

# Untapped Fisheries Sector, the Sleeping Giant of our Country

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## **Abstract**

*Indian Fisheries is one of the most important sectors which contributes for food, health, economy, exports, employment and tourism of our country. India is the second largest producer of cultured fish and third largest producer of fish in the world. Despite, it is disheartening to note that its exploitation is not in commensurate with its vast potential. Though we have a plethora of research institutions, professionals, political will, government initiatives, progressive farmers and financial resources. There is some missing link which prevented the full exploitation. In this paper an attempt is made to trace such missing link and to offer a few suggestions for the development of this vital sector.*

**Keywords :** *Fisheries, Marine Fisheries, Brackish water Fisheries, Inland Fisheries, Ornamental Fisheries, National Fisheries Development Board(NFDB)*

## **Introduction**

India is the second largest producer of cultured fish (after China) and third largest producer of fish in the world. The growth of fisheries in the country at present is 8 percent per year which is higher than any of its agricultural counter parts. The share of fisheries in agricultural domestic product has increased from 1.7 percent in 1979-80 to 4.75 percent as current prices for the year 2012-13 making this sector an important one. This sector contributes for food, health, economy, exports, employment and tourism of the country. During 2013-14 export earnings from this sector touched all time high at 9,83,756 tonnes with value of Rs 30,213 crores. The present level of production is 9.58 million tonnes. Though this status is a matter of

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pride, it is a fact that the exploitation is not in commensurate with the vast potential. We are not exploiting the available biological resources which could have supported the nutritional security of the country. However, we are not too late to realize this and still a lot more could be done, in the future.

Scientists have proved that watching fishes in the aquarium tanks reduces blood pressure and Cardiologists recommend eating fish by heart patients, even after bypass surgery. According to Dr M S Swaminathan, about 20 percent per capita intake of animal protein for more than 2.8 billion people is from fish and for over 400 million people fish meets 50 percent of the requirement for animal protein and minerals. So fishes or fisheries sector is important both for vegetarian as well as non vegetarians. Further fisheries especially aquaculture provides opportunities to adapt to climate change of this warm planet by integrating it with agriculture.

Fisheries sector can be divided into three sub sectors namely Marine fisheries, Brackish water fisheries and Inland fisheries. Here are few recent developments in the sector.

### **Marine Fisheries**

After declaration of the EEZ in 1976, the marine resources available are estimated at 2.02 million sq. km, comprising 0.86 million sq. km on the west coast, 0.56 million sq. km on the east coast and 0.60 million sq. km around the Andaman and Nicobar Islands. The continental shelf area amounts to 5,30,000 sq. km of which 71 percent area is available in the Arabian Sea (West coast) and 29 percent in the Bay of Bengal (East coast).

Waters up to 200 meters depth are optimally exploited and some fishery resources are even over-exploited. Thus, there is no scope for expansion of fishing effort in this zone. Waters between 200 to 500 meters are being exploited by small and medium sized fishing boats. There again the scope is limited due to pressure on near-shore waters. However there is considerable scope of expansion in the waters beyond 500 meter depth, which are not optimally exploited. But unfortunately, deep sea fishing vessels required to harvest the resources and the expertise available for such ventures, which are

highly capital intensive and risk prone, are limited in our country. Government of India is finalizing suitable Deep Sea Fishing policies for collaborating with foreign fishing vessels.

For developing capture and culture fisheries we have a long coastline of 8 118 km and an equally large area under estuaries, backwaters, lagoons, etc, There are about 1,376 fish landing centres and 3,322 fishing villages located in the mainland and 2 island territories of Lakshadweep and the Andaman and Nicobar Islands. Our marine resources are comparatively over exploited. Out of the estimated 3.9 million tonnes of potential marine fisheries resources, about 3.44 million tonnes potential has been exploited. The remaining potential exist mainly in the deep sea which are beyond the fishing capacity of the small-scale fishing boats in the country. Hence for future exploitation we need to look for other resources.

### **Brackish water Fisheries**

Brackish water areas are with disease and related environmental issues. With improved culture systems the new varieties of fish and prawns are being cultured. However the potential is limited and it involves high technology. **White legged shrimp** (*Litopenaeus vannamei*) is being cultured in a big way in the country. The problems of quality of brood stock and seeds, seed certification and disease outbreaks etc. were drastically reduced by the introduction of SPF vannamei as an alternative to tiger prawn *P. monodon*. After the commercial success in South East Asian Countries this shrimp was introduced in India. Interested farmers need to apply for permission from Coastal Aquaculture Authority (CAA) and have to fulfill Bio-security requirements like, Fencing, Bird Netting, Water Intake System and an Effluent Treatment System. Only tested and certified seeds to be cultured. The Specific Pathogen Free (SPF) brood stock is being imported from USA and the same is Quarantine in India before culture. The quarantine facility is established in Rajiv Gandhi Centre for Aquaculture in Chennai. SPF shrimp seeds are being cultured in Tamil Nadu and Andhra Pradesh. There are 180 hatcheries located mainly Andhra Pradesh (127), Tamil Nadu (49), Maharashtra (1)Gujarat (1) Pondicherry (3) which are permitted by

Costal Aquaculture Authority (CAA) to import SPF *L. vannamei* brood stock and seed production during 2014-15. With the introduction of Specific Pathogen Free *L. vannamei*, many farmers have renovated their abandoned farms and gained the confidence in shrimp farming once again due to the assured economic viability. Farmers are highly health conscious (of shrimps) and do not allow any visitors.

Mari culture of fishes, sea weeds, crabs etc is another huge potential, to tap the brackish water resources, which will not only protect the environment but also provide suitable alternate employment opportunities for the youth of fish folk who are in the clutches of poverty for many years.

### **Fresh water fisheries**

It is also called Inland fisheries. Our country is endowed with vast inland water resources covering 2.36 million ha. of ponds and tanks; 1.07 million ha of beels and derelict water bodies; 0.12 million ha. of canals; 3.15 million ha of reservoirs; 0.72 million ha. of upland lakes which could be utilised for aquaculture. There is great scope for development and freshwater aquaculture is the future. This sector is dominated by culture of carps, like Catla, Rohu, Mrigal, common carp, silver carp and grass carp. Very recently new varieties of fish are grown.

*Pangasius sutchi* commonly called as “*Pangasius*” is a fast-growing air breathing, freshwater catfish, which is recently becoming a very popular food fish and valuable aquaculture species. This exotic fish is widely cultured in Asia and Southeast Asia, viz China, Vietnam Bangladesh, Thailand and also picking up now in countries like Malaysia, Cambodia, etc. Since it does not have intramuscular bones, the flesh can be easily filleted and has tremendous potential for domestic as well as export market.

By 2018 it was estimated that *Pangasius* being farmed in an area of about 60,000 ha with an expected production of 1.80 to 2.20 lakhs tons. There is a growing interest among farmers to take up this in a larger extent, thus paving way for commercial scale culture units and hatcheries. They can be cultured in monoculture systems in ponds,

cages and pens Being a facultative air breather it tolerates poor water quality conditions (like low level of dissolved oxygen, polluted water) compared to other freshwater fish species and even can be stocked at high densities as high as 120/m<sup>2</sup>. It attains 1.0 to 1.5 kgs in 8 - 10 months during the culture period. For the interest of Vegetarians, it may be noted that these fishes are getting popular in aquarium tanks also in the name of Shark Catfish. Since this fish is omnivorous and prolific breeder, it may become weed in our common waters. Hence, the culture of *Pangasius sutchii* in India are being governed by the following guidelines:

- Interested farmers have to apply to the State Fisheries Dept for necessary permission. Culture without prior permission is illegal and such farmers are liable for punishment.
- The farm should not be located adjacent to rivers, flood prone areas. Inlets and outlets of culture ponds should be provided with screens to prevent escape of fishes from the pond into the natural environment.
- Each pond should not be more than 5 hectares in area and an average depth of 1.5 ft for better monitoring and management. Grow out culture period for ponds could be 8 to 12 months depending upon stocking density and the targeted size at harvest. Generally the marketable size is 1-1.5 kg.
- Unnecessary usage of other chemicals/ drugs shall be avoided. After every two crops pond de-siltation and drying should be carried out. The used culture water should not be discharged directly into natural fresh water without any treatment such as lime, Sodium hypochlorite etc. As far as possible run off from agriculture fields should be avoided to reduce bio accumulation of pesticides. Any sign of diseases should be reported immediately to the Department.

NFDB provides back-ended subsidy to the Entrepreneur / farmer  
The unit cost is given below

## Construction/renovation costs

- a. Construction of ponds with sluices, pipeline etc.  
Rs.3.00 Lakh
- b. Renovation of existing ponds (Max. 10 ha/ farmer)  
Rs.0.75 lakh

## Inputs for first year

Cost of Fingerlings @ Rs 3.00 per fingerling Rs.0.60 lakh

Cost of feed (26,000 tons @FCR 1:1.3) @ Rs. 20,000/ton

Rs.4.40 lakh Total input costs **Rs. 5.00 lakh**

As can be seen the cost of feed is the maximum expenditure and hence NFDB extend special Subsidy assistance to the project in the following way.

For construction/renovation: 20 percent of the unit cost for all farmers & 25 percent for SC/ST farmers

For construction/renovation Subsidy for input costs:

40 percent of the unit cost for all farmers

Farmers are entitled for 40 percent subsidy on input costs for the initial period of 2 years and thereafter it would be 20 percent for all farmers and 25 percent for SC/ST farmers

In saline or fresh water environments another fish called **Bhetki** the Asian sea bass (*Latescalcarifer*) is grown. It is being extensively cultured in South East Asian countries like Thailand, Malaysia, Singapore and Indonesia. In India these fishes could be grown in the abandoned shrimp farms. Central Institute of Brackish water Aquaculture (CIBA), Chennai has already developed a feed for sea bass farming Due to the cannibalistic nature of sea bass the seeds have to be reared in phases before the grow out rearing viz; Phase I - hatchery reared fry to fingerlings (3-5 gm size) in 45-60 days and Phase II - pre grow out fingerlings to juveniles (3-5 gm size to 60-80gm) in 2-3 months In the grow out system, the juveniles are stocked at the rate of 10,000 nos/ha and reared for a period of 6-7 months till it attains a size of 700 to 800 grams. A total expenditure of Rs.40 lakh (Rs.3 lakh towards capital expenditure and Rs.37 lakh towards

recurring expenditure for one crop of one year) gives a gross revenue of Rs. 45.50 lakh/crop from a water spread area of 5 ha. The market price is Rs.150 to 250 per kg depending upon the size, availability and season.

### **Ornamental fish Production**

Aquarium keeping is the second largest hobby in the world next to photography. This interest has brought a business potential for many countries including ours. The unit value of ornamental fish is higher than the food fish. Though Singapore is regarded as a major trade hub, India is endowed with rich bio diversity, a suitable climate, abundant water resources, and large manpower base for promoting this sector. However, our share in global ornamental fish trade is negligible and is a tip of iceberg of the huge market export potential. It is dominated by the wild caught species. Skill training is required for breeding these fishes. About 2,500 species are traded and some 30-35 species of fresh water fish dominate the market This sector offers good opportunity for rural and urban households to augment income and link them to the International trade.

Marine Products Export Development Authority (MPEDA) encourages this sector through seminars, workshops training programmes and implement a scheme for providing financial assistance for establishment of ornamental fish marketing societies. This sector not only can give huge employment to the unemployed youth but also increase the export earnings of the country

### **Fish Production**

With all the efforts, the fish production in our country as well as our export earnings is increasing over years which could be seen from the following table. Today Indian seafood is being exported to 100 countries.

As can be seen the marine fish production has increased from 28.11 to 34.43 lakh tonnes during 2000-01 to 2013-14, while the inland fish production has increased from 28.45 to 61.36 lakh tonnes during the same period.

## **Table No. 1: Fish Production and Export Earning during 2000-2014**

### **Supports Available for development**

**Government of India** is encouraging the sector with subsidy assistance, in association with respective State Governments. Development of Freshwater and Brackishwater Aquaculture are being implemented with subsidy assistance by the agencies called Fish Farmers Development Agency (FFDA) in the respective States and Union Territories and presently there is a network of 422 FFDAs and 39 Brackish water Fish Farmers Development Agency (BFDA) in the country. The national average productivity of ponds and tanks covered under FFDA has reached to 2500 kg/ha/ year.



As announced in the Union budget 2014-15 Government of Indian is implementing a new scheme on Blue Revolution Inland fisheries to be implemented through NFDB, at an outlay of Rs 50.00 crore for extending subsidy assistance to the investments.

**State Governments** like Government of Karnataka extend interest subsidy for encouraging credit flow from banks to individual fisher folk (both fisherwomen and fishermen). They implement an interest subvention scheme (GO. No. AHF/ 148/ SFS/ 2009 dated 01 Feb 2010) by which the interest charged by banks over and above 3 percent would be reimbursed to Commercial banks and RRBs, provided the loan is for fisheries activities and the loan is promptly repaid. This has been the motivating factor for fisher folk to avail credit from Corporation Bank and promptly repay to the extent of 100 percent.

**Coastal Aquaculture Authority** was established in 2005 with the objective of regulating coastal aquaculture activities in coastal areas in order to ensure sustainable development without causing damage to the coastal environment. Besides making regulations for aquaculture farms in coastal areas, it registers the shrimp farms based on the recommendations of the State and District Level Committees constituted for this purpose. Registration with coastal aquaculture authority is a must for getting financial assistance from formal credit institutions.

As per the Coastal Aquaculture Authority Act, 2005, no person shall carry on, or cause to be carried on, coastal aquaculture in coastal area or traditional coastal aquaculture in the traditional coastal aquaculture farm which lies within the Coastal Regulation Zone and is not used for coastal aquaculture unless he has registered his farm with the Authority. No coastal aquaculture shall be carried on within 200 metres from High Tide Lines; and no coastal aquaculture shall be carried on in creeks, rivers and backwaters within the Coastal Regulation Zone declared for the time being under the Environment (Protection) Act, 1986: Hence any person who intends to carry on coastal aquaculture shall get proper certificate of registration from the Authority. The registration is valid for 5 years and may be

renewed from time to time. Application and related information is available in [www.caa.gov.in](http://www.caa.gov.in)

**National Fisheries Development Board (NFDB)** was established in Sept 2006 to work towards blue revolution with a focus on to increase the fish production of the country to a level of 10.3 million tonnes, double the exports from 7,000 crores to 14,000 crores and create direct employment to about 3.5 million by extending suitable assistance to under Inland, Brackish water and Marine sectors. NFDB is the platform for public-private partnership in fisheries sector. They implement various schemes for subsidy to farmers, assistance to State and user agencies to execute fisheries ventures in all States of the Country. Detailed guidelines are available in their website [www.nfdb.gov.in](http://www.nfdb.gov.in)

### **Financial Institutions**

The banks can be classified as Commercial Banks, Regional Rural Banks and Cooperative Banks. Commercial banks can further be understood as Public sector banks, Private Sector Banks and Foreign banks. The following is the net work of banks in our country as on 31 March 2013.

**Table No. 2: Commercial Bank Network in our country as on 31<sup>st</sup> March 2013**

Regional Rural Banks are banks which are sponsored by Public sector

commercial banks and they have the characteristics of cooperative banks and business acumen of commercial banks. Cooperative banks are banks with vast network in length and breadth of our country and more closer to the farmers. The position as on 31.03.2013 are given below

**Table No. 3: RRB and Co-operative Banking Network in our Country as on 31<sup>st</sup> March 2013**

All these banks encourage financing agriculture and allied sector activities including fisheries. Of late there has been difficulties in getting bank loans in general, as they are linked to collateral securities and recovery issues.

Banking sector is very dynamic and fast changing and there are new type of banks like Bharathia Mahalir Bank, MUDRA (Micro Units Development Refinance Agency) Bank, Payment Banks and Small Financial Banks etc., are coming. It is a fact that getting financial assistance by genuine customers will not be a problem in future.

**Major Issues for development of Fisheries sector**

There are certain major areas which require our immediate attention for sustainable development.

- The fish eating population of our country is about 60 percent and the per capita availability of fish is only 9 kg against the FAO recommendation of 11.1 kg. Tripura is with the exception of 13 kg per capita fish availability. Fisheries is the State Subject and the interest shown by different States varies

widely based on their priorities, potential and manpower. In the Centre also department of fisheries come under Ministry of Agriculture. Considering the importance and potential for future a separate ministry needs to be created for this crucial sector.

- You may be remembering, during our childhood, grand mother always used to advise us to eat complete fish so as to get the protein, vitamins and other important omega 3 fatty acids for our better health. Those small indigenous fish species are getting extinct over a period of time. Now they are available in little quantity in some parts of West Bengal, Tamil Nadu and Andhra Pradesh and are costlier than other fishes. This genetic resources and bio diversity need to be protected from extinction, through well planned conservation management. DNA fingerprints, bar coding etc
- In our efforts for blue revolution, many indigenous species have been neglected, which have huge potential for addressing the nutritional security issues. Little efforts have been made to explore indigenous fish species like minor carps, cat fish, murrels, and other air breathing fishes that are similar to carps and prawns in terms of food value. If tapped scientifically, these resources could improve the socio economic conditions of poor, create adequate employment opportunities as well as combat malnutrition.
- Indian Aquaculture is dominated only by the carps and prawns which constitute less than 5 percent of the potential fish species that are suitable for aquaculture. New species like sea bass, prawn *Litopenaeus vannamei*, and air breathing fishes like Pungasius etc have to be introduced to culture systems and the capacity building at farmers level is very much required.
- **Ornamental fish culture**, harvest from nature, export is another gold mine which can make India as ornamental hub surpassing Singapore. We have both inland and marine ornamental fishes with mind boggling colours. This sector

needs to be promoted in a well planned and systematic way.

- Aquaculture can be **integrated with Agriculture** and all other allied sectors increasing the income of the farmer many fold, making all the sectors viable, maintain the ecological balance as well as improve bio diversity. The interesting fact is that the waste of one sector is the feed / fertilizer of the other sector. Fishes inside the waters, ducks swimming above, pigs and country chicken on the bunds, cows in the shade of banana plantations on the bunds, paddy by the side of the pond will certainly make the farmer busy in the blackberry trading with the traders.
- More and more SHGs and JLGs are to be promoted by the fisher folk to avail huge quantum of bank loan, with ease. The fisherwomen in Udupi district of Karnataka have proved that fisherwoman are bankable and financing them is a successful banking model, which can be replicated everywhere.

One can easily understand that the present condition is more or less similar to a poor man sleeping over the gold mine, waiting for someone to come for feed him. The present development of this sector is more similar to this.

## **Conclusion**

There is a saying in China “where there is no fish there is no money”. We need to keep the “local fishers” at the centre of our attention, while suggesting, planning and executing the developmental programmes. Whether it is for conservation or protection of indigenous species or promotion of new varieties, the participation of primary producers ie., farmers in the grass root level, is very much important.

The issue is not the dearth of research institutions, professionals, Political will, Government initiatives, progressive farmers or financial resources. The missing link is the coordinated efforts by all of them. Public Private Partnership (PPP) model will work wonders in scientific and sustainable exploitation of the fisheries wealth from the marine and other aquatic resources of the country. Referring to

the contributions of green revolution and white revolution in the developmental history of India, the Hon'ble Prime Minister had also said that it is time now to usher in blue revolution, as depicted in the blue colour of the iconic Ashok Chakra. Let us start the process and take steps forward. Let Mother India feed the entire world.

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