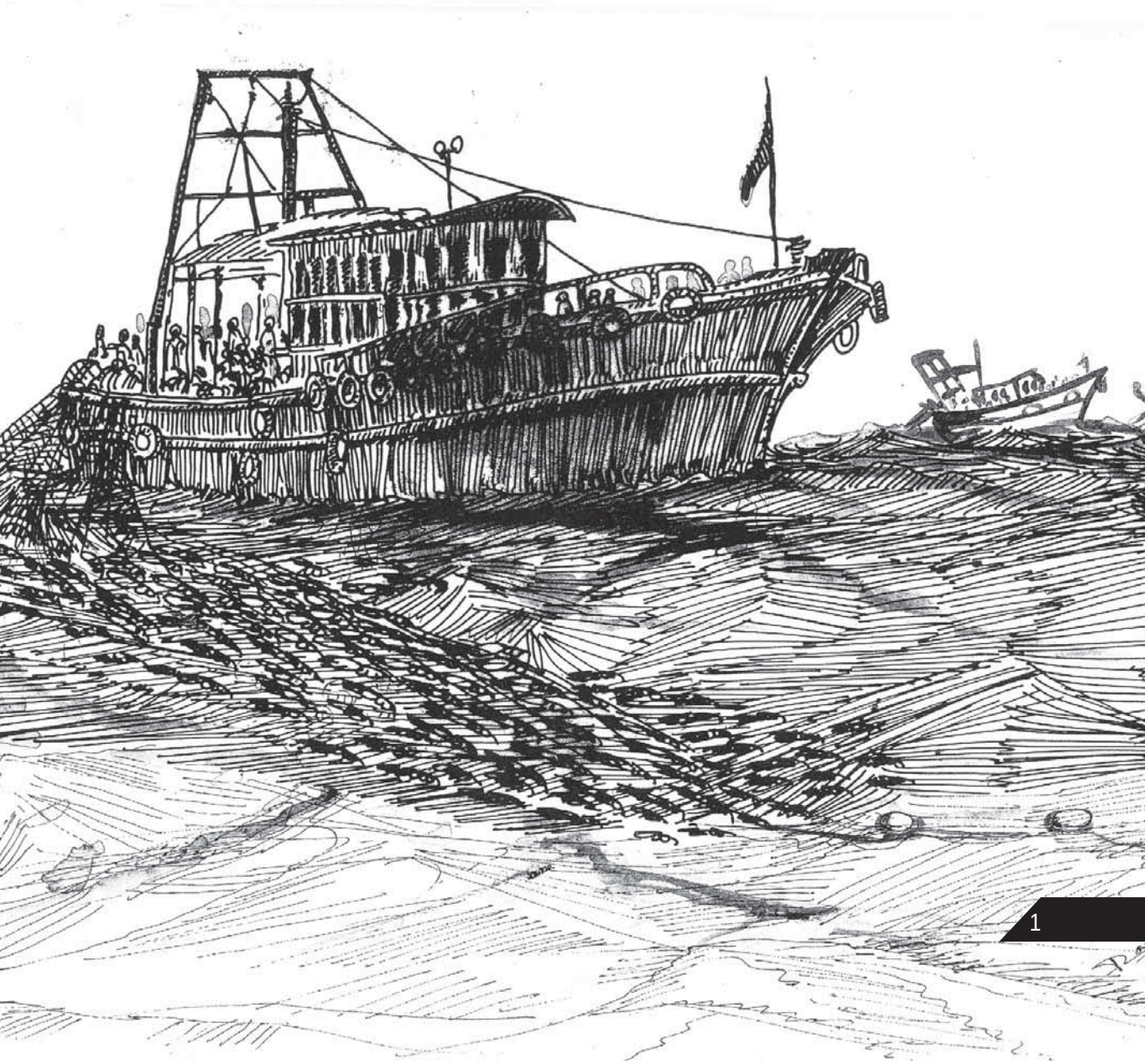
Indian Fisheries: The Setting

01



01

Indian Fisheries: The Setting

R.Sathiadhas, Pradeep Katiha,
Shyam. S. Salim and R.Narayanakumar

The Indian fisheries

Indian fisheries and aquaculture is an important sector of agriculture, providing employment, food and nutritional security particularly to the rural poor and better access to protein rich food for all. It is also contributing to the agricultural exports and engaging about fourteen million people in different activities. With diverse resources ranging from deep seas to lakes in the mountains and more than 10 per cent of the global biodiversity in terms of fish and shellfish species, the country has shown continuous and sustained increments in fish production since independence. With support of government initiatives and policies, various innovations by scientific community, support from private industries and companies, fishermen, farmers, NGOs and self help groups, the sector has evolved from a modest, traditional and subsistence level to a sophisticated and modern enterprise. The country now occupies the third position in total world production and second in aquaculture production. 'Fish for All forever' necessitates the sustained development of the sector to cater nutritional needs of millions of people in future. India with vast water resources ranging from seas to cold hill streams and over 10 per cent of the fish biodiversity on earth has high scope for producing fish by utilizing the untapped potentials of inland and marine sector. These resources at national level are summarized in Table 1.1.

Table 1.1 Indian fishery resources – a glance

Marine Resources	
Length of coastline (km)	8129
Exclusive economic zone(EEZ) million Sq.Km.	2.02
Continental shelf ('000 sq. km.)	530
Number of fish landing centres	1376
No. of fishing villages	3322
No. of fishermen families	764868
Fisher folk population	3574704

Inland Resources	
Total inland water bodies (lakh ha.)	73.59
Rivers & canals (km)	195210
Reservoirs (lakh ha.)	31.5
Tanks and ponds (lakh ha.)	24.14
Flood plain/derelict waters (lakh ha.)	7.98
Brackishwater(lakh ha.)	12.40

Source: From census reports and DAHDF publication

Fish production in India

Indian fisheries sector has growing steadily from the first plan onwards with the annual fish production of 0.754 million tonnes during 1950-51 to the level of 9.57 million tonnes during 2012-13.

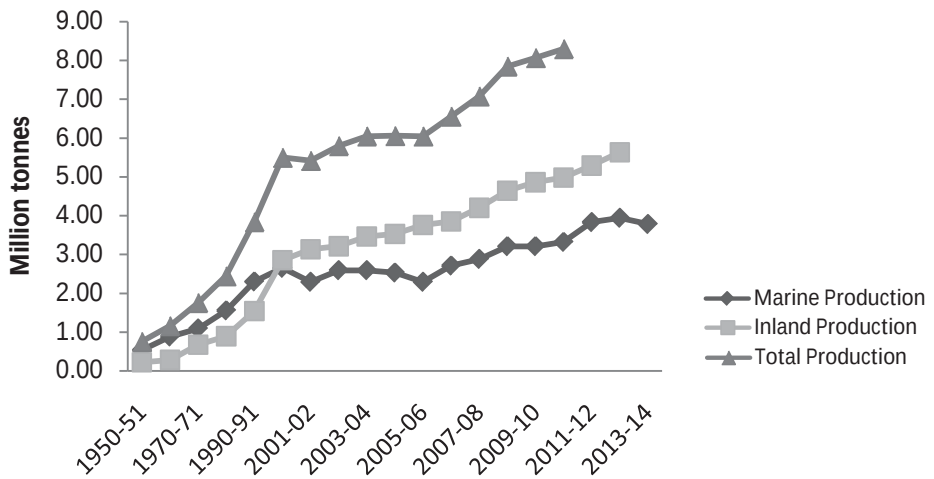


Fig 1.1 Trends in Indian Fish production (Total, marine and inland) from 1950-51 to 2012-13

The sector has vast production potential particularly for inland aquaculture and culture-based fisheries resources. It showed an average growth of 4.43 per cent over the plan periods. The marine fish production has increased from 0.53 million tonnes in 1950-51 to 3.78 million tones in 2013 -14. Inland fishery sector also grown steadily from 0.22 million tonnes during 1950-51 to about 5.63 million tonnes with an annual growth rate of 4.11 per cent in 2012-13. Although, evolved as a livelihood activity, fisheries sector in India had made rapid changes, transformed itself to the present status of an industrialized multi billion industry, contributing immensely to employment generation, food and nutrition security and foreign exchange earnings to the country.

Contribution of the sector to agriculture and national GDP increased steadily over the past few years. The GDP of fisheries sector reached at Rs. 78,000 crore during 2012-13 from

Rs. 9000 crore during 1993-94. Currently, fisheries contribute 0.83 per cent to national GDP of the country and 4.74 per cent of agricultural and allied activities.

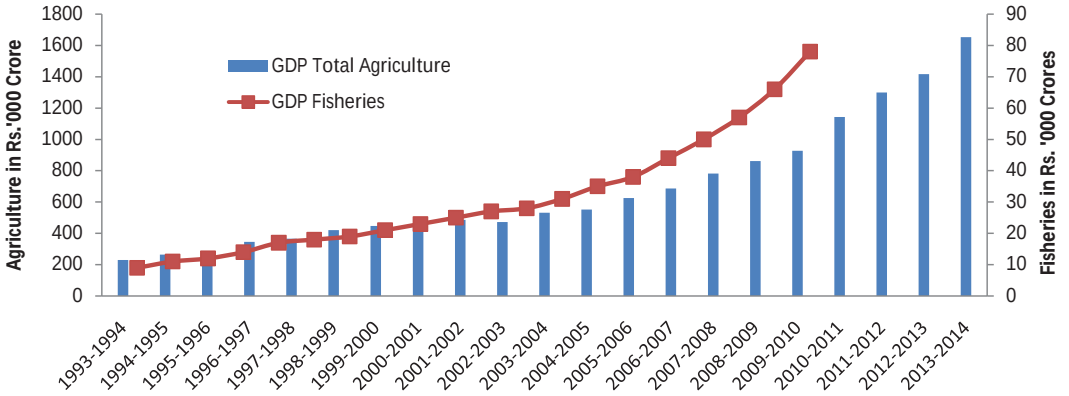


Fig 1.2 Gross Domestic Product of agriculture and fisheries sectors

Source: DAHD & F, 2008

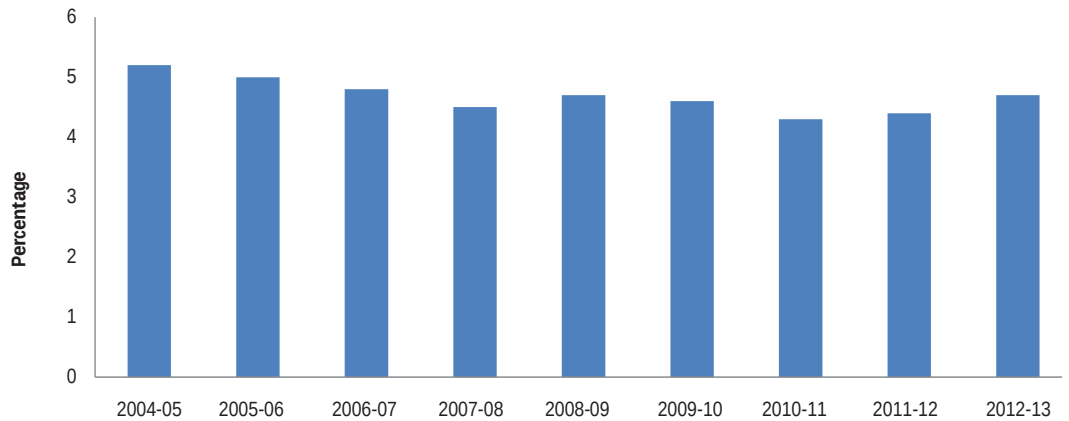


Fig. 1.3 Percentage share of fisheries sector in agriculture

Source: DAHD & F, 2008

Export of fishery products

The fisheries sector has been one of the major contributors of foreign exchange earnings through export. The marine products exports from India continue to surge up new heights and unabated by global recession. Frozen shrimp accounted for 64 per cent of the earnings followed by frozen fish and cephalopods. European Union is the prime geographic destination followed by US, China and South East Asia, for Indian seafood. The marine export value reported during 2013-14 was at 5.08 billion dollars.

The future of fisheries export would be influenced by the consistent compliance with food safety measures (HACCP and SPS standards). Cost of implementation of these measures are high and requires government policies and support system to be designed to minimize the cost of compliance with international standards to make smaller plants viable and export competitive.

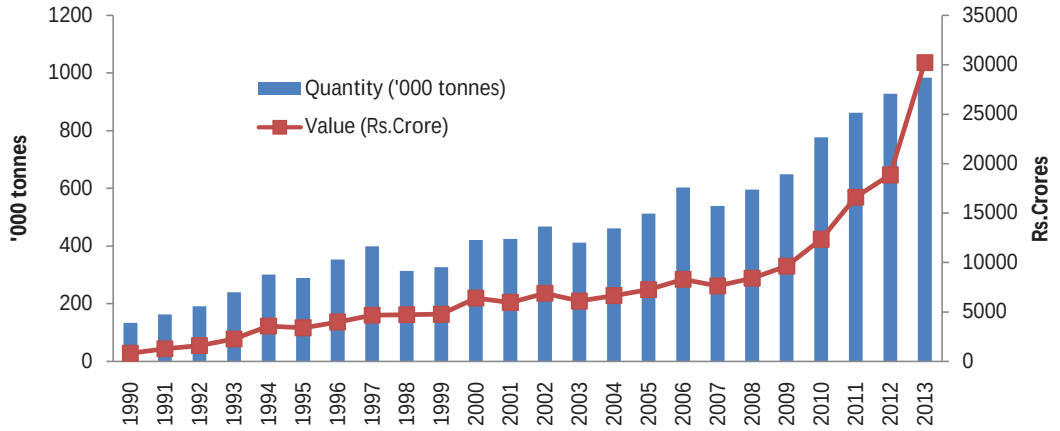


Fig. 1.4 Trends in export of marine products -1961-62 to 2013-14

(Source: Marine Products Export Development Authority)

Employment

Marine fisheries sector provides employment to nearly 32 lakh people in fishing and allied activities. About 11 lakh people are employed in fishery related activities like marketing of fish, repairs of nets, processing of fish, etc. Sector is also providing employment to nearly 10 lakh active fishermen and 11 lakh part time fishermen. Various welfare measures are in place to improve the living standards and income of the fishermen of the country. In the XI plan also due consideration was given to formulate programmes for the benefit of different stakeholders of the sector.

Coastal Fisheries

The production from marine sector has progressively increased nearly by six times during the past 50 years. Much of the fishing effort concentrated on the shelf fall within 2-200m depth. Analysis of the sectoral trend indicates that the mechanized sector accounted for 68 per cent, motorized 25 per cent and the rest by artisanal by yield. The inshore waters are under heavy or exhaustive fishing pressure. Present estimates showed that about 1.35 lakh mechanized and motorized crafts and about 1 lakh non-motorized crafts are engaged in fishing activities in coastal waters. Most of the resources are optimally exploited or marginally over exploited. The sustainability of many resources harvested from the coastal areas has been jeopardized by the incessant fishing pressure coupled with indiscriminate fishing of juveniles, increase in by catch and discards, impacts of pollution, and other anthropogenic causes. Interventions like regulating fishing pressure by adopting optimum fleet size and capacity, by catch reducing devices, strict adherence to gear and mesh regulations, stock enhancement programmes like sea ranching and diversification to tap exploited potential resources are needed to sustain marine fisheries in coming years.

Island Fisheries

The potential yield estimates for tuna from coastal and offshore Andaman waters is around 1lakh tonnes of which 800 tonnes is only harvested at present. Potential tuna resources in the seas around Lakshadweep have been estimated to be between 50,000-90,000 tonnes. About 10,000 tonnes of tuna are caught mostly by pole and line and troll lines. While the coastal fisheries are under heavy fishing pressure, the potential of island fisheries should be tapped judiciously. There is need for diversified fishing practices, provision of deep sea fishing vessels as well as on shore facilities for processing, for both export and domestic markets. Considering the fisheries wealth of island systems and the limited utilization of the resources, it is suggested that mechanism may be developed for harvesting, preserving, processing and transporting the catches from the islands to the mainland and for export.

Mariculture

The present marine fisheries scenario is characterized by declining yields from inshore waters and increasing conflicts among stakeholders, whereas the increasing demand for fish in domestic and export markets indicates good prospects for large-scale sea farming and coastal mariculture. The mariculture potential of India is vast, as there is great scope for developing farming of shrimps, pearl oysters, mussels, crabs, lobsters, seabass, groupers, mullets, milkfish, rabbitfish, sea cucumber, ornamental fishes, seaweeds, etc. Although about 1.2 million ha is suitable for land-based saline aquaculture in India, currently only 13 per cent is utilized. Mariculture activities are presently confined to coastal brackishwater aquaculture, chiefly shrimp farming. Cage culture has made possible the large-scale production of commercial finfish in many parts of the world and can be considered as the most efficient and economical way of rearing fish. The Indian coast offers many ideal locations for cage farming; potential sites include bays in Ratnagiri, Goa, Karwar, Palk Bay, Larsons Bay, Gulf of Mannar, Lakshadweep islands and the Andaman and Nicobar Islands. Potential fish species for cage culture includes groupers, snappers, seabass, rabbitfish and cobia. CMFRI has successfully demonstrated sea cage fish farming at selected locations along the coastline of the various states of India. Sea cage farming is a technology of great potential for augmenting fish production. Cage culture has the potential of progressively compensating the drop in marine fish catch.

Inland Aquaculture

The sector has established itself as the major contributor to Indian fish production. The fish yield from freshwater water bodies in form of ponds and tanks reached 1.8 t/ha from meager 50 kg/ha during 1974-75. Considering the potential of the resources, it has immense scope for vertical integration and horizontal expansion in form of increase in fish yield and brining more and more area under this activity. Further, Indian freshwater aquaculture is carp based and over 90 per cent of its production is either from Indian major carps or exotic carps. During XI Plan steps have been initiated to address different problems of this sector, e.g. diversification, fish feed production, quality fish seed, etc.

Inland Fisheries

As mentioned above, since mid-eighties the inland fish production favoured aquaculture over fisheries, due to number of reasons. Much emphasis has been laid on responsible fisheries in inland open waters, particularly the rivers and estuaries, but due to open access, multiple uses and other anthropogenic pressures, these measures could not yield expected results. The scope to harnessing untapped fish production potential for culture-based fisheries resources (reservoirs and floodplain wetlands) was highlighted many times at different levels. Last few plans also tried to address this sector. But, during XI plan under RFD programme of NFDB large number of reservoirs were stocked with fish seed. It resulted in significant enhancement in fish yield (small reservoirs from 50 to 174 kg/ha). The average yield estimated from Indian reservoirs (small, medium and large) during 2010 was 110kg/ha against 30 kg/ha during last plan. Floodplain wetlands are considered rich in aquatic biodiversity and provide sustaining livelihoods and nutritional security to large local communities. These natural aquatic systems which have high potential for increasing production and productivity, can be utilized for sustainable fish production without altering their ecological functions. The technologies for fisheries enhancements and enclosure culture (pen and cage) were also popularized for production of quality fish seed and table size fish.

Fish demand and supply as healthy food

The general awareness about fish as a healthy food and health concerns greatly influenced the consumption of fish in the country. The demand for fish and fishery products is increasing considerably both at domestic and export markets. The total demand for fish is projected at 9.74 million tonnes for 2012 and 11.85 million tonnes by 2017. The supply projections fall short of the demand and so the production and productivity issues of both inland and marine fisheries and aquaculture are to be addressed. Concerns about the quality and hygiene greater demand for improved and value added fish and fishery products are the other areas to be addressed. Thus the current plan should address the demand and supply of fish and fishery products along with quality concerns.

Ownership and water quality

Countries' vast open large water bodies and small closed water bodies have multiple users, ownerships and stakeholders. Realizing full potential from these water bodies by adopting improved/innovative technologies often constrains with these issues resulting in reduced production. Open waters are also constrained by environmental degradation and manmade modifications through water diversion schemes affecting fisheries. Concerns of property regime, overexploitation of natural stocks, ecosystem degradation, economic losses, etc. require immediate attention. The multiple ownership of water bodies for sustainable exploitation of fish stocks can be achieved through community participation and co-management. Implementation of code of conduct for fisheries is also a need of the hour.

Non food fisheries

Development of non food fisheries such as ornamental fish farming, pearl cultures, etc. are primarily aimed at the export and domestic demand. Presently most of the valued

varieties of ornamental fishes are caught from the wild, which have adverse impact on the natural resources and ecosystem. This is more prevalent in marine ornamental fish sector which is at initial stages of development in the country. Technologies have been developed for captive breeding and culture of various freshwater and marine ornamental fishes by various institutions. Further improvements of technologies is required to put the country in the global ornamental fish trade are to be taken on priority basis. Appropriate support on various inputs, skill development of entrepreneurs etc. are the areas to be looked upon.

Seed supply

The fish production from aquaculture largely depends on quality and quantum of fish seed available for culture. The present estimates for fish seed production from major fish seed production states of India are 11,736 million fingerlings and 26,276 million fry (NFDB, 2011). Inland fishery sector requires around 30 thousand million seeds mainly of freshwater finfishes like carps and freshwater prawns. Similarly brackish water sector need seeds of P.monodon and other crustaceans. Brackishwater sector is looking for alternative species for culture because of the wide spread disease incidence in shrimp farming. Recently the demand for the seed of quality marine/brackishwater species like seabass, etroplus, cobia, mullets etc have increased mainly as an alternative species to prawn in brackishwater aquaculture system. Development of technologies and facilities are to be taken up on a priority basis to ensure an adequate supply of seeds for both freshwater and brackishwater/marine sector.

There are also concerns about the quality of seed used for culture. Demand for improved varieties of seed for both fresh water and brackishwater species in terms of growth and disease resistance are increasing. In freshwater aquaculture scenario, improved varieties of rohu has increased production considerably and similar effort in the case of other species are also required. Development of improved varieties using various biotechnological tools is also needed in the ornamental fish sector.

Conservation

India is one among the 12 mega-biodiversity countries and 25 hotspots of the richest and highly endangered eco-regions of the world. Climatic and environmental changes, overexploitation, habitat loss, inadequate regulatory and conservation regime, and various other anthropogenic activities are among the major causes of species loss that, according to certain estimates, is of the order of a species per day. Regulating fishing pressure, replenishment of native stocks through ranching programmes, improvement of fish breeding grounds and habitat restoration by installation of artificial reefs and Fish Aggregating Devices and development of 'Aquatic Bio reserves' are to be undertaken to conserve biodiversity. Ex situ conservation of fish germplasm and bio inventorying resources must also require greater attention.

Disease surveillance

Outbreak of diseases in aquaculture farms and natural water bodies leads to loss of stock and economic loss. Strong surveillance network on horizontal spread of disease would help to make preventive measures to control diseases. Data collection on seasonal disease outbreaks would help to workout preventive measures to save stocks. Establishment of 'Aqua clinics'

which have unified protocols for identifying disease causing organisms, can provide services to farmers on diagnosis and remedial measures.

Infrastructure

Many fishing harbours are operating in unhygienic condition leading to erosion of fish quality and loss of fish. Owing to overcrowding of fishing boats, poor management and maintenance of fishing harbour infrastructure in the country, the fish hygienic conditions and sanitation standards have met with all-time ebb and being severely criticized by the fish importing countries. It is imperative that the hygienic condition of the harbours need to be improved taking into consideration the issues in each harbour.

Ice plants, chilled storage and fish freezing/processing units facilitate in effectively preserving fish catch, reduction of wastage and preservation of fish against spoilage. These units also help in maintaining minimum price to fishermen by controlling the supply in market and preventing price crash due to glut. It would also help in effective preservation of fish quality as per international standards and help in increase of domestic and export market. Post-harvest fishery activities including processing, product development, transport and marketing provide greater employment than the harvesting sector. The post-harvest loss in marine fisheries sector is accounting more than 20 per cent of its landings due to lack of cold chain from the point of fishing, transport, storage and marketing.

Value Addition

India was recognized as the raw material supplier till early nineties. But, due to interventions and different plans, particularly in form of MPEDA, the fish processing and value addition has got momentum both in quantity and composition. But scope still exists for bringing more and more fishery products under the umbrella of value addition. Considering the stagnant marine and inland capture fish production, thrust may be given for value addition during the XII Plan period. Research and Development and popularization of value added products for domestic and export markets have to be strengthened.

On par with Agriculture

Indian fisheries sector has been growing steadily from the first plan onwards with the annual fish production of 0.754 million tonnes during 1950-51 to the level of 9.57 million tonnes during 2012-13. The GDP of fisheries sector reached at Rs. 78,000 crores during 2012-13 from about Rs. 9000 crores during 1993-94. Currently, fisheries contribute 0.75per cent to national GDP of the country and 4.56 per cent of agricultural and allied activities. The fisheries sector in India is associated with the poor, illiterate and under nourished populations belonging to one of the economically weakest sections of the society. The sector immensely caters to the country's protein requirement and registered highest export earnings growth rate among agriculture commodities. This sector deserves greater support from the government in form of the incentives/concessions as in agriculture. It is matter of concern that aquaculture is being treated as a commercial activity and concessions extended to agriculture are not extended to aqua farmers. This results in increase of tax burden on farmers and higher tariff for power. Hence aquaculture needs to be treated on par with agriculture with regard to bank finance, power tariff, income tax, subsidy on inputs, transportation etc.

Policy

Though most of the policies are focusing on the welfare measures of the fisherfolk, there is a need to implement policies related to sustainability and conservation of resources. Fisheries and aquaculture are multi-stakeholder activities and is a state subject, it is necessary to develop a broad framework for harmonizing various acts under which fisheries is administered. Revision of existing Marine Fisheries Regulation Act (MFRA) and inland model bill, uniform leasing policies for open water bodies including marine and inland waters, treating fisheries on par with agriculture in tariff rates for electricity and water, fright charges, crop insurance for aquaculture, are to be considered. A national mariculture policy is to be formulated to support and encourage the management of the nation's marine resources. Well formulated and implemented policies are vital in the effective implantation of various programmes and thereby contributing to the overall growth of the country.

Capacity strengthening

The fish production and productivity is directly related to the level of skills of the fishers and fish farmers. One of the major reason behind the low productivity of both inland and marine waters for aquaculture and fisheries is low technical know how with the fisher community and even at the level of State Department of Fisheries (DoFs). Therefore, capacity building and skill development were the two issues greatly addressed under XI plan. Large number of stakeholders was trained on different technologies. The interactions among the fishers, state department personnel and research institutions have increased. But, much is needed to be done.

The poor staff strength in DoFs is another important constraint affecting the performance of the departments and efficiency of the sector as a whole. With increase in the work load and diversity, the departments should be strengthened to have better results.

Background and Objective

Literacy, income and health are interlinked for overall development of the personality of an individual and development of the society. Education gives respect and value to an individual in a society and is graded high among the population especially in rural communities. Education is a basic right for all human beings and an essential prerequisite for infusing self-confidence, reducing poverty, improving living conditions and building a food-secure world. The Government of India has placed education at the centre of the 11th Five Year Plan and regarded it as India's Education plan. The government places highest priority on education as an instrument for achieving rapid and inclusive growth. It presents a comprehensive strategy for strengthening the education sector covering all segments of education pyramid. (Singh, 2007).

Literacy is the ability to identify, understand, interpret, create, communicate and compute using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve his or her goals, developing his or her knowledge or potential and participate fully in the community and wider society. (UNESCO Institute for Education, 2003).Literacy is a key aspect of human resource development (HRD) enabling people's livelihoods and capabilities, influencing their access to information and

resources and capacity to manage change. Literacy can help to reduce social marginalization and vulnerability faced by many small-scale fishing communities enhancing effective social participation, influencing people's access to rights and entitlements. (FAO, 2006).GIobally there are about 771 millions aged 15 and above, without basic literacy skills. Out of this, 130 million are in South-east Asia, 381 million are in South west Asia and 511 are in Asia and Pacific. (UNESCO, 2006).

Literacy and numeracy are integral to the livelihoods of many small-scale fishing communities. Despite the educational marginalization faced by many fishing communities, there appear to be rich cultures of literacy with often-high levels of motivation for functional literacy learning. Fishing communities often face educational disadvantage due to geographical and social marginalization. (FAO, 2006).

In India, there is lack of a comprehensive data base on the literacy level of the fisher folk. The National Maine Fishery Census (2005) had estimated the literacy level of the head of the family only and not that of the family. The data collected by the National Sample Survey Organization (55th round) shows that men's literacy rates within fishing communities are higher than those of agricultural labourers. Past studies showed that in Kerala, India, literacy rates in coastal fishing communities were 78 per cent, with women higher than men - figures comparable with other rural communities. On the other hand, in Orissa, figures suggest that fishing communities have much lower rates of literacy than agricultural communities, particularly among women. However these data are collected for isolated location specific studies and there is lack of a comprehensive national data base on literacy.

Income of the household is an important indicator of the socio economic status in a community. The fisheries sector in India has undergone rapid changes over the last six decades to develop from a sustenance fishing to the status of a multi-crore fishing industry. However the economic and social benefits associated with this transformation have not trickled down to the grass root level of the Indian fishing community. The income distribution in the sector is highly skewed in favor of the mechanized sector, which controls over 70 per cent of the total fish landings, though they account for only 30 per cent of the fishing community. The per capita area available per fishermen is gradually declining over the years. The per capita earnings also vary among the fishermen working in the three different sectors of the fishery.

Assessment of health status of fishing communities is very important. There are many factors that influence people's health. These factors are often interactive and outside the individual's control. An unhealthy condition in a family has psychological and economic impact not only on the concerned individual but also on the entire household. An UNICEF study has estimated that in Cote d' Vlains, in urban households, the family which lost one member due to AIDS, have their income reduced by 52-67 per cent, while their expenditure increased four folds. In India, the weak, marginal section of the society is vulnerable to all sorts of health hazards including TB, lung and skin infection, AIDS, cancer and related ailments. The small and marginal section of the fishing community, which lies in the bottom of the socio economic strata, is no exception to this.

Very limited information is available regarding the health and nutritional status of the fisher folk in general and the fisher household in particular. The National Agricultural Technology Project (NATP) study on the socio economic condition of the fisherwomen in

the coastal ecosystem of Andhra Pradesh, Tamilnadu, Kerala and Karnataka has assessed the nutritional and health status of the fisherwomen and preschool children and graded them under different degrees of malnutrition.

Among the recent ailments, HIV/AIDS has become an epidemic spreading across the world and it is estimated that 10 per cent of the global AIDS affected population is in South Asian countries. A few studies have documented the incidence of AIDS in fishing community especially where large scale migration of fishermen is observed. (SIFFS, 2004). Besides the fight against such ailments need a systemati data base of the health status of the target group.

Thus in light of the above discussion, it is observed that presently there is a lack of a comprehensive data base on the literacy, income and health status of the fisher folk in India. These three parameters are the building blocks of the pyramid of socio- economic development of the community. Hence the present project is proposed to assess the literacy, income and health status of the fisher folk in India to develop a strong data base for the use of administrators, policy makers, researchers and academicians.

Objective

The objective of the research study is to assess the status of literacy, health and income of marine and inland fishers, fish farmers and workers in allied activities both in capture and culture systems

Methodology

Sampling design

The entire fishing arena was divided into marine and inland sectors and further classified into capture and culture sub sector. The distribution of samples for the entire study will be as follows

Table 1.2 Distribution of sample respondents in marine fisheries sector.

Sl.No.	Sub sector	Details	Sample Size
1.	Capture	Rural households from all maritime states	700
		Urban households from all maritime states	700
2.	Mariculture	Andhra Pradesh, Kerala, Karnataka, Maharashtra ,Goa and Gujarat	400
3.	Total		1800

Table 1.3 Distribution of sample respondents in fresh water aquaculture sector

Sl.No.	Sub-sector	Details	Sample size
1.	Ponds and tanks a) Extensive	Assam	100
		West Bengal	100
		Orissa	100
		Tamilnadu	100
	b) Semi-intensive & intensive	Andhra Pradesh	50
		Punjab	50
2.	Total		500

Table 1.4 Distribution of sample respondents in inland fisheries sector

Sl.No.	Sub-sector	Details	Sample size
1.	Reservoirs a) Small reservoirs b) Medium reservoirs c) Large reservoirs	Tamil Nadu Kerala Madhya Pradesh Jharkhand Uttar Pradesh Andhra Pradesh Madhya Pradesh Himachal Pradesh	50 50 50 50 50 50 50 50
2.	Wetlands	Assam West Bengal Bihar	50 50 50
3.	River	Ganga :Uttar Pradesh Brahmaputra : Assam Narmada : Madhya Pradesh Gujarat Krishna Andhra Pradesh	50 50 50 50 50
4.	Estuary	Hoghly-Matlah West Bengal Narmada: Gujarat	50 50
5.	Brackishwater	Lake Chilka-Orissa Lake Pulicat-Tamilnadu Brackishwater: Vembanad	50 50 50
6.	Cold water	Uttarakand	50
7.	Total		1,100

Table 1.5 Distribution of sample respondents in brackishwater aquaculture sector

Sl.No.	Sub-sector	Details	Sample size
1.	Extensive	West Bengal Kerala	100 100
2.	Improved extensive	Andhra Pradesh Gujarat Tamilnadu	100 100 100
3.	Total		500

Table 1.6 Distribution of sample respondents in allied sector

Sl.No.	Sub-sector	Details	Sample size
1	Processing sector	Kerala, Gujarat, Andhra Pradesh and Maharashtra	200
2	Marketing	Kerala, Gujarat, Andhra Pradesh, Maharashtra, Delhi, Punjab, West Bengal and Madhya Pradesh	400
3	Total		600

Data Collection

The data was collected with the pre-tested schedule (given in Annexure-I) from the selected sample respondents giving due representation for different regions and fishery activities. The state-wise and institute-wise sample distribution is given in table 1.7.

Table 1.7 State wise breakup of sample respondents under different categories

Sl. No.	State	Marine	Inland	Fresh water aquaculture	Brackish water aquaculture	Processing and Marketing	Total
1.	West Bengal	140	100	100	100	50	490
2.	Orissa	140	50	100	0	0	290
3.	Andhra Pradesh	190	100	50	100	100	540
4.	Tamilnadu	140	100	100	100	0	440
5.	Puduchery	140	0	0	0	0	140
6.	Kerala	265	100	0	100	100	565
7.	Karnataka	215	0	0	0	0	215
8.	Goa	190	0	0	0	0	190
9.	Maharashtra	190	0	0	0	100	290
10.	Gujarat	190	100	0	100	100	490
11.	Jharkhand	0	50	0	0	0	50
12.	Madhya Pradesh	0	150	0	0	50	200
13.	Bihar	0	50	0	0	0	50
14.	Assam	0	100	100	0	0	200
15.	Delhi	0	0	0	0	50	50
16.	Himachal Pradesh	0	50	0	0	0	50
17.	Punjab	0	0	50	0	50	100
18.	Uttarakand	0	50	0	0	0	50
19.	Uttar Pradesh		100	0	0	0	100
20	Total	1,800	1,100	500	500	600	4,500

Tools of Analysis

Conventional tools of analysis will be employed to process the data and bring out the literacy, income and health status of the fishers in India. Appropriate econometric tools will be employed to study the relation between different parameters of the socio economic profile within and across the systems.

Period of Study

The study was conducted during the period from November 2009- March 2011.

Activity milestones

1. Identification of sample states and districts / Sample size for the study
2. Preparation of database on secondary sources of information on the parameters

3. Finalization of questionnaire
4. Data collection work
5. Visit the data collection centers by co-coordinators
6. Mid term review workshop by Principal Coordinator on the progress of work and development of standard dummy tables across sectors
7. Dispatch of data sheets as decided in the mid-term review meeting
8. Compilation of data as decided in the mid-term review meeting
9. Centralization of tabulated data on excel sheets / draft reports on specific sectors with Principal Coordinator
10. Submission of reports by the Coordinators to the Principal Coordinator
11. Compilation and finalization of report by the Principal Coordinator
12. Submission of draft final report to SMD
13. Review meeting of the draft final report and finalization of the Report
14. Submission of the final report to DAHDF

The final report is presented below. The organization of the report is as follows

Budget

The total budget allocated was Rs. 13.68 lakhs apportioned across field survey (Rs. 6.08 lakh) TA (4.60) and other contingency (3.00 lakhs)