

# VALUE ADDITION BY THE MARINE FISHERIES SECTOR

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## **Abstract**

The article describes the important role played by Marine fisheries in the Indian economy. It elaborates the issues associated with value addition of this sector with special reference to optimum capacity utilisation of processing industries, product diversification and adherence to quality control regulations. The article suggests a time bound, well defined investment programme backed up by appropriate policy framework and technology infusion programme for the development of Marine Fisheries sector.

## **Background:**

Fisheries play a very important role in the Indian economy. It provides employment opportunities to large sections of the population, supplies rich protein diet at affordable costs and earns foreign exchange. The fisheries sector contributes about 2.5 per cent of the total GDP and 5.12 per cent of the GDP from agriculture sector. The present fish availability is around 6 million tonnes whereas the potential is about 9.4 million tonnes. In view of the potential and prospects for development of the sector, Government of India has set a target to increase fisheries export from Rs.6000 crore to Rs.14000 crores during the XI Five Year Plan Period. The target set by GOI in terms of export promotion is a function of the raw material supply; optimum capacity utilisation of processing industries, product diversification; value addition and adherence to quality control regulations. The present discussion would primarily address issues connected with value addition.

While export of fish and shrimp in various forms, constitutes more than 70 % of Indian sea food exports, shrimp alone accounts for 71.5 % of the value of exports. However, the major share of the present export in volumetric terms is in bulk form while a small share of the exports comprise of value added products. The share of export of shrimp in block frozen form is around 22 % as against 2.2 % in IQF form. The unit value of IQF products being Rs.475 per kg as against Rs.194 per kg for the block frozen shrimp, there is considerable scope for boost of marine exports through value addition. Similarly, the share of fish surimi which is priced at Rs.68/kg, is only 3.2 per cent of the total export as compared to that of ribbon fish (which is the raw material for surimi) which is priced at Rs. 25/kg and enjoying an export share of 18.3%. Value addition to a part of the fish catch disposed in fresh form, could lead to a transformation of the domestic market which is experiencing a sea change with an increasing demand for processed and ready-to-eat fish products like Breaded and Battered fish items, Fish Burgers, Sea food mix, fish fillets, etc. Fish sauce, silage and other fermented products are important areas of value addition at the lower end of the chain. Wastes from processing factories can also be converted into useful food and non-food products. Crustacean processing waste can be made

into new products like chitin and chitosan. Shark cartilage, squalene etc. have affiliations in medicine and cosmetics.

To understand the issues involved in value addition, it would be necessary to know the extent of marine fish catch in India. Available data suggest that approximately 70% of the catch is disposed of in fresh form; 7.5% in frozen and processed form; 12.5% is in cured form (which means dried, salted and smoked products); 0.25% in canned form; 6.0% is reduced to fish oil; 0.7% is reduced to fish meal and manures and 2.2% is used for other miscellaneous purposes. The issues connected with each method of disposition is unique and needs to be addressed in totality.

It may be mentioned that although by volume, the major share of marine fish rates is in the fresh form (70%), the major focus of the industry is on the frozen products which has a share of 7.5% of the total catch. This is mainly because of the export demand for frozen products and consequent need for value addition. The basic tenet on which the sea food industry is presently working is that there is no demand for value added products in the domestic market as Indian consumers are not capable of ensuring appreciation of the products in terms of price and quality. However, there are considerable changes in consumer preference within the country during the last 40 years. There is an increasing demand for value added products in the domestic market commensurate with the growth of upwardly mobile middle income group specially in the metro cities. It is, therefore, incumbent on the industry to deal with the changed scenario in the domestic market and deal with it accordingly. Moreover, creating domestic niche market for such products would provide risk coverage against any fluctuation and over dependence on the export market. It is expected that in days to come, a share of the fish catch disposed fresh, would be utilised for processed products in various forms taking into account the domestic demand.

Regarding the frozen products which propels sea food exports business, there is a strong need to emphasize value addition in addition to addressing problems of idle capacity utilisation of our fish processing sector, technological upgradation of the units, product diversification and compliance with safety related regulations of buyers. Presently, the fish processing industry utilises less than 20% of its installed capacity due to raw material shortage and its inability to meet the market demand for value added products and safety related regulation of importing countries.

A major share (12.5%) of marine fish sales is in the form of cured products such as dried/salted and smoked fish. The importance of cured fish products emanates from the high cost of transportation of low value fish to hinterland States as also to deal with the situation of bumper landings. At present, drying takes place mostly on open beaches thereby increasing impurities (sand content) in the product and making it susceptible to halophytic bacteria as well as maggots and mites. The problem could be overcome if facilities for fish drying using hot air and storage of dried products are made available at the fish landing centres. State Governments could provide such infrastructure facilities near the landing centres so that fishermen could utilise the same by paying for the services rendered. Government extension machinery / services of NGOs could be utilised to educate the fishermen on the hygiene and the quality aspect of the

products. It is assumed that in case shore based facilities for fish drying and storage is created, it would lead to increased landings of bycatch of the fishing vessels which at present are dumped into the sea, considering their low price in the absence of adequate processing facilities. Thus, this otherwise lost resource in the form of by-catch, estimated to be 1/3rd of the total marine landings could be brought ashore to improve the raw material base of the industry, considerably. This would in turn lead to better price realisation by the marine fishing units.

The volume of canned products has remained very low and its share is very negligible at (1%). It has been almost constant between 2001 and 2006. This is a typical story of poverty amidst plenty and more so if considered it to be a prime export commodity. With an exploitable stock of 2.4 lakh tonnes of tuna, our present level of exploitation is merely 10%. Bulk of the tuna product is globally traded in the canned form. There is considerable potential of tuna based canning in the Andaman, Lakshadweep as well as oceanic waters. Despite several national level Expert Committees dwelling on the subject of under exploitation of tuna resources, development still remains elusive and it is rightly said that Indian seas are the only waters where tuna fishes are allowed to die of old age.

The process of value addition with respect to reduction of fish for fish meal, leaves a lot to desire in terms of quality and impurities. As the fishes are dried in the open beaches a lot of impurities gets into the raw material which affects both machinery as well as product quality. As a result most of the fish meal produced within the country is unfit for use as raw material in the animal, as well as fish feed industry. We are required to import good quality fish meal in order to meet the requirements of the feed industry. Creating necessary infrastructure for drying as discussed earlier would help the cause of producing good quality fish meal and better utilisation of by catch.

## **2. Indian Sea Food Industry - Regional Configuration**

The Indian sea food processing industry comprises of a fishing fleet of 14266 vessels, 394 freezing plants and 479 cold storage plants which are registered in India but there are only 13 canning plants, 12 fish meal plants, 5 Surimi plants, 4 Agar Agar plants and 1 plant of Isinglass. The distribution of the infrastructural setup of the sea food processing industry would reveal that major fishing bases are in Kerala, Tamil Nadu, Karnataka and Maharashtra whereas the concentration of the processing plants, freezing and storage capacities are more in Kerala, Gujarat, Andhra Pradesh, Tamil Nadu, Maharashtra and West Bengal. Although there are 17 food parks approved by Dept. of Food Processing Industry (DFPI), GOI, but none of them are located in places close to the important sea food processing bases in the above States. Although a scheme on infrastructural facility for preservation and processing of fish is provided for on creation of additional facilities under the DFPI scheme yet the same cannot be utilised unless food parks are planned in areas close to fishing / processing centres. Similarly, few number of Agri Export Zones have so far been sanctioned / approved as per the recently announced Exim policy of the Ministry of Commerce. A preliminary scrutiny of the list would reveal that all the approved units are related to horticulture products and not a single Export Zone is ascribed to development of sea food processing industry although 25% of the total agricultural export is on account of sea food.

### **3. R&D Road Map for the Processed Fish Food Industry**

Considering existing potentials of the industry and the constraints, the following R&D roadmap is suggested for the future.

- \*. Designing and market development of ready to eat fish products like fish tikkas, kababs, sausages, salami etc utilising fishes disposed in fresh form both, in inland and marine sectors, for the domestic as well as the export market.
- \*. Developing ready to eat fish products utilising non-conventional deep sea fishery reserves.
- \*. Assessment of potentials for setting up various value added fisheries based processing units based on market demand, availability of raw materials /inputs and their financial viability.
- \*. Assessment of the proposed restructuring plan of sea food industry forwarded to the Ministry of Finance, GOI by the Ministry of Commerce, GOI.
- \*. Assessment of infrastructural requirement towards upgradation of the sea food industry and investment needs.
- \*. Transfer of technology in the field of coastal aquaculture, inshore mariculture and offshore mariculture.
- \*. Survey of Indian sea bed and coastal waters for assessment of mariculture potential based on carrying capacity.
- Research in the areas of formulation of innovative drugs utilising coral reef organisms.

### **4. Project Profiles**

Fisheries sector is technology dependent and product specific availability of information to potential investors is a major constraint. Realising this, the National Bank has come out with a series of techno economic project profiles pertaining to few value added fish products viz. (1) Fish Surimi (2) IQF products and (3) Chitosan etc. More such project profiles could be prepared by the National Bank, based on industry demand. For this purpose the National Bank could collateral with research institutions / development agencies, working in product development by way of funding R&D Projects; preparation of model schemes and making arrangements for finance.

### **5. Policy Support**

Certain urgent steps need to be taken to popularise marine fish famous.

- i. Waiver of custom duty on import of raw material for reprocessing / value addition has been the consistent demand of the industry towards a level playing field for export. Although the Govt. of India has made some breakthrough in this regard there is a need to revisit again.
- ii. As already indicated, the location of the food parks and the crops covered by the Agri Export zones in the country do not address the needs of sea food export although the same accounts for nearly 25% of total agricultural exports of the country. Some of the food parks could be located near the major sea food export zones in the country to provide the linkage between marine landings and post harvest processing. The Ministry of Food Processing may have to consider this aspect.

iii. The guidelines of the Aqua culture Authority for setting up coastal aquaculture units and the cumbersome process of granting license, has put a brake on growth of exports based on cultured shrimp. The coast line distance criteria besides rendering the cost on investment very high, has brought the activity (which is predominantly coastal dependent) to the doorsteps of human settlement and agricultural activities. It would be difficult for small farmers to set up farms following the high infrastructure cost in terms of water intake and disposal structures. The solution to this problem lies in consideration of the review petition of MOA before the Supreme Court filed in January 1997 and allowing aquaculture as an eligible activity within CRZ on the ground that it is a coastal dependent activity and so recognised under the strictest CRZ regulations world over. In case this is not feasible, the Government may consider creating common infrastructure facilities and leasing them out to individual beneficiaries or facilitating sharing of costs through area development projects / cluster programmes. This could be possible if suitable Government land is leased out for such cluster farming. Such a move would also help the small / marginal farmers in getting licenses as the Governments would make available such lands which would be permitted for aquaculture within or outside the CRZ. The Government needs to redefine its role as a facilitator instead of as a regulator.

iv. Lack of policy for leasing of sea bed in inshore and offshore waters for mariculture is a hurdle in the way of its popularisation. The problems faced by two such projects in Andaman waters, have brought out the lack of enabling policy in this regard by the State Governments in inshore areas and that of the Union Government in the EEZs.

v. Opening up of mariculture would also require detailed survey of the Indian coastlines in respect of their carrying capacity and suitability. This may involve a nation wide assessment replicating the 'LENKA' system adopted by Norway. The Ministry of Agriculture, GOI may explore the possibilities of getting Norwegian assistance under the bilateral assistance programme.

vi. To diversify and strengthen the raw materials base of the sea food industry, introduction of new technology pertaining to mariculture and processing may be necessary and may have to be borne by the industry. The cess on marine exports levied by MPEDA could be utilised for the purpose. Additional assistance if any may be considered by NABARD from its R&D funds on selective basis.

vii. In order to provide stability to the sea food exporting units, it may be necessary to create a sound domestic sales base by allowing 25-30% sales in the domestic market. This would give the necessary resilience to the unit to meet the challenges of fluctuating export markets as well as seasonal sales volumes. The concession allowed to EOUs including packing credit may be extended to domestic sales too.

viii. Introduction of resource specific vessels through joint venture test fishing with foreign collaboration and equity participation of MPEDA and state run corporations have been considered for tapping deep sea resources specially that for high priced blue fish and yellow fish Tuna species. Policies need to be framed by GOI in consultation with the industry, research institutes, development agencies and financial institutions, to tap these measures.

ix. Although the Andamans are estimated to harbour a stock of one lakh tonnes of Tuna in addition to other large untapped marine species, the sea-food industry is not able to develop because of poor marketing arrangements in addition to other problems. It is not possible to export sea food from Andamans without touching the main land. An extra cost of Rs.7/kg on this account, renders the business uneconomical. Though the export markets in South East Asia is close to Andamans yet due to existing policy regulations, the produce has to touch main land before export to another country. A policy change could certainly be factored in if the actual catch volumes can be recorded and taxes/other issues, are settled in a transparent manner.

x. Several important value added products i.e. drugs have already been developed from chemicals found in coral reef organisms. The most famous of these is AZT, a treatment for HIV patients. Unique compounds from coral reefs have yielded treatments for cardio vascular diseases, ulcers, leukemia and skin cancer. In addition, the unique skeletal structure and corals has been used for bone grafting. More than half of all new cancer drug research focuses on marine organisms. Coral reefs have thrived for over 50 million years, but we have lost over 20% of it over the last 20 years due to pollution/global warming etc.. We need to protect this unique resource for evolving high value products in the future and also to protect our island ecosystems. A national policy needs to be formulated on the lines of Great Barrier Reef and Hawaiian Reef conservation to conserve our national treasure.

## **6. Role of NABARD in Value Addition**

NABARD has been supporting the sea food industry through various credit & non-credit support mechanism.

1) The National Bank meets the credit need of the sector through refinance assistance to Commercial Banks, Regional Rural Banks & Co-operatives against their financing. The refinance assistance from NABARD accounts for 40% of the investment credit which has flown into marine fishing & sea food processing industry. The IDA sponsored programme for mechanisation of marine fishing had been routed through NABARD. A number of fish processing units with IQF plants and fish Surimi projects, have been supported by the Bank.

2) NABARD provides for direct finance to State Governments and Government supported corporations under Rural Infrastructure Development Fund (RIDF) for infrastructural projects in the sector. NABARD has sanctioned 2 projects or fishing harbours in West Bengal and 13 more projects are in the pipeline.

3) NABARD also funds R & D projects in the fisheries and several R&D projects in the fisheries sector have been completed.

## **7. NABARD Blue Print for Promotion of Value Added Products**

The blue print for promotion of Value Added Products in the sea food industry according to National Bank is designed to address the twin issues of (i) increase of unit value and (ii) that of

diversification and widening of raw material base. The milestones for the proposed road map are as under:

**a) Towards Increase in unit Value**

i) Value addition to fresh fish through formulation of ready to eat fish products for the domestic market may be prioritised by the research institutes and its integration with product marketing involving the sea food industry.

ii) The Share of IQF shrimp products in sea food export is little more than 2%. The sea food export industry should set a target of increasing its share to at least 10% over the next five years. The possibilities and investment measurements may be assessed in consultation with the industry and an implement able development plan chalked out.

iii) Similarly, a target may be set for increasing the share of IQF products of squid & cuttle fish by 5% in the five years. An investment plan may be prepared in consultation with the industry.

iv) Attempts may be made to increase the unit value of frozen fish through promotion of filleting, formulation of breaded & battered products, other ready to eat products in consumer packs, as it accounts for 38.3% of total exports by volume. The possibilities and the specific needs of the industry may be evaluated and investment plans prepared accordingly.

v) New product development with inhouse expertise specially for non-conventional resources such as deep sea catches should be encouraged to address better utilization of available raw materials. Our food research institutes may draw up necessary R&D programmes, to address the technology gap.

vi) Better unit value realisations with increase in brand image through generic marketing efforts, should receive due attention. MPEDA may provide necessary support to the industry in this effort.

**b) Towards diversification and widening of raw material base**

The raw material base could be widened through exploitation of oceanic and deep sea resources; onshore and offshore mariculture, utilisation of brackish water aquaculture resources, aquaculture of high value species in inland sector and import of raw material for processing.

Diversification of offshore fishing involves upgradation of the small scale motorized and mechanised crafts and introduction of resource specific fleet such as tuna long liners, purse seiners, squid jiggers, pole and long line fishing vessels, etc. The respective State Governments could develop investment plans in respect of introduction of resource specific vessels involving foreign collaboration and equity participation from State owned corporations and MPEDA. The credit requirements of such investments could be met by financial institutions for which refinance assistance would be available from NABARD. This would be a concrete step towards

fulfillment of our national obligation as a signatory of the UN convention on the law of the sea (UNCLOS) for optimum utilization of marine resources within our EEZ.

## 8. Conclusion

Value addition and products diversification are two sides of the same coin and we meet diversify our exports by addition of newer species through aquaculture/mariculture. The problems in respect of mariculture are well known. We have not addressed these problems adequately considering the total stagnation in marine landings and non utilization of mariculture resources. Development of the above sectors would involve infusion of advanced technology for offshore cage farming as well as for inshore mussel / oyster farming. Infusion of heavy capital investment is the other prerequisite which needs to be met by the financial institutions. A time bound, well defined investment programme backed up by appropriate policy framework and technology infusion programme, needs to be implemented during the XI Five Year Plan period. (2007-2012)

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