Prospects and Potential of Fisheries in the North-Eastern States of India

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The northeastern region of India, though hilly and landlocked, has a very vast potential for fisheries development. Yet, the fisheries sector of the region is very weak and fish production is far below the demand within the region for the reason the people are fond of fish. This situation calls for focal attention to enhance fish production to uplift the sector. The analysis of available data on status of various aspects of fisheries of the region was done with the aim of strengthening the sector and for ultimately uplifting the socio-economic status of the people by converting the weaknesses of the sector in the region into strengths, and the threats into opportunities. In the present analysis, the strengths, weaknesses, opportunities and threats (SWOT) existing in the region, those which pose a barrier to the development of the sector are documented. The SWOT analysis of the sector was done for the whole region based on the assessment of the strengths, weaknesses, opportunities and threats of fisheries of each of the States of the region, to serve as a basis to step up fisheries development activities adopting upgraded fisheries practices, so as to achieve enhancement of the production and to bring prosperity to the sector.

The northeastern region of India, comprises eight States viz; Arunachal pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim. It occupies a total geographical area of 2.62 lakh sq.km, which accounts for 7.97 percent of the total land area of the country. Of the total area, 43 percent lies in the elevation range of 300 m, 30 percent in between 300-1200 m and 27 percent above 1200m above MSL. The region has very diverse and distinct agro-climatic and geographical characteristics in relation to the topography, temperature, rainfall and soil types. The average temperature of the region ranges from 18°C to 25°C. However, in some of the States there are also coldwater resources available. The region gets a very heavy rainfall, which sometimes poses great problems like floods and landslides. Acidic type of soil is mostly prevalent in the region. The major river system of the region is Brahmaputra. It flows through the States of Arunachal Pradesh and Assam and ultimately joins Bay of Bengal. It serve as the most important source of fisheries activities for the region, in respect of fish production through capture from several centres and also for collection of spawn for seed production. It serves as a major source of fish to serve as food, especially for the people living on the catchments areas. Brahmaputra is also one of the most important river system of the country. It harbours a very diverse aquatic flora and fauna. Assam is considered as central for the fisheries of the region, since it is the main source of seed and also for export of fish to other States of the region. Besides this, there are many small rivers flowing in different States, which are very important for each of the States concerned from fisheries point of view.

Fisheries Resources and Production

Since this region is a hilly land-locked area, only freshwater resources are available which mainly comprise rivers (18,968 km), reservoirs (8,091 ha), *bheels*/Lakes (14,3491ha) and tanks and ponds (42,782ha). Besides, there is a vast extent of paddy fields, lowlying areas and forests which contribute additional resources of around 94,577ha in the region. The total fish production from the different North Eastern States is listed in Table 1.

Table1: Fish production (in t)

States	2000-2001	2001-2002	2002-2003	2003-2004
Arunachal Pradesh	2,500	2,600	2,600	2,650
Assam	1,59,620	1,61,450	1,65,520	1,81,000
Manipur	16,050	16,450	16,600	17,600
Meghalaya	6,179	4,968	5,370	5,150
Mizoram	2,860	3,147	3,250	3,380
Nagaland	5,500	5,200	5,500	5,560
Sikkim	140	140	140	140
Tripura	29,420	29,450	29,520	17,980
Total	2,21,269	2,23,405	2,28,500	2,33,460

Source: Ministry of Agriculture, DAHD

Table 2: Fisheries Resources of Northeastern India

States	Rivers (kms)	*Bheels*/Lakes (ha)	Tanks/Ponds (ha)	Paddy Fields (ha)	Other Suitable Areas
Arunachal Pradesh	2,000	2,500 + 110	1,000	2,800	700
Assam	4,820	1,00,000	20,000	20,000	1,517
Manipur	2,000	40,000	5,000	40,000	10,000
Meghalaya	5,600	394	1,944	5,000	3,000
Mizoram	1,748	32	1,800	1,560	-
Nagaland	1,600	215	2,000	10,000	-
Sikkim	900	-	-	-	-
Tripura	1,200	240	11,038	-	-
TOTAL	19,868	14,338	72,782	79,360	15,217

Source: North Eastern Council-Ten year prospective plan

The resources available are given in the Table 2.

Considering these available resources, greater attention is required for their full utilization. The present annual fish production of the region is only around 2.23 lakh tonnes, which constitutes 7 percent of the total inland fish production of the country. This production provides about 6 kg per capita fish to the present population against the standard nutritional requirement of 11 kg per capita. To provide fish to meet this requirement, the region requires fish production of at least around 4 lakh tonnes annually. To partially offset the demand, a large quantity of fishes are imported into the region from other States of the country. Particulars of fish production of the region are given in Table 1.

Methodology: The study was conducted by analysing SWOT of fisheries in the sector, which would depict the present status and help in the prediction of the future potentials of fisheries sector of the region, which will ultimately help in enhancement of the production and give a better basis for management of fisheries. Before going into the details about SWOT Analysis of fisheries of the region, a brief account on what SWOT Analysis is and what it signifies is attempted hereunder.

As already mentioned, SWOT Analysis is an informative tool for assessing the potential and status of any industry or any sector of production. It provides a complete picture of its Strengths (S), Weaknesses (W), Opportunities (O) and Threats (T). However, the analysis of its strengths and weaknesses, which is essential, is possible only when the threats are taken into consideration while also identifying the opportunities available too. SWOT analysis is very important to upgrade the sector to a flourishing level, since it helps in problem identification, planning, decision making, appropriate technology implementation, and for taking precautionary measures for accelerating fish production to a sustainable level.

SWOT Analysis of any production sector or system will help us in: 1) Providing a basis for future action; 2) Sets in motion decision making process; 3) Provides a proper feed back i.e., it provides information regarding the performance and the steps to be taken for its improvement; 4) Help in setting up standard performance; 5) Provides basis for taking up planned research to convert weaknesses into strengths and threats into opportunities; 6) Enables formulation of management measures and their implementation; and 7) It helps in smoothening the work process.

Results and Discussions

***Strengths* (S)** These Consist of: 1) A vast fishery resource, which continues to remain largely unutilised. Cold water resources of some of the States like Arunachal Pradesh and Meghalaya are among them. Besides, there are many zones whose fisheries are untouched. There have been no efforts as yet to assess the fishery potential.

2) The rivers of this region, especially Brahmaputra in Assam and Arunachal Pradesh, are highly productive due to the organic enrichment from the peripheral areas. Besides the water resources of the other States are also very productive due to the organic waste entering the water bodies from the catchments areas.

3) One of the most important strengths of the region is the availability of manpower at low cost. In the States like Arunachal pradesh, Assam, Manipur, Mizoram etc., labour cost usually ranges at around Rs. 60-90/- per person.

4) Fisheries practices in the region continue to be traditional due to illiteracy and absence of interface with developed technologies. Yet the production per unit area in the region happens to be very high which is one of the important strengths of this region. People of this region are very fond of fishes and fish farming became part of their life. They started culturing fishes from time immemorial in their own traditional way. This has the effect of keeping the cost of production on a lower key. Even in capture sector of this region, the main gear that is used continues to be traditional and this also keeps the cost of fishing down.

5) Short-term training programmes, conducted by the professionals from the fisheries department and N.E.C also help the people, particularly fishermen. CIFRI also conducts training programmes on fish farming from time to time according to the needs of the farmers. In the States like Mizoram, the fisheries department also conducts training programme at regular intervgals.

***Weaknesses* (W):** 1) One of the major problems that exist in the region is poor organizational skills among the farmers which owe their origin to past disputes that dissipate energies of the people in the wrong direction. The effect of this is the lack of private entreprenuership and partnership in the field. Not even a single fisheries cooperative is there in some of the States. Mizoram is an example.

2) Awareness towards fish marketing is very weak in most of the States of the region. In fact, it can be said that no proper marketing system exists in the region, especially Nagaland, Meghalaya and Mizoram. In some of the States, not only the system is weak but no separate markets for fishes exist.

3) Since the people are illiterate, and they do not have much knowledge about fishery complexion of their respective areas, there is no reliable data on the resources. Added to this, no proper studies have been taken up on the fisheries resources of this region. In some of the States of the region, it can be said that there are very few with any inclination to undertake such studies. In a State like Mizoram, there are however around six or seven persons who have a degree in the subject of fisheries which is a very small number, and still there is no person holding a master degree in fisheries in the State.

4) The availability of quality seeds in the region is also very limited. Seeds are mainly collected from

rivers. In some of the States the requirement of seeds is met by importing them from the nearby States. Assam has been playing very important part for the supply of fish seeds although in small quantities, to many of the States of the region. The shortage of seed production in the other States is because of lack of manpower having knowledge of technology of seed production; Fish production of this region is marginal and this is mainly due to lack of trained skilled manpower. Fish farming and capture fishing is mainly done, using their own traditional gears. For this reason the farmers are unable to utilise the resources even to a reasonable extent; 6) Fishing gears used in most of the States are of traditional type, and which are not efficient enough to exploit the resources available effectively; 7) Fishing regulations can be considered as non-existent in most of the States. Use of dynamite, poison and indiscriminate fishing of the brooders and the juveniles are a common practice, which adversely effect fisheries of the region; and Extension system in the region is very weak which is one of the major weaknesses of the sector. Each of the fishery officers have an unwieldy area to cover, without assistance. Besides, the extension system existing in the region does not reach the remote areas.

***Opportunities* (O):** 1) High productivity of the water bodies contributes to the socio-economic status of the region. 2) Production and supply of seed could be well organized with some effort for promoting composite fish farming, integrated farming and cage and pen farming systems. 3) Since there are many areas available for fish farming, farmers of all categories can have opportunities to undertake fish farming for their livelihood. 4) There are many untapped fishery resources that are available in the region, which can be utilized to enhance fish production of the region. Coldwater resources available in different States of the region like Arunachal Pradesh, Meghalaya, Nagaland, besides other lowlying paddy fields which are in use for farming in different States of the region are some of the opportunities which are awaiting exploration and utilization; 5) Fish demand in the region is very high, compared with the other States of the country. In some of the States like Mizoram more than 60 percent of the population consume fish as their diet. Also in Manipur, fish is always an essential food item in the daily diet of the people. Fish is a traditional food, which should almost always be taken as part of each of their meals. For the region as a whole, more than 60 percent of the population consumes fish; and 6) There is a fishing practice, in the region which is known as *Jhora* fishing. This is a kind of running water fish farming system. This type of fishing is practised in States such as Tripura, Arunachal Pradesh, Meghalaya. *Jhora* fisheries can be developed on commercial lines for increased or enhanced production.

***Threats* (T):** 1) Water bodies with high productivity will get infested with aquatic weeds, if they are left unutilized for aquafarming. Such unutilized water bodies may lead to health hazards. For example, they may serve as breeding grounds for mosquitoes. 2) Pollution due to agricultural runoff and inflow of domestic waste may cause deterioration of water quality; and 3) Indiscriminate fishing of any wild stocks is one of the major threats. In some of the States, fishes are caught when they ascend to the upper region of the rivers for breeding and even on their way back to feeding grounds. This is commonly done in Mizoram. They are also caught on the breeding ground itself. This type of fishing is called "Nghafuanveng". Indiscriminate fishing of brooders and also the destruction of their eggs are the worst aspect of this type of fishing. Also the use of dynamite and poisons in the rivers are a very important fishing method in these States. Due to lack of proper implementation of regulations in this regard, this problem remains unsolved. This kind of practices are also reported from other States like Meghalaya, Tripura, Nagaland..etc; 4) Since the farmers are mostly illiterate, none of the management measures has been adopted in the region. The result of this is proliferation of weeds in the water bodies. Weed infestation in Loktak lake which is locally called as *Phoomdi* is a clear indication in this direction. Due to the lack of management measures for the uncontrolled waste discharge, water quality has been deteriorating day by day which can ultimately lead to disease outbreak among the fishes of the lake; 5) Due to heavy rainfall, all the States of the region are suffering from the effects of natural disasters such as floods, and landslides that adversely effect not only fisheries but also the people themselves. In fact, it sometimes leads to the complete destruction of fisheries of the region. The floods may wash the crop away, leaving no fishes in fish ponds. Further, landslides also pose a great problem in the transportation of fishes; 6) Due to unemployment problem and food insecurity in some of the States, people migrate to different regions in search of livelihood, which ultimately affects the fisheries; 7) One of the major threats, which need to be thwarted, is the neglect of the sector by the State Governments. Fisheries sector in all parts of this region are neglected since the governments concerned have not yet perceived the importance of this sector for the upliftment of socio-economic status of their respective States. In comparison with other sectors like agriculture and veterinary, the sector has been neglected with regard to funding for its development; 8) The farms and hatcheries presently existing are not yet utilized in some of the States of the region. In States like Mizoram and Nagaland, even government hatcheries and farms are left without functioning, which is a threat to the fisheries; 9) Marketing system in the whole region is very weak. This tantamounts to not having a proper marketing system, particularly in some of the States. In States like Mizoram, not even a single separate fish market exists. Besides this, safe and hygienic transportation of fish is one of the major threats to ☞

the sector. Transportation system as such in the region is very weak which ultimately affects the sector as a whole; 10) Poaching is one of the major problems in the region. In some cases, a farmer fails to obtain any crop due to this problem of poaching which exists everywhere in the region, since security is weak. 11) Soil in this region is mainly acidic, which gives poor production to farmers. Illiterate and poor farmers face problems to manage increases in their incomes through higher production.

Conclusion

The North Eastern region of India, even though is a hilly landlocked area has a very vast fishery potential, which still remains unutilised. At present, the production is far behind the demand and the needs of the people. So, to enhance the production and to upgrade the sector, focal attention is needed to bring about not only the upliftment of the living standards and socio-economical status of the fishing community of the region but also to integrate the fisheries sector with that of the country. If the development strategy is planned keeping in view the above mentioned points, we can be confident of achieving the production target set for the region. This is a challenge for professionals, researchers and policy makers, to enlist close cooperation from the farmers and all the others who participate in fisheries activities so as to evolve an appropriate and implementable strategy to induct prosperity to region.

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Fish Workers Threaten Countrywide Agitation

The Traditional Fish Workers Union (TFWU) has recently threatened a countrywide agitation over the attempts by some influential members of the World Trade Organisation (WTO) for removal of tariff barriers for import of fish into developing countries like India.

Union chairperson Harikrishna Debnath told reporters that the European Union, US, Japan and other advanced countries were trying to get clearance for fish imports during the WTO ministerial meeting slated for December 13 to 18 at Hong Kong on non-agricultural market access (NAMA).

Mr. Debnath, who was at a regional conference of fish workers held at Visakhapatnam said that the NAMA initiative would be a serious blow to traditional fish workers.

Removal of protective mechanism for the domestic market would spell doom for some two crore fish workers, he said.

Apart from India, developing countries like the Philippines and Thailand would be hit hard, he said, declaring that fish workers would take out huge rallies against the NAMA initiative at Visakhapatnam, Kakinada, Vizianagaram and Srikakulam in A.P on November 21, coinciding with the World Fisheries Day.

Deregulation of tariff barriers would lead to dumping of fish skin and other waste from abroad in India and other developing countries, he said. He also asked the Union Government to oppose the move strongly at the Hong Kong meet on NAMA.

Mr. Debnath said that the fish workers were also agitated over allowing of operation of foreign owned trawlers under Indian ownership.

Recalling how they had pressured the Centre to withdraw foreign chartered vessels through countrywide protests during 1993-97, he said that in deference to mounting public opinion, the chartered vessels were sent back.

Detrimental Move

Decisions on allowing operation of foreign trawlers under Indian hire-purchase ownership without adequate discussion and consultation with the stakeholders is detrimental to the interest of fishing community, he felt.

The advanced countries were exerting pressure through the WTO for removal of tariff barriers on imports as well as phasing out subsidies being extended to fish workers. He accused the M.S. Swaminathan panel of diluting the Coastal Regulatory Zone (CRZ) by recommending its replacement with a coastal management zone.

Caught on Camera for the First Time: Giant Squid

Japanese scientists have taken the first photographs of one of the most mysterious creatures in the deep ocean the giant squid.

Until now the only information about the behaviour of the creatures which measure up to 18 metres in length has been based on dead or dying squid washed up on shore or captured in commercial fishing nets.

But Tsunemi Kubodera, of the National Science Museum, and Kyoichi Mori of the Ogasawara Whale Watching Association, both in Tokyo have captured the first images of *Architeuthis* attacking bait 900 metres below the surface in the cold, dark waters of the North Pacific.