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Mechanized Pelagic Fishing in Bangladesh: Challenges and Opportunities

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ABSTRACT

Bangladesh possesses a huge sea territory. Settlement of the boundary delimitation with neighbouring countries has established her right over enormous sea resources within this territory. Of all known sea resources fisheries contributions are significant. Scientific exploration and exploitation of it can add a huge momentum to our economy and thus obviously contribute of our blue economy drive. Introduction of mechanised pelagic fishing trawlers revolutionised the fishing sector through scientific exploration. As a result exploitation has been more massive and transformed traditional fishing into industrial fishing. But in the same time there are some impacts of mechanised pelagic fishing both on environment and socio-economic conditions. If these impacts cannot be mitigated or reduced it appears that there will be havoc in our marine fisheries recourses.

1. Introduction

In Bangladesh, fish is an irreplaceable animal source food in the diet of millions, both in terms of quantity and frequency of consumption far exceeding that of any other animal source food. Fish accounts for approximately 60% of animal protein intake at 18.1kg consumption per person per year. The need growing population cannot be met only by fresh water fish. As such Bangladeshi people are being gradually habituated with marine fishes. There are four major fishing grounds in Bay of Bengal (BoB). They are South Patches, South of South Patches, Middle Ground and Swatch of no Ground. In these grounds more than 120 edible pelagic species are found. Species includes: Mackerel, Sardine, Surma, Ilesha, Pomphret, etc. among others. Due to lack of reach and technology local country boats cannot catch the pelagic fish. Its place has been taken by Mechanised Pelagic Fishing Trawler. This has enhanced the catch and contributed significantly to our economy at the cost of environmental degradation. With this back drop the objective of this study is to examine the challenges and prospects of Mechanised Pelagic Fishing Trawler in Bangladesh with a view to recommend measures to overcome the challenges. The paper first highlights the brief description of Pelagic Fishing Trawler and then discusses the prospects, challenges and some ways out of the challenges regarding it subsequently.

2. Pelagic Fishing Trawler

A Pelagic Fishing Trawler also known as a dragger is a commercial fishing vessel designed to operate fishing trawls. Trawling is a method of fishing that involves actively dragging or pulling a trawl throw the water behind. The bridge room also known as wheel house is well equipped with GPS, RADAR, echo-sounder, hydraulic gear, auto pilot, VHF transceiver etc. Bridge is the command centre of the trawler. Monkey island, the roof top of the vessel houses navigational and fishing lights, search light, radar and wireless aerial etc. As per accommodation is concerned; generally Skipper and Chief Engineer has single cabin. Other Officers share the cabin. Crews accommodations are common and has separate washroom. Besides accommodations there is a kitchen called galley for preparations of food. Main Deck is known as processing zone where caught fishes are washed, sorted by species, and packed. There

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are normally 3 to 6 fish holds in a fishing vessel depending on their gross tonnage. In fish holds processed fishes are stored for freezing. A pelagic fishing trawler has two gallows for supporting two big blocks by which main wire of a fishing net are supported for shooting net. It also supports the heavy trawl doors to hang alongside to it during hauling time of the net. There are also two derricks to support the heavy weight of net along with caught fishes or transferring the trawl doors to the desired place. A pelagic fishing trawler has well equipped engine room with integrated control room to control the activities related to fishing such as temperature control of fish holds, power supply to every required portion of the ship etc. Trawl nets are the main gear of a pelagic fishing trawler. There are several types of pelagic trawl net such as Danish, Thai, and Champion etc. depending on the breaking horse power of a trawler. There is specific mesh size of the net. For Bangladesh territory no fishing vessel will be allowed to use less than 60 mm mesh size at their net. Every trawler has a pair of trawl doors made of wood or steel. Trawl doors are used for perfect opening of the net. Wooden trawl doors are used in low depth water where steel trawl doors are used in high depth water. Main wire is used in front of the trawl doors to decrease or increase the length of wire by pulling to or leaving wire from wire drum respectively. Trawl net is stored in net drum being twisted. It is a power driven machine which is used for hauling and shooting net. Modern fishing vessels are equipped with net sonar and fish sonar. Net sonar is used to watch the opening of the net during hauling period. Fish sonar detects the fish school far from the trawling vessel.

2.1. Present State of Pelagic Fishing Trawlers in Bangladesh

More than 100 pelagic fishing trawlers operate in Bangladesh. Table 1 shows the statistics of national main stream pelagic fishing trawling companies are presently engaged in pelagic fishing in BOB. Other companies are operating with one or two vessels.

Table 1: Fishing Fleet according to the Company

Sl. no.	Owners/Operators	No.of Trawler in Operation
1.	Sea Resource Limited	14
2.	Simiju Fishing	06
3.	Continental Marine Fisheries Ltd	08
4.	Eden Fisheries	10
5.	J K Groups	04
6.	Peninsula Fishing	04
7.	Speed Fisheries	06
8.	Agro Food Ltd	04
9.	Fish Mark Ltd	06

Source: Field Data

More than edible 120 species of pelagic fish are available in the Bay of Bengal (BoB). Table 2 shows the list of popular pelagic fish available in the BoB.

Table 2: Popular pelagic fish from BOB

Ser	Species	Examples
1.	Sardine	Chapilla
2.	Mackerel	Aila Aila Big Eye
3.	Ilesha	Hilsa Big-Eye
4.	Tuna	Bullet Shurma Small Tuna
5.	Jew	Red Jew Small Jew Black Jew Spotted Jew
6.	Scads	Kawa Black Pomfret
7.	Pomfret	Silver Pomfret Chinese Pomfret
8.	Others	Bombay Duck Red Snapper Red Fish Lakkha Lizard Fish Butter Fish Tailla Sea Koi Mola

Source: Field Data

3. Present Scope of Fishing.

A warm tropical climate and high rainfall are the blessings of seaside and marine environment of Bangladesh is enriched with nutrients from the land. It has created one of the world?s richest ecosystems including high productivity (Hossain , 2001). Huge quantity of living and nonliving resources from Bay of Bengal has the potential to substantially contribute to the national economy. Proper exploration, exploitation and management are necessary for that. Especially following those later choice of the international tribunal for law of the ocean (ITLOS) in regards to the Bangladesh-Myanmar sea boundary, 2012 and the choice of the arbitral tribunal of the UNCLOS once India-Bangladesh oceanic boundary, 2014 built sovereign privileges with respect to more than 118,813 km^2 range about regional ocean and 200 nautical miles Exclusive Economic Zone (EEZ) including all kinds of living and non-living resources under the continental shelf up to 354 nautical miles from the Chittagong coast (MoFA , 2014). Currently, 32,440 km^2 , beginning from the coastline on 40 m depth, in the Bay interested in around 67,669 unlicensed angling boats, for which regarding 51% are non-motorized boats (Shamsuzzaman et al. , 2017). Considering the Bay of Bengal, fish resources are segmented in three tiers: up to 40 m in depth from the coastline where normal fishing boats operate, from 40 m to 200 m in depth where mid-water trawlers are engaged in trawling and from 200 m in depth to the end of the EEZ where longliner trawlers catches

fish (Islam et al. , 2017). There are only 242 trawlers that are allowed for fishing in those regions by the government including mid water and bottom trawler. Rich coastal and marine ecosystems has made the Bay of Bengal a source of wide range of biodiversity, such as fishes, shrimps, mollusks, crabs, mammals, seaweeds, etc. Around 511 marine species, together with shrimps, exist within Bangladeshi waters (Murshed-E-Jahan et al. , 2014). Marine fisheries pro duction is only 16.28% of the national fish production (Report, 2016). The potential of the coastal fisheries sector has not been exploited correctly. Rather the resources have been over-harvested. The fish stocks have been declined as a result. A number of surveys were conducted between the 1970s and 1980s but no recent or comprehensive survey has been administered on the fisheries stocks, systematic, biological and ecological aspects of the coastal and marine fisheries of Bangladesh. The main commercial fishing zones in the Bay of Bengal are Swatch of no Ground, Middle Ground, South Patches and South of South Patches (Rahman et al. , 1994). Artisanal fishing is also done in the coastal area closed to shore line of Bangladesh.

4. New Platform for enlightened opportunities

4.1. New Door for Exploration and Exploitation of Marine Fisheries.

As mentioned before Bangladesh has four big fishing grounds enriched with massive fisheries resources. More over 120 species of pelagic fish are roaming there. Catching of these mid water level fishes is not possible for those bottom water fishing technique. So no alternative way of mid water trawler i.e. pelagic fishing trawler to improve the catch. On the big fishing territory exploration is not so easy i.e. finding out where the expected fish school is, only possible by using the high tech equipment onboard the trawler. These equipments are Fish Finder, Echo Sounder, Fish Sonar etc. Catch data of these commercial vessels are helping Mercantile Marine Fisheries department to search for new fishing zone in Bay of Bengal. Since the introducing of Mechanised Fishing Trawler catch has been improved up to average 130000 tons (recent years) where as catch was average 7000 tons (approx.) only five years back. So result can easily be realised.

4.2. Newly Owned Sea Region and Necessity of Trawler.

The judgment delivered by the United Nations Permanent Court Of Arbitration (PCA) on the maritime demarcation between Bangladesh and India has happily been hailed by both countries. Although, the verdict has largely gone in favour of Bangladesh with the PCA upholding its claim of equitable instead of equidistance solution, this has been dubbed a victory of friendship, a win-win situation for the people of Bangladesh and India. The verdict awards Bangladesh an area of 19,467 sq km out of the total disputed 25,602 sq km. Thus more than one-third of the countries earlier total territorial area adds up to it allowing Bangladesh to exclusively exercise its sovereign rights on 118813 sq km of waters extending up to 12 nautical miles of territorial sea and a further exclusive economic zone of 200 nautical miles into the high sea. We have also won sea region from Myanmar on a long time disputed issue. Newly gained region may possess a lot of unknown fisheries wealth which cannot be detected until modern fishing operation is held over there.

4.3. Reduction of Pressure on Fresh-water Fish.

We the Bangladeshi people are highly dependent on fresh water fish for fish protein. Fresh water fish production is not sufficient enough to cover all needs of our massive population. For this reason every year a huge quantity of fresh water fish has to be imported. But many of our people don?t know about the pelagic sea fish which have even greater taste. These species may fullfill the demand of our people after habituated upon them.

4.4. Opening Opportunities for Newer Business and Job Opening.

If the fishing vessel is in the centre a lot of business has been emerged by surrounding the centre in Chittagong. Not only in Chittagong, business has been spread over country by the means of improved transportation. All of these businesses are the combined part of whole fishing sector. There are about 200,000 people and their families are directly or indirectly related with this sector regarding vessels and company management, fish processing plants, ice plants, unloading labor etc. Moreover, newer businesses are emerging day by day like some logistics business and exporting business.

4.5. Export of Fisheries Resources.

A new horizon has been opened in exporting some specific pelagic fish species such as Redsnapper, RedPangsha, Hellibat, RibbonFish, BlackPompfret ,Chapila, Surma and so on. These species are highly demandable in Europe and Middle East countries. Exporting can be handled directly by vessel?s company or by the fish processing plant.

4.6. Contribution on Dry Fisheries.

Bangladesh is a bid fair country in producing dry fish. There is a huge prospectus in this issue for our country. There is a big demand on this item of our country men. Overall demand was being met only by the traditional fishing that is fishing with the country boat. Bangladesh was not used to export this item until the mechanised trawlers were introduced. Because exporting of any item needs to meet the quality that the buyers are used to. Quality of fish can be retained after catch only on board the vessel. Japan, Korea, China and Singapore are the dry fish importing countries of Bangladesh.

5. Threats Found.

5.1. Declining catch.

History of commercial fishing with the Mid water Fishing Trawler is not very old. This type of fishing was drastically started after the year 2000. But adverse impacts are now very

noticeable within these few years. Catches are declining for few 2-3 years within our fishing ground as per Mercantile Marine Fisheries Department (MMFD). Over fishing, unplanned fishing, greedy fishing is very responsible for this occurrence. Companies always create pressure on Skipper to catch more and more. To save their job they used to keep going on illegal fishing. Maximum time the don?t follow the legal fishing depth (40m-upper depth) rather they steam their vessels to below 40m and catch huge amount of juvenile fish along with the spawning fish. Even they intentionally keep fishing on the breeding ground. So juvenile fish are not getting the chance of adulteration and the spawning fish are not getting the scope to spawn. For that catches are declining day by day.

5.2. Particular Species on the Way of Extinction.

Some very popular fish species are on the way of extinction. They are not found on the trawl net for few years. Lakkha, Gold Ilesha, massive school of Pomfret are found very rarely. Random fishing in the same ground cause the disturbance of particular fish species. So they leave the ground for the search of new optimum living place. Bay of Bengal is one of the world?s best breeding ground of some particular fish species. Our vessels are not caring about the rules regarding breeding ground implemented by the government.

5.3. Threats on Marine Bio Diversity.

Wherever there is fishing, there is by catch- the incidental capture of non target species such as dolphins, marine turtles and seabirds (R. A. khurshed, [date unknown]). Thousands of miles of land-nets are set in the bay each day. Modern fishing gear, often undetectable by sight and extremely strong, is very efficient at catching the desired fish as well as anything else in its path. A staggering amount of marine life including turtles, dolphins and juvenile fish is hauled up with the catch, and then discarded overboard dead or dying. Ghost fishing occurs when fishing gear is lost or abandoned at sea. The gear continue to catch fish, dolphins ,whales turtles, and other creatures as it drifts through the water and after it becomes snagged on the sea bed.

5.4. Threats on Livelihood of Local Fisherman.

Near about 20000 local country boats have been fishing in Bay of Bengal (Report, 2006). Their fishing is totally depends on fortune without high tech equipment in their boats. Gillnets are only the fishing gear they possess. So competition is very much inequitable comparing with the modern fishing vessel. Moreover they don?t get space of satisfactory fishing for continuous movement of fishing vessels. Not only that sometimes they loss their only fishing gear by vessels propeller. It is the scenario at sea. In harbor, they have already lost their market which has been replaced by the fishing vessels. Thus they are in threats regarding livelihood along with their families.

6. Ways out of threats: actions need to be taken.

- Each Skipper should obey the government implemented rules regarding voyage duration, fishing depth, fishing season. It will ensure the avoiding of over catch.
- They should avoid spawning ground and juvenile ground if they find any symptom of them in their fishing ground.
- Bangladesh Navy should provide more surveillance on fishing ground and arrest those vessels while engaging in illegal fishing.
- Mercantile Marine Department should implement the new technology to impel the fishing vessels to avoid unexpected fishing ground.
- People those who are engaged in fishing with country boat the should have been rehabilitated further.
- Proper service rules should be implemented for onboard the vessels? employees because motivation is a must to continue in an onboard job of a fishing vessel.
- Already fish school is declining. So no more license should be provided for new fishing vessel.
- Regular inspection should be done by MMFD to ensure the vessels hygiene and it is not using illegal smaller net mesh size.

Conclusions

Planned Mid Water Pelagic Fishing can keep a big contribution in the blue economy of Bangladesh. Government of the Peoples Republic of Bangladesh (GoB) should give a birds eye view on this sector. The privet companies are generating huge amount of profits every year. At present, there is not a single state owned commercial fishing vessel on operation in the Bay of Bengal. Also GoB should owned few research vessels for exploring new fisheries resources in newly gained sea region. It is a matter of great hope that the first ever maritime university in Bangladesh named Bangabandhu Sheikh Mujibur Rahaman Maritime University has been established and one of the set missions of this university is to explore in the Bay of Bengal to keep contribution in the Blue Economy.

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