy is based on streams of collaborative and non-collaborative information on all three fronts of the monitoring, controlling, and surveillance, as shown in figure 5. The information-gathering will, on the one hand, be based on the information given by the fishers and vessel owners as collaborators and on non-collaborated activities through inspections, onboard observation, patrols, information sharing and any other sources, including third-party information.

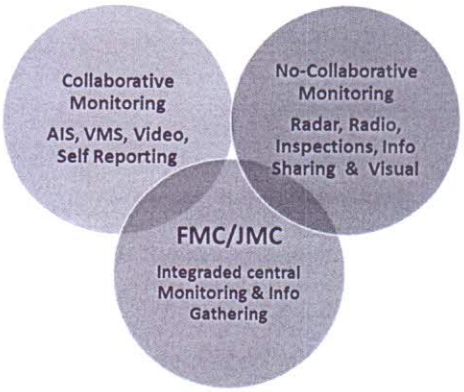


Figure 6. MCS Strategy

3.2.5 MCS Performance Indicators

A set of fisheries management performance indicators (FPI) will be developed to evaluate the effectiveness of the MFP-3 MCS plan. The plan's effectiveness is observed by monitoring these indicators and adjusting it as required to accomplish its objectives. The critical indicators for the FMP-3 MCS are various activity measuring instruments developed for all three main pillars of the Monitoring, Controlling and Surveillance. Records of VMS, licenses/fishing permit, inspections, surveys, patrols, offences, incidents, etc., will be used to evaluate the performance.

3.2.6 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's 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 conservation goals and rational exploitation of the marine resources, thus improving the livelihood in the coastal communities.

It is not a replacement for the current fisheries management structures. It presents 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 DoF.

Figure 7. Fisheries Co-management Forums

Figure 6 represents the stakeholder involvement at different levels including Village and Upazila Co-management Committees, District and Regional Fisheries Co-management forum, and a national level Fisheries Advisory Body (FAB), which is also a central Co-management Committee. Three regional community-based fisheries management forum will be formed at Chattogram, Basisal, and Khulna.

3.3 The MCS Management Measures 2024-2027

3.3.1 Science-based Fisheries Management

In marine fisheries management, the fisheries act, the management plan, the fisheries rules, and the government 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 the 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 are vital for the success of the fisheries management regime and need to be supported by all who participate in the fisheries sector.

3.3.2 Fisheries Stock Assessment and Research

Fisheries research and fish stock assessment are the groundwork for the science-based fisheries management of marine resources. The research includes collecting and analysing fisheries dependent and independent data. The fishing effort and catch data, systematically collected at all landing sites, is necessary for the FMP-3 MCS. The information collected provides 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 and a technical working group. The statistical analysis assists scientists, fisheries managers, and politicians in shaping and developing 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.

3.3.3 Scientific Advice

Based on the outcomes of the fisheries survey and landing data, the DoF's scientists annually report on the state of the marine fisheries resources. Afterward, the DoF's scientists will produce a report on the state of the marine fisheries resources based on fisheries research and stock assessment analyses. These reports guide the conservation measures and harvesting levels of fish stocks to be implemented by the FMPs. The scientific advice is formulated under the consensus that sustained fisheries are process-oriented and must be adaptive to the state of marine fisheries resources.

3.3.4 MCS Fisheries Management Measures

The MCS management measures for the marine fisheries aim at reducing the fishing pressure on the marine resources by multiple controlling approaches. The fundamental change from previous MCS plans is that all fishing vessels must be licensed or hold a fishing permit in the Bangladesh EEZ. The industrial vessels will be allocated Individual Total Allowable Effort Quota (ITAEQ) annually. Fishing areas and seasonal restrictions continue, and the protection of spawning- and nursery grounds will periodically remain closed to fishing. Technical fishing gear restrictions are the same as before. The management measures aim to simultaneously conserve marine resources and pave the way for rational exploitation.

3.3.5 The MCS Controlling Operation

The MCS Controlling operation contributes to the preparations and updates of FMPs, Marine Fisheries Rules (MFR), issues and keeps track of fishing licences and enforces the rules and sanctions of violations. The controlling division also conducts socioeconomic studies concerning formulating the rules and fisheries management measures in general. The Licencing authority manages the fisher's ID card registry.

3.3.6 The MCS Monitoring Operation

The MCS Monitoring operation collects fisheries data on catch and effort, biological characteristics of the catch, and the fisheries socioeconomics by its enumeration and inspections programs. The data is collected in scientifically designed frame surveys, direct inspections, fishery dependent and independent sources. The database provides a good overview of the fishing activities and fish resources for scientific analysis and formulation of management measures.

3.3.7 The MCS Surveillance Operation

Inspection and VMS/AIS monitoring at the FMC & JMC is the core of the surveillance activities. The JMC is jointly managed by DoF, the Coast Guard, the Navy and other relevant authorities. VMS and AIS systems signals are monitored continuously on virtual TV screens. When cases of non-conformity occur, appropriate actions are taken by one or all the JMC centre members in a coordinated way. Patrol boats are also effective in surveillance at the fishing grounds. Port inspections by trained inspectors are also a vital source of information. The JMC operates 24/7 monitoring for the systems under specific rules on sharing information on individual vessels with the other parties.

3.3.8 The Joint Monitoring Cell (JMC)

The Bangladesh marine fisheries JMC is a jointly operated multi-surveillance cell within the FMC of the Departme (Figure 7). All partners have their specific roles in the operation as defined in the MOU. The leading partners are governmental agencies, such as DoF, BN, BCG, MAU, River Police, Department of Shipping (DoS), MMO, Port Authorities, NBR, Divisional Commissioners of Chattogram, Khulna and Barishal. A JMC Coordination Committee (JMC-CC) oversees the policy and overall coordination issues of the JMC. Under the JMC-CC is a Steering Group (JMC-SG) representing the partner agencies' regional authority and overseas JMC management. The daily operations are under the guidance of the heads of three functional units.

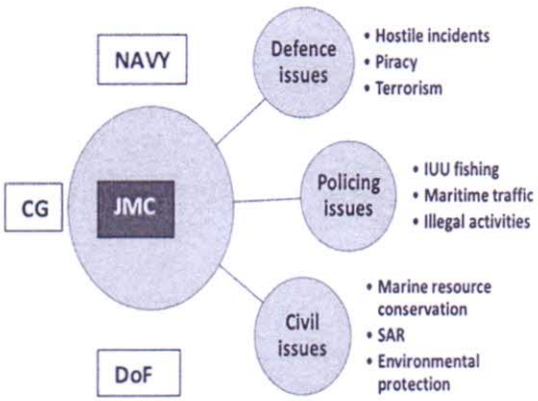


Figure 8. The JMC Operations

3.3.9 Check Posts and Patrol Boats

Marine Fisheries Surveillance Check posts (MFSC) and patrol boats will be placed strategically along the coast for MCS surveillance. The patrol boats will do random surveillance to oversee fishing activities accompanied by inspectors, and representatives of other relevant authorities as appropriate. The patrol boats will also bring observers to and from a fishing vessel at the fishing grounds for inspections and collection of catch data and samples.

3.3.10 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 charged in most countries. DoF will continue to charge fees for licences. The government may consider further cost recovery levies at a later stage.

4 SECTION D: Key Concerns and Management Measures

4.1 Core Compliance Considerations

Challenge: Compliance with rules and respect for the artisanal and industrial fisheries' ecosystem needs to improve. IUU fishing takes place. Illegal fishing with estuarine set bag net (ESBN). Illegal gillnets and trawl nets with undersized mesh are used, catch not reported and restricted or closed areas not respected. The following management measures are intended to increase fishers' compliance with rules and enhance their respect for the ecosystem.

Long-term Objective: Improving compliance and respect for Acts, rules and the ecosystem.		
Target: Enhance compliance with marine fisheries Acts, rules, and regulations within five years.		
Compliance issues	**Actions**	**Timeline**
1. Registration/enlistment and licensing/ permits for fishing vessels	Fishing vessels of over 15 net tonnages (NT) must be registered at MMO and receive a fishing license from DoF, and fishing vessels of 15 NT and below must have a fishing permit issued by DoF. – Non-compliance will lead to penalties as stipulated in MFA 2020. – All unregistered and unlicensed fishing vessels and vessels without fishing permits should be registered/ licensed/permitted in a joint effort of DoF and MMO, and facilitate to a one-stop service point.	January 2024 onward
2. Legal fishing gear	– Fishing gear used by all vessels shall comply with the definition of such gear in the Marine Fisheries Act-2020 and Marine Fisheries Rules 2023, Fish Protection and Conservation Act 1950, and subsequent rules. Non-compliant fishing gear will be confiscated and destroyed, and imprisonment or penalties will be applied as per the legal framework.	Persistent
3. Closed seasons	– Fishing closures must always be respected. Fishing licenses or permits will be canceled or withheld, or penalties will be imposed for contravening fishing closures as per the legal framework.	Persistent
4. Marine protected areas	– Fishing in marine protected areas is a punishable crime. Fishing licenses or permits will be canceled or withheld, or penalties will be imposed for non-compliance as per the legal framework.	Persistent
5. Reporting fish catch	– Reporting all fish caught by vessels with a license or permit is mandatory. Failure to report fish catch can lead to administrative penalties as per the legal framework.	Persistent
6. Stop IUU fishing	– IUU fishing is forbidden. Illegal fishing will lead to penalties or imprisonment as stipulated in	Persistent

	MFA 2020 & MFR 2023.	
7. The TAE and/or TAC rule	– Individual vessel effort quotas or total allowable catch (TAC) will be allocated to all industrial vessels, gradually scaling their effort to sustainable levels. – Effort limit will also be introduced to the artisanal fleet collectively.	July 2024 onward
8. The hilsa rule	– Industrial vessels can catch hilsa as bycatch, the bycatch limit will be applied as stated in FMP-1.	Persistent
9. Establish Co-management for better compliance	– Cost-effective approaches such as 'co-management' of resources be promoted and managed to achieve the objectives of MCS through stakeholder consultations.	Persistent

4.2 Fisheries MCS Management Governance Challenges

Challenge: Inadequate MCS capacity

Fisheries in Bangladesh have been relatively open-access fisheries with limited restrictions on effort, area, and use of fishing gear. It calls for diverse and rigorous fisheries management measures safeguarding good resource conservation and rational exploitation, such as:

- Enhance MCS in marine fisheries,
- Improving fisheries data collection and quality
- Improving coordination and cooperation among fisheries enforcement agencies,
- Developing co-management consultation for shared marine resources,
- Strengthen marine fisheries research and development activities,

Objective: Strengthen marine fisheries MCS operation			
Target: An effective MCS fisheries management fully functioning by 2025			
Management Measures	**Actions**	**Timeline**	**Responsibility**
1. Enhance MCS in marine fisheries.	– Monitoring: New C&E monitoring software introduced, Enumerators training and deployment completed.	January 2024	DoF & SCMFP-FAO
	– Controlling: Online registration & licensing system introduced. Fishing vessel and gear database updated. The FMP-1, FMP-2, FMP-3 implemented, and capacity building of DoF officials through training.	June 2024	DoF & SCMFP-FAO
	– Enforcement: Marine Fisheries Act & Rules implementation Plan prepared & implemented.	Persistent	DoF
	– Surveillance: The JMC, patrol boats, MFSCs in place and functional. Onboard Observers program implemented, strengthen inspections and capability building of inspectors through training.	December 2024 onward	DoF, BCG, Navy, MMO, port authorities and all parties of JMC

2. Improving fisheries data collection, analysis, quality and storing	– Calipseo software in place and functional (FAO contract), Boat and Gear database updated and maintained, Fishers' database in place.	June 2024	DoF & SCMFP-FAO
3. Improving cooperation and coordination among fisheries enforcement agencies	– The JMC MOU is signed and functional 24/7 year around; – Deployment and mobilization of human resources and logistics in newly built JMC.	January 2024 Dec 2024	MoFL, DoF, all JMC parties DoF & MoFL
4. Developing co-management consultation for shared marine resources	– DoF, under the framework of the SCMFP, plans to establish Community Co-Management Forums to include a broader stakeholder's participation in strengthening the implementation of MCS.	April 2024	SCMFP, DoF
5. Strengthen marine fisheries research and development activities	– Regular survey activities of R V Meen Shandhani, survey by experimental Tuna fishing vessels and stock assessment of marine fisheries resources;	Persistent	MFSMU-SCMFP, DoF
6. Capacity enhancement of MCS Officials.	– Training of MCS officials (DoF, BCG, BN, MMO) to improve their effectiveness, skills and capacity to address IUU fishing	Ongoing	DoF, BCG, Universities & Academies

4.3 Fisheries Monitoring Tasks and Challenges

Challenge: Inadequate fisheries data and information

Comprehensive data on marine fisheries, such as data on catch and effort, 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.

Objective: Improving fisheries data collection and analysis			
Target: Improve data collection and software systems by 2025			
Management Measures	**Actions**	**Timeline**	**Responsibility**
1. Establish a portal, FMIS database and applications system that links different sources of data for use in stock assessment, fisheries management and stakeholder information	– An integrated database system is operational and Web-portal accessing is operational. This will include C&E monitoring system, fishing vessel & gear database, registration & licensing database, and Fishers' database.	Dec 2024	SCMFP, DoF
2. Establish data quality assurance by cross-validation of data from different sources.	– Automated or manual data validation processes are in place and functional.	March 2024	DoF (MFSMU-SCMFP-FRSS)

3. Establish biological sampling databases such as species composition, size composition	– Database and application developed and integrated into a fisheries information portal.	Dec 2024 onward	SCMFP, DoF
	– At-sea sampling operational by observers or inspectors	June 2024	DoF
	– Shore-based sampling operational and analysis report available online.	Jan 2024 onward	SCMFP & MFSMU, DoF
4. Establish economic and employment data collection for marine fisheries	– Monitor data on the value chain from landing centres to the final destination of the catch for local consumption or export.	June 2025	DoF
5. Enumeration	– 195 enumerators will be trained and deployed to monitor catch and effort in the marine fisheries; – District and UZ technical staffs shall be trained for sustainability of the system.	Persistent	DoF (SCMFP, MFSMU, MFO)
6. Onboard Observation	– About 25 Onboard Observers will be trained and deployed to serve as observers onboard industrial vessels.	Aug 2024	SCMFP, DoF
7. Fish catches are landed at designated fish landing points (Home port & Landing port)	– Designate the home port & an alternate landing port for all artisanal fishing vessels – Marine fish landings should be estimated on the basis of a statistically designed programme.	March 2024	DoF
8. Key fisheries management information of marine fisheries is publicly accessible	– Documentation of fisheries management information prepared and published at regular intervals.	Persistent	DoF

4.4 Fisheries Controlling Tasks and Challenges

The implementation of the new controlling measures in marine fisheries is a challenge.
The fisheries controlling tasks are more complicated and diverse than before under the Marine Fisheries Act 2020. The new order in the licensing of fishing vessels, the TAE and hilsa rules need to be implemented and enforced, and their biological and socioeconomic impact assessed biennially.

Objective: Improving fisheries control in Bangladesh marine fisheries.			
Target: Implementing new controlling measures by 2025			
Management Measures	**Actions**	**Timeline**	**Responsibility**
1. Biennial evaluation of Fisheries Management Measures (EFMM) and systematic update of	– Evaluation of scientific advice of the resource and individual fish stock status, – Decide on management measures	June 2024	MFSMU & MFO of DoF & Review Committee/

Fisheries Management Plans and Rules	adjustment to plans and rules – Establish SOPs for the biennial EFMM, including the evaluation and revision.		Working Committee
2. Processing Licenses and Permits	– Establish a national fishing vessel register – Issuing licenses & permits, – Maintaining licensing & permit records – Establish SOPs for the licensing & permit operations, including the biennial evaluation and revision, according to the provisions of acts & rules.	June 2024 onward	DoF
3. Implementing the TAE/TAC rule, allocation of TAE/TAC quota, monitoring use of TAE/TAC quota.	– The allocation of the TAE/TAC quota based on stock status – Monitoring vessels' use of TAE days and updating the database, – Maintaining TAE/TAC quota records – Establish SOPs for TAE/TAC quota allocations, including the annual evaluation and revision. – Online C & E monitoring system will be employed for evaluating TAE/TAC.	June 2024	DoF (MFO)
4. Implementing and monitoring the hilsa rule	– Monitoring hilsa catch by industrial vessels, – Maintaining the hilsa catch records for individual vessels using online system – Establish SOPs for the hilsa rule implementation, including the annual evaluation and revision.	July 2024 onward	DoF
5. Enforcement realization	– Enforce rules and plans, – Maintaining enforcement records, – Establish SOPs for investigating and processing offenses, and preparing prosecution according to legal framework.	Persistent	DoF
6. Socioeconomic studies and fisheries management performance evaluation	– Carry out regular studies on the socioeconomic impact of the fisheries management measures, – Report and advise annually to optimize economics of controlling measures.	Dec 2024 onward	DoF

4.5 Fisheries Surveillance Tasks and Challenges

The challenge is the implementation of a coordinated and comprehensive surveillance operation.

The new JMC, MFSCs, and patrol boats are new addition to the existing surveillance operation. Its challenging integration to present operation and mobilisation of the new activities will need an additional workforce, logistics, reorganisation of the management structures, an MoU and a set of new SOPs (Standard Operations Procedures), and documents to guide the new officers in their daily work and execution of the various surveillance activities.

Objective: Improving fisheries surveillance in Bangladesh marine fisheries			
Target: Implement new surveillance activities by 2025			
Management Measures	**Actions**	**Timeline**	**Responsibility**
1. Operate a fully-fledged JMC with VMS and AIS/GSM monitoring. 24/7 year-around.	– Build and commission a fully operational JMC within the FMC; – Sign MOU between all GoB agencies involved in the JMC operation directly and indirectly; – Deploy, mobilize, and train JMC's staff – Establish SOPs for its operations, including the annual evaluation and revision as necessary.	Jan 2024 onward	SCMFP, DoF
2. Operate fully-fledged Check-Posts (MFSCs) at strategic locations	– Build and commission at least five fully operational Check-Posts. – Deployment & training of human resources for the smooth operation of MFSCs;	Dec 2024	DoF (SCMFP & MFO)
3. Operate new patrol boats for patrolling the inshore and offshore fisheries.	– Procure and deliver fully operational patrol boats (6 nos.) to MFSCs. – Deployment and training of crews. – Establish SOPs for its operations, including the annual evaluation and revision as necessary.	Dec 2024	DoF
4. Inspections operation by enlarged and fortified force of inspectors.	– SWOT analysis to reorient actual needs of inspector's capacity building and institutional strengthening of MFO, DoF. – Re-organise and train existing inspectors in the new marine fisheries measures, – Deploy and training of new inspectors,	December 2024	DoF

4.6 Review and Update of FMP 3

The FMP-3 MCS recognises the importance of generating better 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-3 MCS 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 and other relevant data.	March	MFO, SCMFP, DoF
2.	Review of progress in objectives, fisheries performance, stock assessment, biomass estimation & results of survey cruises (RV MS).	April	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 3 Review Committee or an FMP review committee will review all three FMPs as needed.

5 Annexes

5.1 Organisations and Stakeholders Associations

Core Fisheries Administration	
Ministry of Fisheries and Livestock (MoFL)	The administrative Ministry with oversight and policy-making responsibility for fisheries through its' various departments and agencies. 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.
Department of Fisheries (DoF)	DoF is the principal agency of MoFL, responsible for managing Bangladesh's fisheries resources. The Marine Fisheries Office, based in Chattogram, is responsible for licensing, fishing operation regulations, catch reporting & certification, MCS, and enforcement activities. Marine Fisheries Survey Management Unit (MFSMU) of DoF is responsible for catch and stock status monitoring through survey, enumeration and stock assessment and generation of scientific advise. DoF is also responsible for drafting fisheries policy, Acts, strategies, rules and regulations and management plans for approval from MoFL.
Department of Shipping (DoS)	DoS is a regulatory agency under the Ministry of Shipping, mandated as the maritime safety administration of Bangladesh and responsible for formulating and implementing national policies and legislation on the safety of ships at sea, coastal and inland waters. To ensure the safety of the inland, coastal and ocean-going vessels, including fishing vessels, the DoS performs the approval of the ship's design, oversees the construction of the vessels, conducts regular surveys, and registers the ships.
Mercantile Marine Office (MMO)	MMO, based in Chattogram, is a subordinate office of the DoS under the Ministry of Shipping. In addition to merchant shipping responsibilities concerning fishing vessels. MMO is primarily responsible for registration, survey and inspection of coastal fishing vessels; issuing Safety Equipment certificates and Seaworthiness certificates.

Fisheries Enforcement	
Bangladesh Coast Guard (BCG)	BCG of the Ministry of Home Affairs is mandated to enforce Maritime Law in the EEZ; conduct surveillance; Protect fishery and other non-living resources from illegal exploitation.
Bangladesh Navy (BN)	BN of the Ministry of Defence is mandated to safeguard national maritime interests in the EEZ.

Other Fisheries Institutions and Associations	
Bangladesh Fisheries Development Corporation (BFDC)	BFDC is responsible for supporting processing, fisheries product development, and distribution by harvesting fishery resources and developing marketing facilities.
Marine Fisheries Academy (MFA)	Government training institution under MoFL for training personnel for fishing vessels and provides 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 coordinates nationwide research efforts, standardising techniques to maximise production and improve resource management. The institute also provides courses to disseminate new skills and technologies within the fishery sector.
Technical Universities	Currently, twelve universities in Bangladesh are providing honours Bachelor's and Master's degrees in Fisheries, 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 (WFTOA)	BWFTOA 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.

5.2 Fishing Zone Division Line

Artisanal mechanised boats and industrial vessels must carry and operate the AIS/GSM, as appropriate, throughout fishing trips. From the start of the 2023-24 fishing season or when the legal provisions and infrastructure is ready, whichever is earlier, the industrial vessels must carry and operate 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°

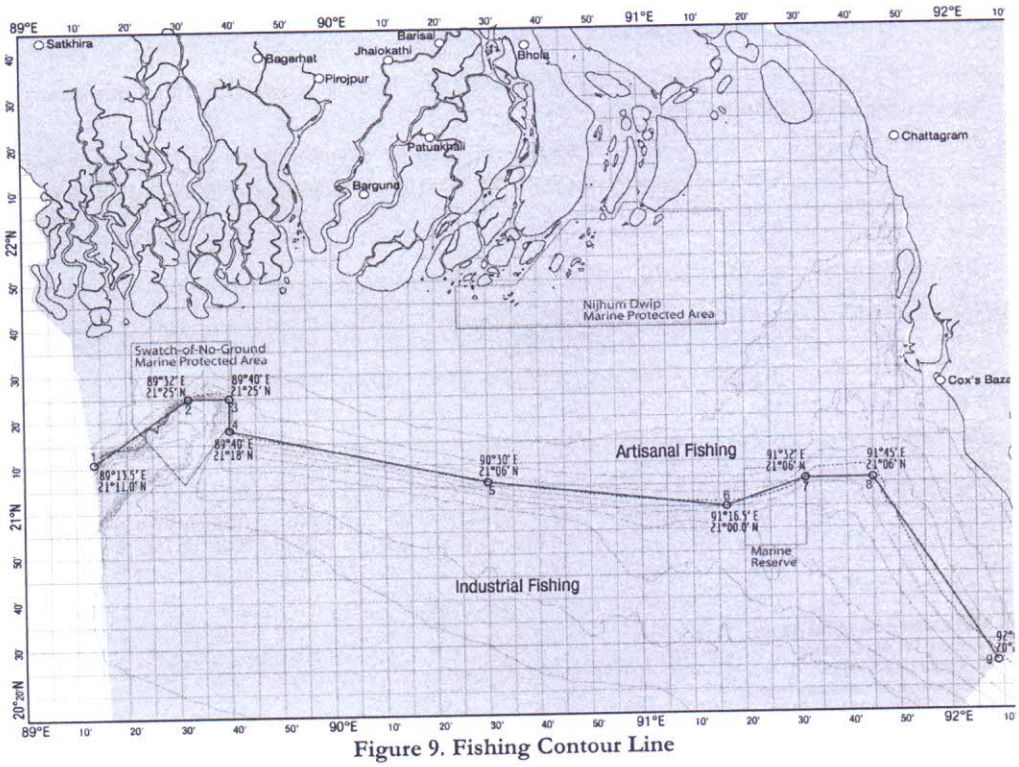


Figure 9. Fishing Contour Line

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