

An Assessment of the Institutional Policy and Legal Regime to Combat IUU Fishing: A Review on the Journey of Bangladesh Towards Sustainable Blue Economy

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Abstract

As a developing coastal State, Bangladesh aspires for harnessing the potentials like ensuring food security, fulfilling nutritional deficiency, rendering employment opportunity, generating income and export earnings through sustainable using of its Blue Economy. Comprehensive combating against IUU fishing is a holistic approach to protect marine ecosystem, biodiversity, survival of threatened and endangered marine species, and secure livelihood of small-scale fishers. Institutional set-up seeks more personnel and logistic potency along with the modernization of monitoring, controlling and surveillance mechanisms for preventing IUU fishing. The National Plan of 'Action-IUU Fishing (NPOA-IUU)' addressed several general and special measures with some priority actions for preventing, controlling and eliminating IUU fishing from our maritime boundary through enhancing organizational and professional capacity. Ensuring inclusiveness and no one behind philosophy of SDG, integration of the interest and ownership of the small-scale fishers on the territorial water should be considered in the National Plan of Action. Apart from NPOA-IUU, fighting against IUU fishing requires more focus in marine fisheries management, maritime zone related policies, and strategies as well as national policy documents. Legal instruments of the country need incorporation of IUU fishing issue in a comprehensive way to facilitate legitimate fishing and to enhance law enforcement against illegal fishers. Regional and international fisheries management organizations necessitate regular communication, collaboration and information sharing to win over free riders as well as ensure sustainable blue economy.

Keywords: Bay of Bengal, IUU Fishing, SDG 14, NPOA-IUU, Blue Economy.

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1. Introduction

Bangladesh is blessed with the Bay of Bengal, the largest bay in the world, possessing vast marine and coastal water body and through the historical pathway, the country has built a symbolic relationship with this maritime territory by fishing and shipping. The geographical position and climatic condition of Bangladesh has made her coastal area is one of the highly productive areas, the richest ecosystem of the world, having enormous biodiversity with a large number of endangered and vulnerable species (Islam, 2003). In 2018-2019, the total marine catch was 6,59,911 metric ton which is 15.05% of total fisheries production of Bangladesh (DoF, 2020) The key economic activity in the Bay of Bengal and it's fisheries production is six million metric ton per year, comprising more than seven percent of the world's catch (Rahman, 2018). Marine fisheries can be the lion share of the total fisheries catches, as well as can be the good source of protein intakes and foreign exchange earnings. The marine and coastal fisheries have been playing significant role not only in the economic and social development of the country but also in the regional ecological balance (Salam,et al.,2011) but due to over and illegal, unreported and unregulated (IUU) fishing, these resources are depleting at an alarming rate and is threatening the food security and livelihood for the future generations (Khan,et al.,2003). Attainment of the Sustainable Development Goal (SGD) 14, there are some targets (Target 14.4 and 14.6) to regulate harvesting, end of overfishing, IUU fishing and destructive fishing practices and applies science and technology based management strategies to reinstate fisheries stock by 2020 at a level of Maximum Sustainable Yield (MSY) frontier through maintaining their biological characteristics (BBS, 2021). As the prudent and pragmatic management of marine fishery resources is symbolized as the key constituent to ensure sustainable blue economy, Bangladesh should take crucial step like combating against illegal, unreported and unregulated (IUU) fishing in its maritime area to stop overexploitation, destroying habitats of Bay of Bengal.

2. IUU Fishing

Illegal unreported and unregulated fishing refers to activities that contravene national laws and regulations, the conservation and management measures of Regional Fishery Management Organizations (RFMOs) and, where relevant, international law (Bernd Cordes and California Environmental Associates, 2015; IUU Watch, 2021). The following definitions of illegal, unreported and unregulated fishing have been defined by International Plan of Action to Prevent, Deter and Eliminate IUU Fishing (IPOA IUU) 2001:

3. Illegal Fishing Activities

- (1) Without the consent or permission of any State, or in contravention of its laws and regulations of the country, carried out fishing activities by national or foreign vessels in waters under the jurisdiction of that State;
- (2) Contravention operation conducted by a fishing vessels flying the official flag of the country that are parties to a regional fisheries management body entrusted to conserve fisheries resources by holistic approach and by which the country is bound to abide by the international fisheries management law;
- (3) Contravention of national laws or international obligations by cooperating countries of a relevant fisheries management entity or organization.

4. Unreported Fishing Activities

- (1) The fishing activities which were unreported, or no measures have been taken for reporting or have been misreported, to the designated national authority, in contravention of national laws and regulations; or
- (2) The fishing activities which were undertaken in the area of competence of a relevant regional fisheries management organization had been unreported, or no measures have been taken for reporting or have been misreported, in violation of the reporting procedure of that organization.

5. Unregulated Fishing Activities

- (1) The fishing activities are conducted by a vessel without nationality, or by those flying the flag of a country not party to a relevant fisheries organization in the area of that pertinent regional fisheries management organization or by a fishing entity such a manner or procedure that is not consistent with or violation the conservation and management mechanism to that fisheries organization; or
- (2) The fishing activities are conducted such a consistent manner in fish stock areas in which conservation or management measures are not applicable but State has the responsibility to conserve and manage of the living marine resources under international laws and regulations.

The behavior of IUU fishing includes contravention of the fish stock or fish conserve agreement, such as without having a valid license, catching undersized fish, fishing by prohibited gear, conducting transshipments by unauthorized fishing craft, misreporting catch data, concealing or falsifying the identity or itinerary of the fishing vessels, or

misleading or obstructing at the work of law enforcers or inspectors. IUU fishing is observed in all categories and dimensions of fisheries, specially in marine domain both in high seas and in areas within national boundary. All characteristics and stages of the capture and utilization of fish is considered here and the district towns.

6. The Causes of IUU Fishing

6.1 Economic Causes

IUU fishing is principally an economic venture. It is found that there are some incentives to employ in IUU fishing by nature and this phenomenon can be described as economics of crime in maritime territory and its punishment. Nobel Laureate Gary Becker stated that risk-neutral individual or rational criminals compare the benefit of violating the law with the possible cost (Becker, 1968). The theory explained that a rational human being will engage in an offence, which has low-risk but opportunity of getting high-return. It is argued that if and only if a person's personal expected profit surpasses the expected loss (penalty) for a certain crime then the person is engaged with the crime. Regarding the IUU fishing, it is stated that if the expected profit of IUU fishing is positive then there will be continuation of proving incentives for IUU fishing operations.

6.2 Gaps in Legal Regime

IUU fishing is occurring due to the gaps in national legal framework, as well as weak monitoring, control and surveillance of RFMOs.

Institutional Causes/Ineffective Management

Overcapacity of fishing vessels, allocation of fishing rights inappropriately, vessel registration under the Flag of Convenience (FOC) system, are the outcomes of ineffective management and poor institutional setup of relevant organization.

6.3 Impact of IUU Fishing

IUU fishing activity pillages the oceans and diminishes as well as exhausts fish stocks, destabilizes the conservation of marine biodiversity and management efforts, and eventually endangered food security and weakens economies. Its harmful effects jeopardize the livelihoods of legitimate fishers; one of the most vulnerable communities in the country and the world, and at the same time, deprives the global citizens from required food and nutrition. It is true that due to lacking of relevant policies, legal instruments like acts/laws, rules and regulations, required institutional set-up, technical

knowhow and resources for effective MCS (Monitoring, Control, and Surveillance), the developing countries including Bangladesh are failing to reduce IUU fishing (FAO, 2001). In Bangladesh, IUU fishing is occurring both on the coastal and marine areas within the national jurisdiction of the country, concerning with all aspects and stages of the capture and utilization of fisheries resources. Bona fide fishers are being dispossessed of fisheries resources due to IUU fishing, which may lead to high vulnerability of local small-scale fisheries and forwarded to extinction like bad money drives good money from the market. By conserving and sustainably use of the Bay of Bengal's marine resources, Bangladesh may attain Sustainable Development Goal (SDG) 14 (UN, 2021), which will ultimately assist to end poverty and hunger from the country and achieve SDG Goals 1 and 2 as well (COFI, 2021).

7. IUU Fishing - Bangladesh Scenario

In the coastal and marine territorial water of the Bay of Bengal, incidents of IUU fishing is crucial issue for the country though the nation has no authenticate record of IUU fishing activities in its marine realm. In Bangladesh, IUU fishing can be classified by three broad categories:

7.1 IUU Fishing by Foreign Fishing Vessels: To operationalize fishing fleet within the jurisdiction of Bangladesh EEZ, no foreign fishing vessel has been given permission by the relevant authority of Bangladesh government. Therefore, any fishing vessel hoisting foreign flag engaged in fishing activity in Bangladesh marine water body is considered illegal fishing;

7.2 IUU Fishing by Bangladeshi Flagged Industrial Fishing Vessels: Generally, having license, Bangladeshi flag bearing industrial fishing vessels maintains logbook of its fishing operation in designated fishing ground of the country's maritime territory. But it is investigated that these industrial fishing vessels are frequently breaching the restriction of 40 meters depth zone, which is considered as illegal fishing and contravention of Marine Fisheries Ordinance, 1983; and

7.3 IUU Fishing by Bangladeshi Flagged Artisanal Fishing Vessels: Regarding IUU Fishing index by Poseidon Aquatic Resource Management Ltd and Global Initiative Against Transnational Organized Crime, Bangladesh IUU score is 2.41 in the scale

between 1 and 5 where 1 is the best and 5 is the worst (IUU Fishing Index, 2021). Due to overfishing and IUU fishing, fishing industry in the country (specially, the small scale fisheries), is seriously affected, and economic and social livelihood of small fishers have been jeopardized. By IUU fishing, the country is losing valuable wild brood stocks, many of the species are in declining situation and some are nearly extinct (e.g., Tiger Prawn and Indian Salmon) (BBC, 2021). In addition, the ecosystem of the Bay of Bengal is degrading and fisheries related crimes are enhancing in the nations territorial water. Again, IUU fishing by foreign fishing vessels are aggravating security threat to the country, arising competition with local fishers, overexploiting fisheries resources etc.

Therefore, the objectives of this study are to analyze the current institutional set-up, existing policies and strategies, and examine the effectiveness of the present state of legal framework of Bangladesh to control IUU fishing in the Bay of Bengal.

8. Research Methodology

The study employed mixed methods and multi-disciplinary approaches comprising an extensive literature review, quantitative data analysis and Focused Group Discussion (FGD) to gain in-depth understanding on IUU fishing scenario and its existing elimination strategy in the country. Literature review comprised of both published journal articles, Bangladesh government policy documents and unpublished government reports, study materials etc.

8.1 Types and Sources of Data

Qualitative as well as quantitative data on relevant policies, plans, strategies, guidelines, schemes, acts/ordinances, rules, regulations, charters, code of conducts, institutional structure and governance system for combating IUU fishing in coastal and marine areas under national water area of the Bay of Bengal had been studied in this research. Again, primary and secondary data have been investigated from the following institutions in the country like Blue Economy Wing under the Ministry of Fisheries and Livestock, Marine Fisheries Office of the Department of Fisheries, Ministry of Foreign Affairs, Coast-Guard Bangladesh, Bangladesh Navy, Mercantile Marine Department under the Ministry of Shipping, Ministry of Law and Parliamentary Affairs, Bangladesh Telecommunication Regulatory Commission (BTRC), Bangladesh Planning Commission, WorldFish Bangladesh Office, Food and Agricultural Organization of the United Nation's (FAO) Dhaka Office etc. The secondary data from Research journals,

workshop proceedings, committees declaration of fisheries related international organizations, especially FAO, Committee on Fisheries (COFI) and Indian Ocean Tuna Commission (IOTC) had been explored in this research.

8.2 Data Collection Methodology

FGD sessions comprising 7 discussion participants from the key stakeholders had been held by careful preparation based on the objectives of this study. Agenda of the FGD sessions had been prepared cautiously. A questionnaire had been developed on the basis of agenda in this regard. Identification of the key personnel in this issue had been done judiciously and invitation of the suitable discussion participants (e.g., Wing Chief of Blue Economy Wing, Administration Wing, Planning Wing and Law Wing of Ministry of Fisheries and Livestock; Director (Marine), Deputy Director (Marine) and Assistant Director of Department of Fisheries etc.

As the study is dealt with social science issue, therefore, descriptive analytical method was used to conduct this research, which encompassed country preparedness to handle IUU fishing cases in the area of policy domain, regulatory framework, institutional arrangement, enforcement capabilities and international binding principles (binding international agreements) on IUU fishing.

9. Results and Discussions

9.1 Institutional Set-up

To fight against IUU fishing, the Ministry of Fisheries and Livestock (MoFL) is entrusted prime responsibility to safeguard and flourish marine fisheries resources of the country. MoFL has opened a wing called “Blue Economy Wing” to garner the opportunities and face the challenges in this arena. MoFL is playing central role by making policies, plans, strategies, laws, acts, rules and regulations, and implementing marine and aquaculture development projects with its attached department like Marine Fisheries Office and 14 Coastal District Fisheries Offices under the Department of Fisheries (DoF), Bangladesh Fisheries Research Institute (BFRI) and Bangladesh Fisheries Development Corporation (BFDC). In the context of maritime issues with neighboring countries and international forum, the Ministry of Foreign Affairs (MoFA) look after the matters. Through the prudent leadership of the Head of the State, MoFA won two verdicts against Myanmar (year of 2012) and India (year of 2014), which allowed the country to expand

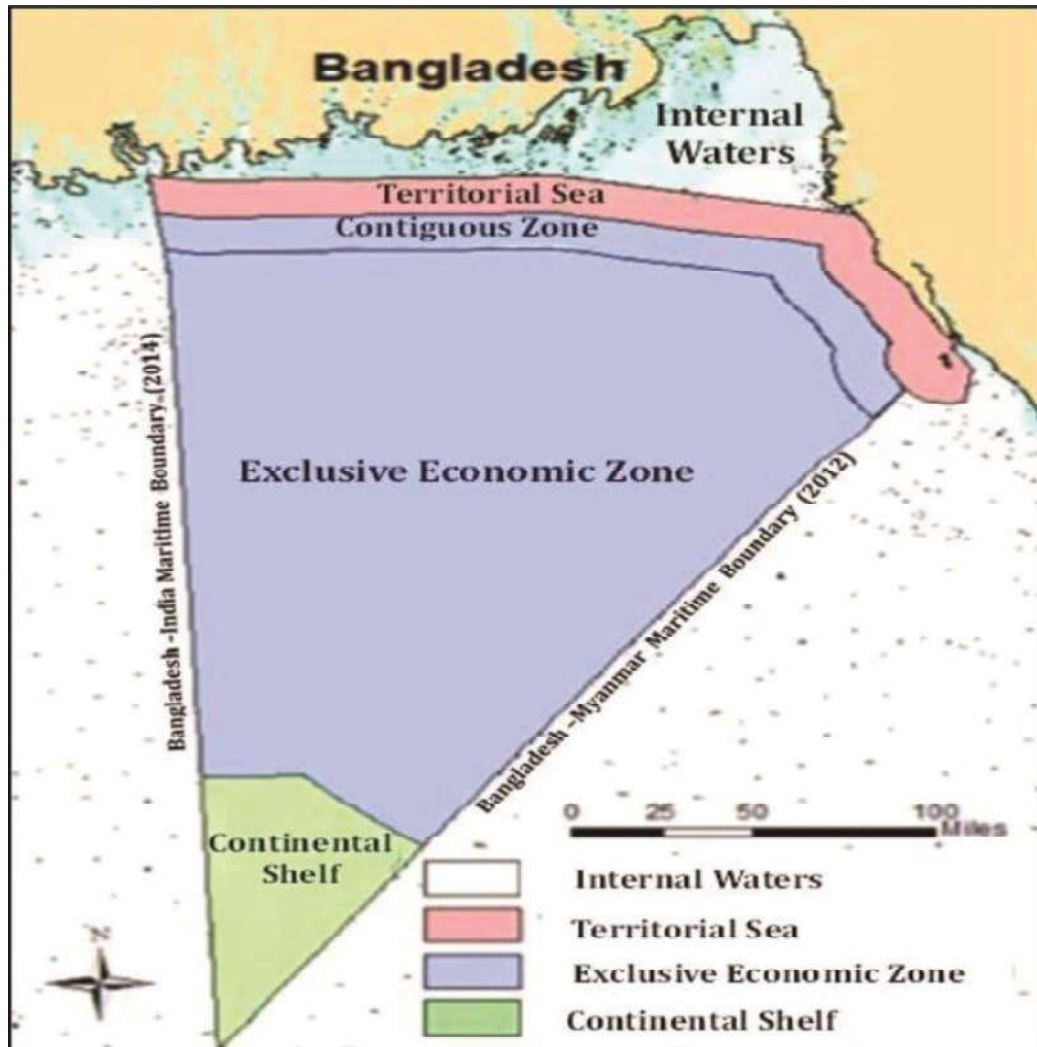


Figure 1a: Maritime area of Bangladesh (Source: MOFA, 2014 and Hussain et al., 2017).

the Exclusive Economic Zone (EEZ) of 200 nautical mile into the sea and Continental Shelf up to 354 nautical mile (Figure 1a) from the Chattogram coastline (MOFA, 2014), which occupied 4 maritime fishing zones in the Bay of Bengal namely Swatch of no Ground, Middle Ground, South Patches and South of South Patches (Figure 1b).

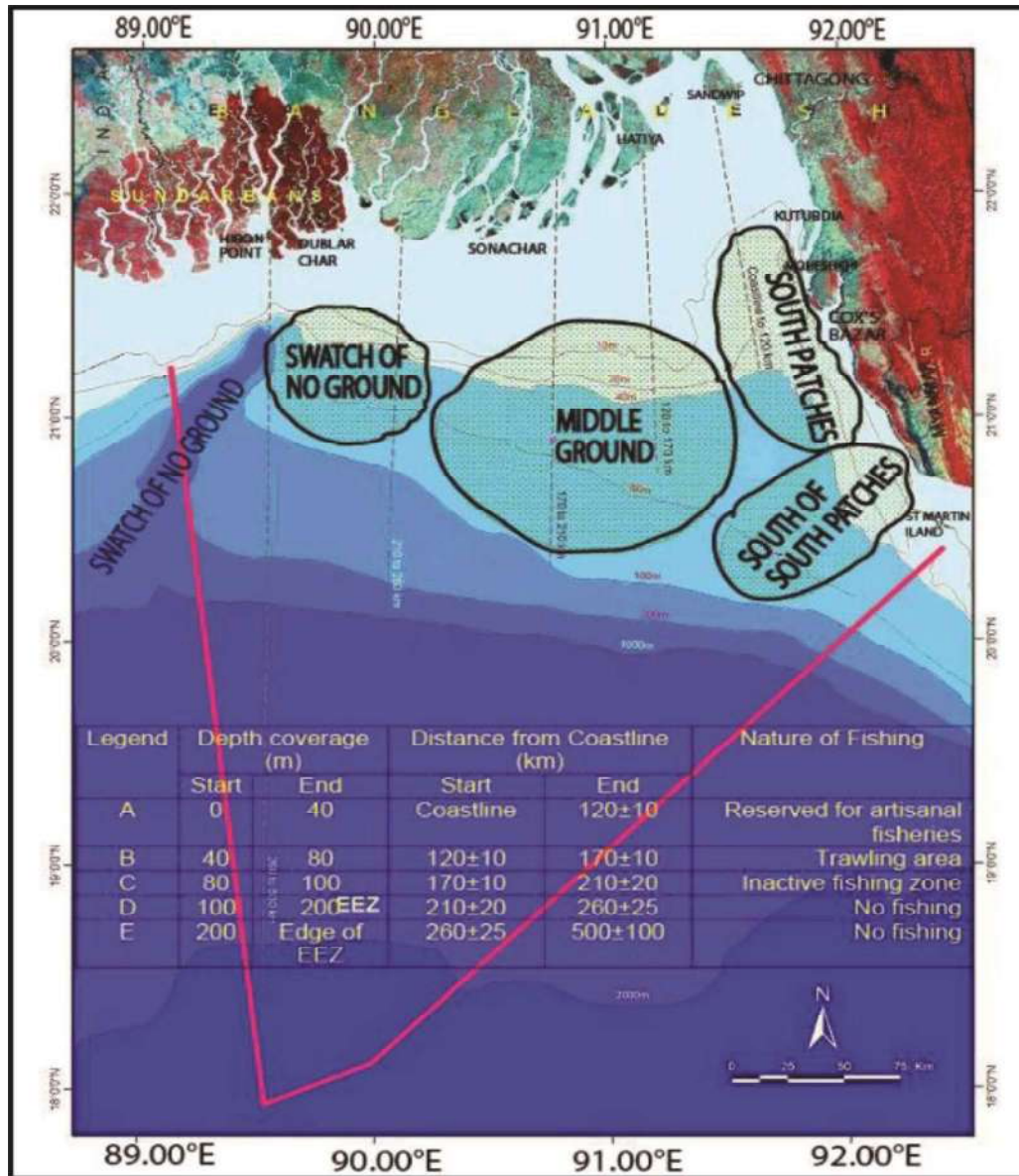


Figure 1b: Marine Fishing Zones of Bangladesh (Source: Uddin et al., 2012).

Table 1 shows the personnel in MoFL, MOFA, and Marine Fisheries Office, Marine Fisheries Survey Management Unit and Head Quarter of DoF, who are involved in the IUU related matters.

Table 1: Staff Pattern of IUU deter related Institution

S.N.	Organization	No. of Officials	Designation of Officials
1.	Blue Economy Wing, Ministry of Fisheries and Livestock (MoFL)	3	Joint Secretary-1 Deputy Secretary-2
2.	Maritime Affairs Unit, Ministry of Foreign Affairs (MOFA)	5	Secretary-1, Director-1 Senior Assistant Secretary -3
3.	Head Quarter, Department of Fisheries	3	Deputy Chief (Marine)-1 Assistant Chief-2
3.	Marine Fisheries Office, Chattogram under Department of Fisheries (DOF)	17	Director-1, Deputy Director-1 Assistant Director-2, Statistician-1, Marine Production Officer-1, Inspector-11
4.	Marine Fisheries Survey Management Unsit, Chattogram under Department of Fisheries (DOF)	9	Principal Scientific Officer-1 Scientific Officer-8

There are 262 industrial trawlers got license from Marine Fisheries Office, Chattogram to operate in the Bay of Bengal of which 238 trawlers are in operation and 24 are missing/scrapped/ sinking/useless trawlers, 67,669 are mechanized and non-mechanized boats of which 6,566 mechanized boats took license for fishing (DoF, 2020), 11 inspectors under Marine Fisheries Office, Chattogram are involved to inspect the trawlers and mechanized boats for renewal and new license approval. Again, 14 coastal districts and its 48 upazillas are exposed to the Bay and or lower estuaries, where DoF offices are engaged in the management of coastal and marine fisheries resources (Figure 2). However, the number of officials and their logistic supports (e.g., petrol boat, necessary fuel, surveillance check post, pontoon, jetty etc.) are very scanty to operate vigilance activities in the vast coastal and marine fishing zone.

Marine Fisheries Survey Management Unit, Chattogram, is in charge for assessing fisheries, shrimp and other fisheries resources in the exclusive economic zone of the Bay of Bengal as well as studying the expansion, abundance, breeding season and migration route of fisheries resources by using the Research Vessel, R.V. Meen Shandhani. The Unit is also involved in collecting and analyzing fishing data of

trawlers and boats. Research vessel R.V. Fridge Nansen was also conducted a survey in the Bay of Bengal in 2018. Mercantile Marine Department under the Ministry of Shipping is authorized for management of shipping activities like fishing vessel registration, inspection, safety, seaworthiness etc.

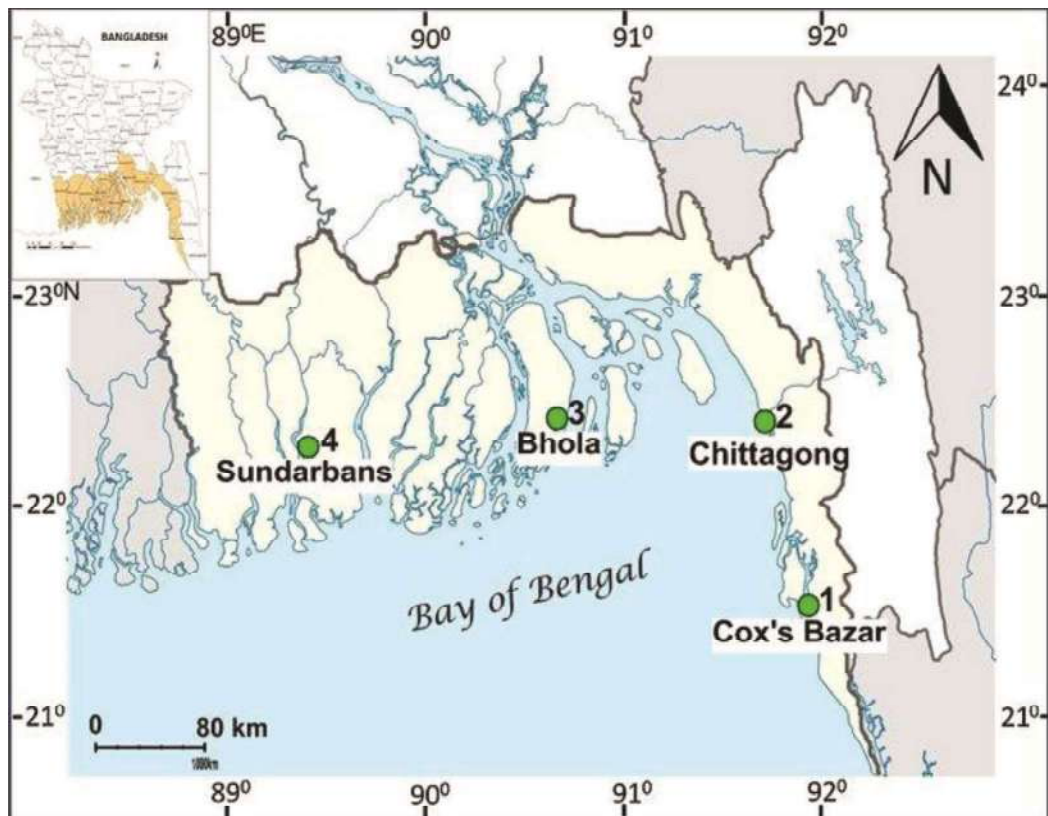


Figure 2: Map of Coastal area of Bangladesh (Source: Md Habibullah-Al-Mamun, 2019)

In the academic arena of Marine Fisheries, the country now has several universities such as Bangladesh Agricultural University, Dhaka University, Chattogram University, Bangabandhu Sheikh Mujibur Rahman Maritime University, Khulna University, Patuakhali Science and Technology University, Noakhali Science and Technology University, Chattogram Veterinary and Animal Sciences University etc. are conducting Honors and Master level studies in the area of Marine Fisheries Management. Marine Academy, Marine Fisheries Academy and some other private-owned Marine Academies are engaged in building of human resources for fishing and commercial vessel operations (Nautical, Engineering, post-harvest technology etc). For

conducting national research on coastal, sea and oceanic area, Government has formed Bangladesh Oceanographic Research Institute (BORI) under the Ministry of Science and Technology (MoST).

Regarding law enforcement in maritime territory, Bangladesh Navy (BN), Bangladesh Coast Guard (BCG), Port authority and Bangladesh Police are working to prevent illegal entry in Bangladesh water body, deter illegal fishing, exercise routine patrol for surveillance over the national jurisdiction and to ensure safety and security of our maritime territory. In Figure 3, the operational areas of Bangladesh Coast Guard have been described, where their Base Camp (Chattogram, Khulna, Coxsbazar, Patuakhali, Bhola, Chandpur), Station and Operation Camp are positioned.

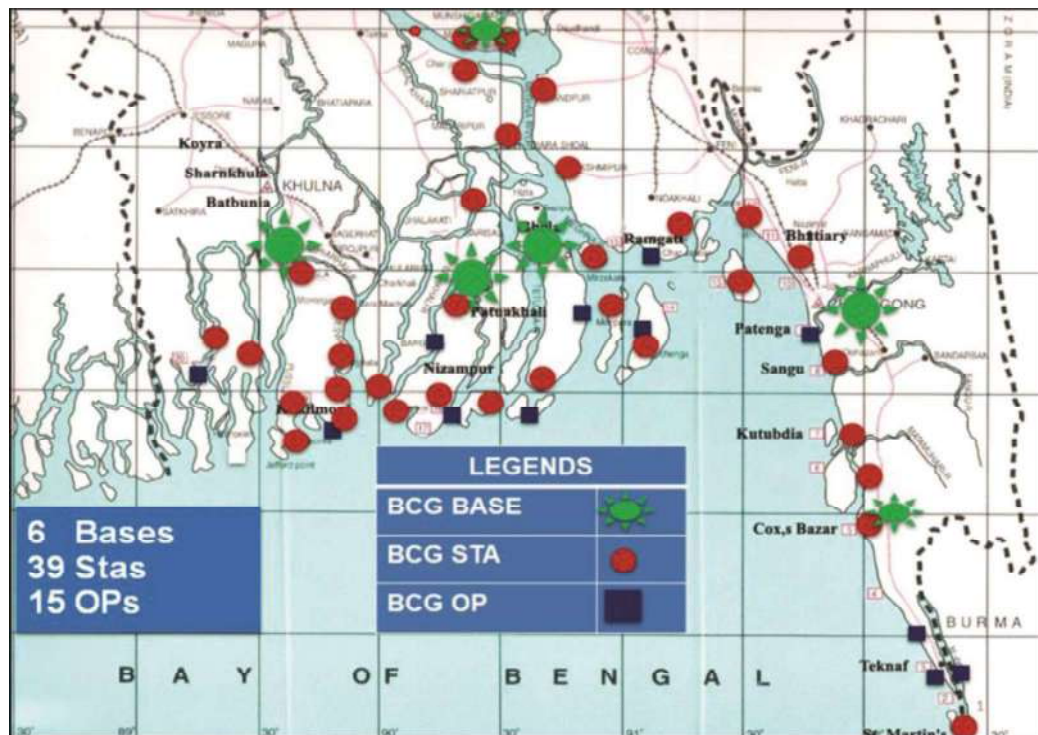


Figure 3: Bangladesh Coast Guard Operational Area (Source: BCG, 2021)

There are some government registered trade bodies like Bangladesh Marine Fisheries Association (BMFA) and Bangladesh Mariner's Society, who are working in marine shrimp and fish harvesting, exporting, improving competitiveness of marine fishing industry and coordinating to other marine fisheries enterprises.

Bangladesh has basic institutional setup to fight against IUU fishing in the vast marine territorial water that required extended manpower in the coastal districts, proper staffing, logistic tools, technique and demand driven technological upliftment of the organization.

9.2 Policy Regime

National Fisheries Policy, 1998

Public Policy is an overarching principle to guide decisions, specific strategies and activities for solving particular problem as well as attaining national goal of the country (IGI, Global 2021). For enhancing the fisheries production, ensuring protein requirement and improving health of the people, earning foreign currency through exporting fish and fisheries products, creating employment, generating income of the fishers, alleviating poverty, securing robust economic growth as well as conserving resources and biodiversity, keeping ecological balance, Bangladesh made National Fisheries Policy, 1998 (DoF, 1998) and stepped towards sustainable development in the fisheries sector.

National Fisheries Policy, 1998, the supreme guideline for the fisheries sector, provided special attention on Marine Fisheries Management through its several articles (MoFL, 1998). The policy focused on protection and management of marine fisheries resources by arresting over-exploitation of the Bay of Bengal and to secure quality of harvested fisheries, hygienic fish landing center will be established. It declared that fish and shrimp harvesting within 40 meter depth at shallow coastal territory by the industrial fishing trawlers would be banned. The policy also stated that the fleet size of fishing trawlers (industrial) will be fixed or determined by the competent authority, conservation of spawning ground will be ensured to maintain natural breeding of marine species, indiscriminate fishing will be prohibited to guard the present marine brood stocks, marine fisheries sanctuaries will be established at the selected marine zones for undisturbed spawning and rearing of fingerlings towards the smooth growing up of fish stocks. The policy provided special importance on conservation of marine aquatic flora and fauna through conducting required research activities. All these strategic measures and specific actions of the policy will secure Maximum Sustainable Yield (MSY) in the marine fisheries sector of the country.

Again, the policy also focused on the small-scale fishers who use mechanized and non-mechanized small boats and maintain their livelihood on coastal and marine fisheries resources. The policy emphasized that there will be restriction on the coastal area for fishing only for the small-scale fishers and there will be clear demarcation for large scale fishing and small scale fishing through conducting research and survey. The related laws and regulations will be enacted to implement the strategy, and this action is

the symbol of inclusiveness of all stakeholders and leaving no one behind them, which is a key instrument (basis) of the 2030 Agenda for Sustainable Development.

9.3 Fisheries Resource Development Perspective Plan 2009-2021

To boost marine fisheries production, Fisheries Resource Development Perspective Plan 2009-2021 (DOF, 2009) declared Short (2008-09 to 2009-10), Medium (2010-11 to 2012-13) and Long-term (2013-14 to 2020-21) Plan, where emphasis has been given on ICT based fishing vessel registration, licensing, renewal of licensing and using of satellite technology for approval of harvesting, post-harvest management, building communication network with mariners etc. Specially to ensure Maximum Sustainable Yield (MSY), optimum marine fish harvesting is crucial and the plan focused on Monitoring, Control and Surveillance (MCS), which may attain through Vessel Tracking Monitoring System (VTMS) in short term. It is stated that implementation of these technologies prevent IUU fishing in maritime territory of Bangladesh.

9.4 Bangladesh Delta Plan 2100

Bangladesh Delta Plan 2100 (BDP 2100) (GED, 2018) mentioned the Strategy for advancing the ‘Blue Economy’ (Chapter 6.11), where narrated the necessity of investments in forward and backward linkages of marine fisheries resources, human resource development for deep sea fishing (e.g. fishing in EEZ and international waters), Maritime Spatial Planning (MSP) and Digital Marine Fisheries Resource Mapping (DMFRM), Ocean and Coastal Framework Policy and above all establishing “home” for fruitful coordination etc. BDP 2100 is the 100 years water centric plan specially focused on private investment through bilateral, multilateral and regional mechanism. Therefore, to achieve resilient and prosperous delta, strategy of joint collaboration with neighboring countries, multinational organization and developed economies is highly sought for untapping opportunity of Blue Economy.

9.5 Making Vision 2041 a Reality “Perspective Plan Bangladesh 2021-2041 (PP2041)”

In Chapter 12.8, the Perspective Plan Bangladesh 2021-2041 (GED, 2020) stated the strategy for acquiring the potentials of the blue economy through developing a pragmatic marine policy framework focusing domestic private investment, Foreign Direct Investment (FDI), joint venture investment with India, China and the EU and welcomed new technology and knowledge through research and study. The Plan provided robust support to small-scale artisanal fishers in shallow water fishing and as well as in deep sea fishing through building cooperatives for getting accessibility of

harvesting marine resources including flora (e.g. seaweed) and fauna (e.g., Mollusk). Again, priority has been given to strengthen monitoring mechanisms by establishing surveillance regime for managing a large number of artisanal fishing vessels operating at maritime territory.

9.6 The 8th Five Year Plan (2021-2025)

The 8th Five Year Plan (2021-2025) has been prepared to align with BDP 2100 and PP2041. The latest 5-year plan emphasized on protecting fisheries resources through uphold restriction of illegal fishing, arresting poacher of resources and unlawful entry in our maritime territory that is very much linked with deterring IUU fishing. The plan urged shared effort with Bangladesh Coast Guard (BCG) and Bangladesh Navy (BN) for monitoring, surveillance, controlling encroachment and breaching of regulation applicable to local fishing vessels as well.

To follow the above-mentioned policy, the Government has taken several projects like Sustainable Coastal and Marine Fisheries Project, Enhanced Coastal Fisheries (ECOFISH), Automatic Identification System of vessels, strengthening marine fisheries research and infrastructure development for sustainable extraction management of coastal and marine fisheries and value chain development of harvested fisheries

9.7 National Plan of Action (NPOA-IUU) 2020

International Plan of Action (IPOA)-IUU (FAO, 2001) urged to States for developing and implementing National Plan of Actions (NPOA-IUU) to realize the objective of the IPOA-IUU through integrating IUU preventing programs in fisheries management and budgetary system for smooth fund allocation thereof. Through vigorous consultative process, Bangladesh has finalized NPOA-IUU following the guideline of FAO's IPOA-IUU to avert, deter and eradicate IUU fishing from its water territory.

9.8 The main instruments of Bangladesh NPOA-IUU are the followings:

- a) Bangladesh NPOA-IUU focuses on targeted general measures (international instruments) at all states like:
 - To follow international guiding principles, general norms, order and law thoroughly for preventing, deterring and eliminating IUU fishing;
 - On the priority basis ratification, acceptance of international agreements and conventions are encouraged to all States e.g., 1982 UN Convention, 1995 Fish Stocks Agreement, 1993 FAO Compliance Agreement and to implement the 1995 FAO Code of Conduct for Responsible Fisheries

- Incorporation (e.g. amendment) of IUU fishing in relevant National legislation effectively;
 - Awareness building initiative on IUU fishing and discourage the national people in the IUU fishing;
 - Considering sanctions on vessels and nationals engaged in IUU fishing;
 - Raising IUU fishing issues in the regional body for complying all the members;
 - No financial support in the form of incentives, subsidies be given to IUU fishers
 - Conduction of monitoring, control and surveillance effectively from the initial point like harvesting and then landing and final destination;
 - Cooperation, collaboration and coordination with neighboring countries and relevant Regional Fisheries Management Organizations (RFMO);
 - Publication and sharing information on IUU fishing and its preventive activities taken by a state in the RFMO.
- b) Bangladesh NPOA-IUU focuses on targeted special measures:
- Obligation of complying by Bangladeshi flag bearing vessel to national laws (e.g., registration, record keeping, authorization, transportation and re-supplying), regional and international binding principles, rules and regulations (Flag State Responsibilities);
 - As a Coastal State, exercising exploitation, conservation and management of living marine resources in its authorized coastal area as well as preventing and eradicating IUU fishing in its jurisdiction (Coastal State Responsibilities);
 - Controlling of accessing (e.g. permission to designated port) to the port by fishing vessel through maintaining international laws, rules (Port State Measures);
 - Trade related measures for international market access (e.g. catching documentation, supply chain declaration-traceability) properly maintain international laws, rules (Internationally Agreed Market Related Measures); and
 - Capacity building of the relevant personnel through training, knowledge sharing, technology transfer in developing countries and innovative measures, actions to prevent IUU fishing through RFMO.

10. Legal Regime

In the legal regime of fisheries management in Bangladesh, at first, 'Protection and Conservation of Fish Act, 1950' was enacted for the protection and conservation of fish in the country and under the Act government made 'Protection and Conservation of Fish Rules, 1985' to implement the act for successful fisheries management. Again, required amendment and insertion of the rules were made in the years of 1993, 2000, 2004, 2005, 2006, 2007, 2010, 2014, 2015, 2020 and 2021 as per necessity of pragmatic fisheries management.

The Territorial Waters and Maritime Zones Act, 1974 was formulated by Bangladesh government to declare the maritime territory and its protection, conservation of living resources therein from indiscriminating exploitation, destruction activities and maintaining the productivity.

Bangladesh Government issued 'Marine Fisheries Ordinance, 1983' to address marine fisheries conservation and management. In 2014, Swatch of No Ground has been declared as first Marine Protected Area under the 'Wildlife (Conservation and Security) Act, 2012' to preserve whales, dolphins and other sea living mega fauna at our maritime territory.

In the area of Law Enforcement, 'Bangladesh Coast Guard (BCG) Act, 2016' (BCG, 2021) mentioned in its article 10 (Role and Responsibility of the Force) regarding protection of fisheries resources through prohibiting illegal fishing, prevent illegal encroachment at Bangladesh maritime territory, monitoring and surveillance thereof though not specifically stated to deter IUU fishing.

'Marine Fisheries Act, 2020' has well-articulated Act on IUU fishing which has 12 chapters and 12 Articles. Article-3 of 'Marine Fisheries Act, 2020' empowered the government to issue necessary orders or directives to prevent illegal, unreported and unregulated fishing. In this act, Director General of the Department of Fisheries, Bangladesh, is entrusted to determine allowable catch and to ensure Maximum Sustainable Yield (MSY) through monitoring, control and surveillance, and survey. Again, violation of an order or instruction issued by the Government of Bangladesh under this act is treated as punishable offence. Penalties are also described for foreign fishing vessels, who will commit offence (e.g., without having a license).

It is stated that as a member of United Nations (UN), Bangladesh follows the international binding principles adopted by UN organs like Food and Agricultural Organization (FAO), International Labor Organization (ILO), International Migration Organization (IMO) etc. It is stated that 'UN Convention on the Law of the Sea (UNCLOS), 1982' has been ratified by Bangladesh for marine fisheries resource conservation and management. Again, as a member of the regional and international cooperation organization like Bay of Bengal Programme Inter-Governmental Organization (BOBP-IGC), Indian Ocean Rim Association (IORA), Asia-Pacific Fishery Commission (APFIC), Indian Ocean Tuna Commission (IOTC) etc., the country is committed to advance its fisheries management capacity for achieving targets with its neighboring cooperation.

11. Conclusions

For attaining the SDG 14, conservation and management of marine living resources through combating against IUU fishing with holistic approach is the key instrument and NPOA-IUU may act as comprehensive "toolbox" in this regard. To fight against IUU

fishers, the unjust and unfair advantage taker, and the free riders, the law enforcement agencies require showing some strictness in action to protect the legitimate and fair fishers, who follow national and international rules and regulations. Through innovative ideas, measures and strategies with widespread collaboration, cooperation and coordination among academia, policy maker, law enforcer and fishers community (end user) implementation portfolio for combatting IUU fishing is expected to be strengthened. Again, sharing of international best practices through RFMOs and capacity building of relevant professionals will assist to ensure sustainable blue economy.

References

- BBS (2021). Bangladesh Bureau of Statistics- SDG Tracker (<https://www.sdg.gov.bd/page/indicator-wise/1/177/2/0#1>) (Last visited 15/08/ 2021).
- BCG (2021). Bangladesh Coast Guard. (<http://www.coastguard.gov.bd/>).
- BBC (2021). <https://www.bbc.com/news/world-asia-52227735>.
- Becker G. (1968). Crime and punishment: an economic approach. *J Polit Econ* 76:169–217.
- Bernd Cordes and California Environmental Associates (2015). *Illegal, Unreported and Unregulated (IUU) Fishing: A Whitepaper*, Presented for the Packard Foundation.
- Committee on Fisheries-COFI (2021). *COFI Declaration For Sustainable Fisheries And Aquaculture*,.1–5 February, 2021.
- DOF (1998). Department of Fisheries. *National Fisheries Policy, 1998*. (http://fisheries.gov.bd/sites/default/files/files/fisheries.portal.gov.bd/miscellaneous_inf_o/b2a0f0cd_ed97_457d_907b_1ffdfae4edbe/a13921f73bb8de2f632979bd62901360.pdf) (Last visited 15/08/ 2021).
- DOF (2020). Department of Fisheries. *National Plan of Action (NPOA-IUU)*. (https://mofl.gov.bd/sites/default/files/files/mofl.portal.gov.bd/divisional_noc/54548444_2d46_4e31_9d43_e2fec7c7e0ab/FAO-compressed.pdf.) (Last visited 15/08/ 2021).
- DOF (2020). Department of Fisheries. *Yearbook of Fisheries Statistics in Bangladesh 2018-19*. (http://fisheries.portal.gov.bd/sites/default/files/files/fisheries.portal.gov.bd/page/4cfbb3cc_c0c4_4f25_be21_b91f84bdc45c/2020-10-20-11-57-8df0b0e26d7d0134ea2c92ac6129702b.pdf).
- DOF, (2009) Department of Fisheries. *Fisheries Resource Development Perspective Plan*.

(https://bangladesh.gov.bd/sites/default/files/files/bangladesh.gov.bd/page/6dca6a2a_9857_4656_bce6_139584b7f160/Perspective-Plan-of-Bangladesh.pdf).

FAO, (2001). Food and Agricultural Organizations. International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (<http://www.fao.org/publications/card/en/c/71be21c9-8406-5f66-ac68-1e74604464e7>).

FAO, (2021). Food and Agricultural Organizations, IUU Fishing (<http://www.fao.org/iuu-fishing/en/>).

GED, (2018). General Economics Division, Bangladesh Delta Plan 2100.

GED, (2020). General Economics Division- 8th Five Year Plan (2021-2025).

GED, (2020). General Economics Division-. Making Vision 2041 a Reality “Perspective Plan Bangladesh 2021-2041 (PP2041).

Habibullah-Al-Mamun, M., Ahmed, M. K., Islam, M. S., Tokumura, M., & Masunaga, S., (2019). Distribution of polycyclic aromatic hydrocarbons (PAHs) in commonly consumed seafood from coastal areas of Bangladesh and associated human health implications. *Environmental geochemistry and health*, 41(3), 1105-1121.

Hussain, M. G., Failler, P., Al Karim, A., & Alam, M. K., (2017). Review on opportunities, constraints and challenges of blue economy development in Bangladesh. *Journal of Fisheries and Life Sciences*, 2(1), 45-57.

IGI, Global, (2021) <https://www.igi-global.com/dictionary/collaborative-governance/22930>.

Islam, M.S., (2003). Perspectives of the coastal and marine fisheries of the Bay of Bengal, Bangladesh, *Ocean & Coastal Management*, 46(8)(2003), pp.763-796.

IUU Fishing Index, (2021) <https://iuufishingindex.net/about>.

IUU watch, (2021) <http://www.iuuwatch.eu/what-is-iuu-fishing>.

Khan, M.A.A., Sada, N.U., and Chowdhury, Z.A., (2003). Status of the demersal fishery resources of Bangladesh, p. 63 – 82 In G. Silvestre, L. Garces, I. Stobutzki, M. Ahmed, R.A. Valmonte- Santos, C. Luna, L. Lachica-Aliño, P. Munro, V. Christensen and D. Pauly (eds.) *Assessment, Management and Future Directions of Coastal Fisheries in Asian Countries*. WorldFish Center Conference Proceedings 67, 1 120 p.

MOFA, (2014). Ministry of Foreign Affairs. *Proceedings of International Workshop on Blue Economy*, Dhaka, Bangladesh 1-2 September, 2014. 88pp.

MoFL (1998). Ministry of Fisheries and Livestock, *National Fisheries Policy*, 1998.

Rahman, M. (2018). <https://www.slideshare.net/CREATIVEAvro/fishing-ground-of-bob>.

Salam, M.A., Hossain, M.S., Tareque, A.M.H., (2011). Studies on the present status and future potential of molluscs, dry fish and crab in Bangladesh coast: A GIS methodological perspective. Value Chain and Market Assessment of Coastal and Marine Aquatic Products of Bangladesh, Bangladesh Fisheries Research Forum (BFRF).

Uddin, A, M. K., and Kaudstaal R., (2003) Delineation of The Coastal Zone Working Paper WP005.

Uddin, M. S., Karim, E., Hasan, S. J., Barua, S., & Humayun, N. M. (2012). Catch composition for main marine shrimp species in Bangladesh. *Bd Res Pub J*,7(2), 91-98.

UN, (2021). United Nations. Department of Economic and Social Affairs Sustainable Development (<https://sdgs.un.org/goals/goal14>).