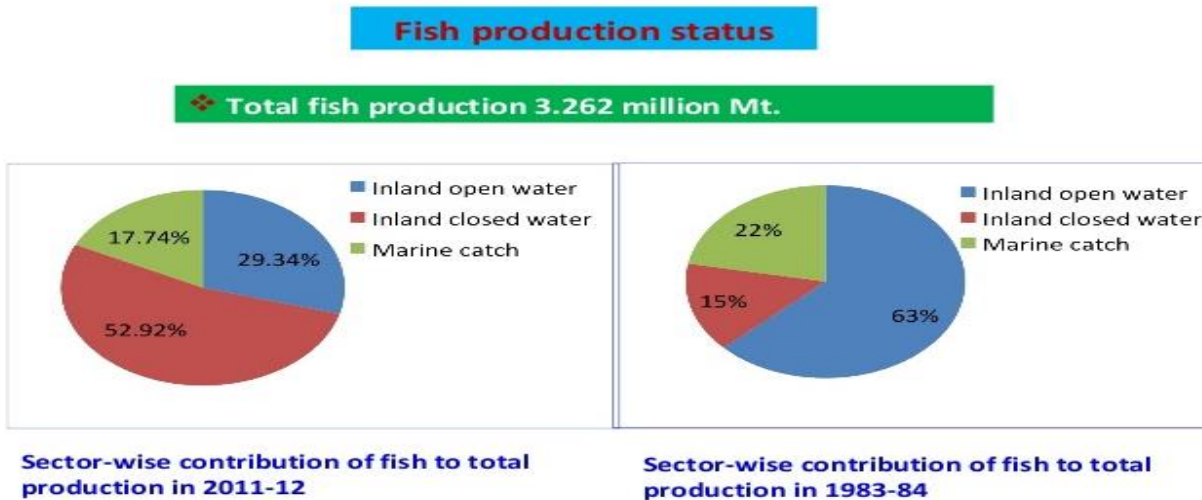


Opportunities to Improve Fisheries Management through Innovative Technologies and Advanced Data Systems in the Bay of Bengal

Afifat Khanam Ritika



Bangladesh is blessed with an approximate 710 km long coast with nearly 118,813 sq. km. of maritime area. Bangladesh's coastal zone has 35.1 million people that is 29% of the total population. The majority of the people who live along the coast in this area rely on fishing as their primary source of food and sustenance. The marine zone's natural system generates a multitude of natural living (Fish, seaweed, crustacean and other commercially important living species) and non-living resources (Oil, gas, minerals, etc.).

But among all marine resources, marine fisheries are the most prominent sector to exploit and enrich the country's economy with less effort. Marine fisheries contribute at least 20% of total fish production in Bangladesh and 90% of which comes from artisanal fishing. Bangladesh has ranked 11th in marine fish production in 2018. Though there is no concrete explanation on this ranking. It can be assumed that this may occur due to the large variety of fish species and rich stock in the Bay of Bengal as Bangladesh is still backward compared to technological competence with the developed country.

If we see the marine contribution in the country's total fish production, it reduced from 22% in 1983-84 to 17.74% in 2011-12. That does not mean that marine production is declining. In 2019-2020 the marine production increased 0.8%. The marine production was 3.62 lac MT in 2011-2012 and increased to 6.37 lac MT in 2019-2020. Since it is less than the other sectors, so, the other sectors are taking place at a higher rate in country's total fisheries production over time.

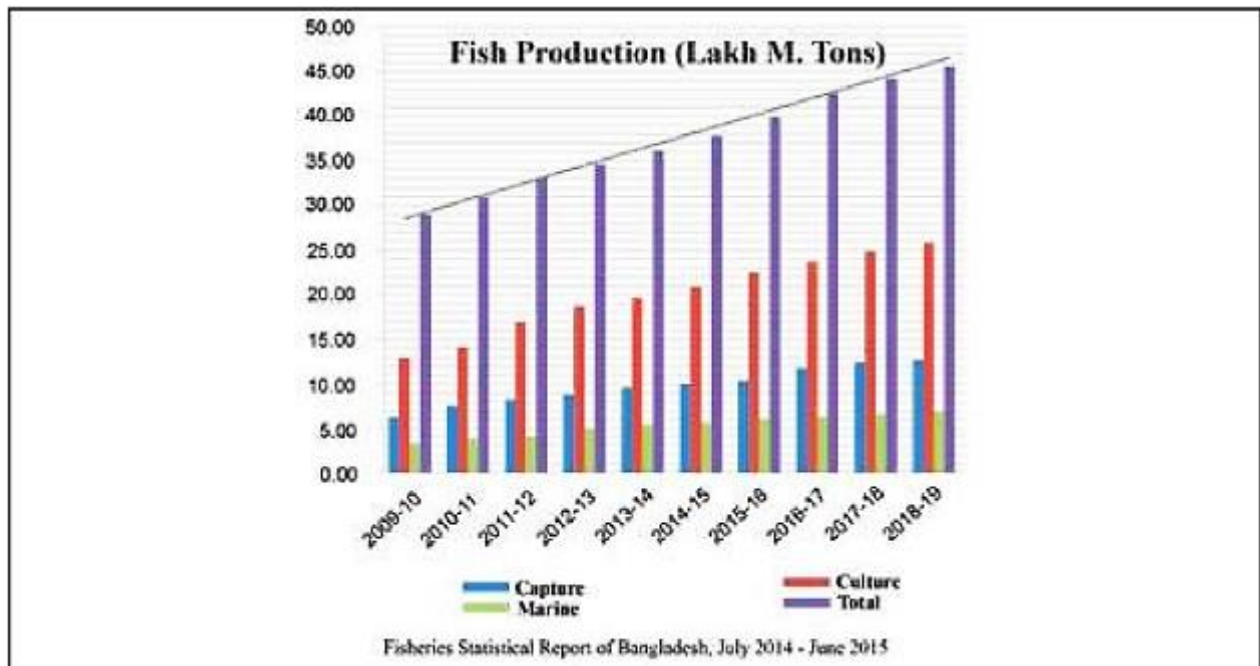
The aquaculture production is gradually increasing due to dissemination of improved technological packages and supportive need-based extension services at farmer's level. A slight growth in the production from both inland capture and marine fisheries was also

noticed during the recent past years with some exceptions. Although marine production is increasing over time, it is much lower than the expectations.

Bangladesh is estimated to catch only 0.70 million tons of fish every year out of the total 8 million tons of fish available in the Bay of Bengal which is inadequate considering the huge potential.

So, where is the gap?

Technology and Science!!



Bangladesh marine fishing is effectively limited to continental shelf region up to 200 m, but most fishing boats and vessels operate in the coastal areas within 40 m depth because of insufficient facilities and advance fishing technology.

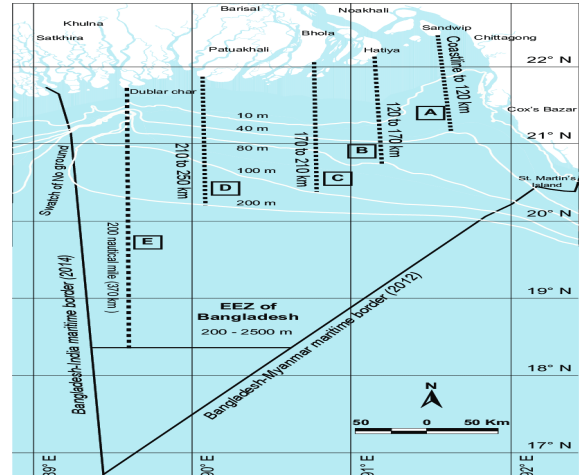
The fishing grounds could be divided into five distinct zones(A-E), of which the nearest two zones (A and B) are subject to active fishing and the remaining zones (C, D and E) have the potential to provide new business opportunities (Blue economic development in Bangladesh: A policy guide for marine fisheries and aquaculture, p. 11 by M. Shahadat Hossain, 2017). According to the Bangladesh catch history, starting from the coastline, up to a depth of 40 m and a distance of 120 km is used by the artisanal fishers. The fishing zones extending up to 80 m depth and 170 km distance are for trawling. All other zones are either lightly fished or unexploited at present.

Intensive harvesting from the same region with different types of destructive and unplanned gear is responsible for extinction of many commercially important species. Overfishing and no capability for extending fishing zones are warned of capture reduction.

For any planned or sustainable catch, the first and foremost requirement is enough data with advance fishing technology. The country is fishing blindly; there is no enough data

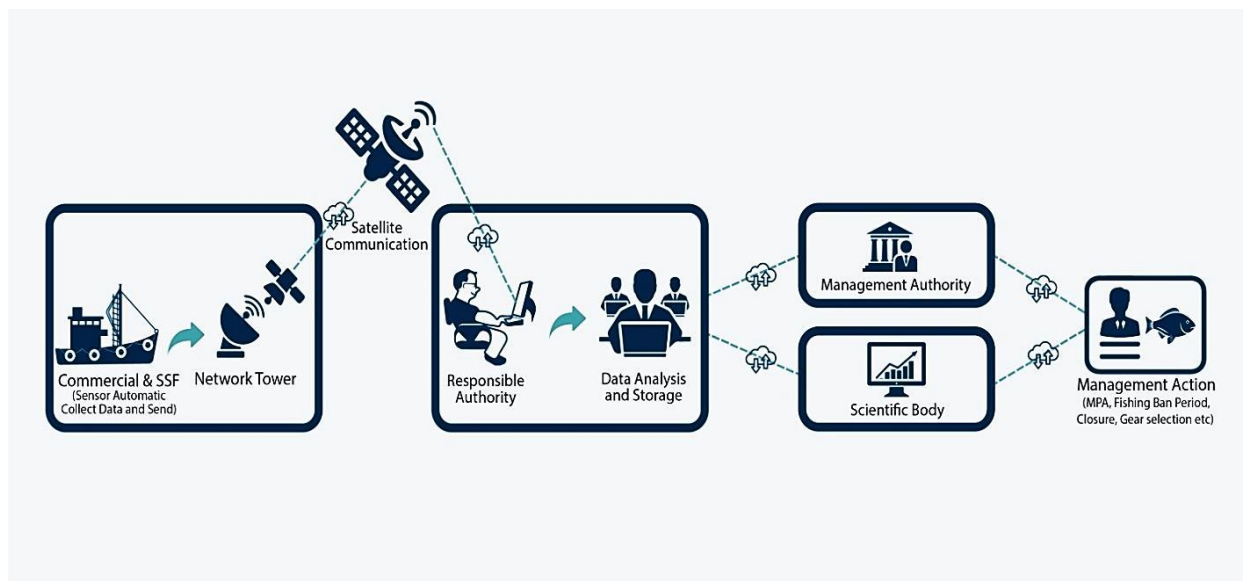
on fish stock assessment. Marine fisheries surveys in Bangladesh's marine waters dated back to 1857, and the latest survey is about 25 years old. Fisher community/ fishing companies are not getting interest on technological modernization considering cost and catch profit.

No established method has been used in the last 25 years to collect data for a tangible idea on marine catch or stock in Bangladesh. Fishery dependent data collection for necessary information is generally conducted by various fisheries stakeholders, including fishers, fisheries managers, fish buyers and processors, or even third parties such as consumers or non-profit agencies. Such data are recorded via logbooks and vessel trip reports, on-board observers, landing records, port sampling or dockside surveys, point of the first sale, telephone surveys or experiential knowledge, and recorded at the capture site landing sale or even later by the survey. For Example- The yearbook of fisheries statistics of Bangladesh that publish yearly report on fish, collect data through each arrival of a fishing trawler from their fishing trip and fisheries companies every month.



The process of moving and processing data from the point of the collection into management decision-making is often slow or non-existent, with time lags regularly exceeding the pace of rapidly changing ocean conditions and their impact on fish stocks (National Research Council 2000). Depending on the late report, any concrete management decision, catch effort or stock assessment is not possible in reality.

To avoid the above stumbling block, the author has proposed an idea using a high tech system to collect timely data from the fishing vessel.



The above figure presents an advanced method in which, using a sensor and video recording, the data on vessel catch will be collected and sent to the network system. The system will collect into the satellite communication and responsible authority will reserve, store, and analyse the data after receiving it. The management authority will then collect the synthesised data or scientific body for decision making on management strategy (MPA, Closure, Ban period, catch limitation, gear restriction or others). So, this could be an instant real data collection method where physical manipulation or any other error will be excluded. Maybe it seems expensive, but in the long term, the return will be beneficial.

If we use high tech for timely data collection, it will help to manage the marine fisheries in several ways like:

- Assessing the condition of the stocks on an area or ecosystem basis and in connection with the fishery its support.
- Developing and implementing regulations to explore the fish stocks in a sustainable manner.
- Monitoring the biological, economic and social effects of the implemented rules and regulation.
- Development of advanced, cost-effective technology for bulk catch.
- Development of Management Strategies for sustainable catch.
- Achieving the goal of SDG-14.

Achieving effective fisheries management is increasingly vital as overfishing threatens fish stocks in our marine capture, reducing biodiversity, altering ecosystem functioning and jeopardizes the food security and livelihoods. Fisheries management is a complex socio-political process and there is no silver bullet to improve our marine fisheries sector. However, access to accurate, consistent data about how a fishery is doing and what, where and how much of a species are being caught is a fundamental component for establishing effective fishery management and also develop innovative technology, regardless of the fishing sector or management system.

Writer: Afifat Khanam Ritika is a Research Officer of BIMRAD.

The article was published in [PAAL Magazine](#), Volume 04, Issue 02, July 2021