



“A Study on the Career Advancement and Entrepreneurship in Fisheries Sector during Pandemic”

1. Amiyanshu Amarnath

Research Associate, PGDM, IIMS, Pune, India

2. Dr Samrat Ray, Dean and Head of International Relations, IIMS, Pune

Aim:

To evaluate the career prospectus and Entrepreneurship probability in different arenas of Fisheries sector to highlight the advancement in career and Entrepreneurship pertaining to its awareness and expertise.

Objectives:

1. To emphasize on the demand of different fields in Fisheries.
2. To create awareness pertaining to the career advancement and Entrepreneurship in Fisheries
3. To enlist different parameters influencing the potential of Fisheries sector.
4. To monitor the importance and benefit of Field work and Practical Implications in career development and Entrepreneurship in Fisheries sector.
5. To highlight the applications of Fisheries and knowledge of norms and regulations through the multi-disciplinary approach in Fisheries.
6. To enhance the challenges faced by people with different profession and thus, enlighten the crisis to overcome the discrepancies in Career advancement and Entrepreneurship during Pandemic situation.

Rationale:

As there are competitions in the field of Fisheries due to excess qualified professionals and less awareness about the career in Fisheries. It is noteworthy to focus upon the challenges of students and people with different professions to acquire the knowledge of Fisheries correlating with the parameters to be developed for improvement of career development and Entrepreneurship. The mode of evaluation of the different parameters of awareness about the career options and the difference between the changes in career advancement in pre- and post-Pandemic situation is a matter of research interest. The norms and regulations as per the Government of India needs appropriate implementation and awareness in people belonging to the rural sector and fishermen community to enlighten the career advancement in the society. The research needs more validation for the awareness of the career development and

Entrepreneurship during the Pandemic situation which supports technical knowledge and challenges towards Field work and Experimentation in Fisheries sector.

Introduction:

Fisheries sector is complex enterprise comprising of capture and culture-based fisheries especially Marine fisheries, Coastal aquaculture, Inland fisheries, Freshwater aquaculture and Coldwater fisheries to food, health, economy, exports, employment and tourism of the country. Indian fisheries sector showed sustained increments in fish production constituting about 7% of the global fish production, the sector contributes to 1.07% of the national GDP. (Based on National Institute of Agricultural Economics and Policy Research)

Fisheries sector contributing agricultural production sector with more than 10 % of the global biodiversity in terms of fish and shellfish species from diverse resources ranging from deep seas to bakes in the mountains. Indian fisheries with a long coast line of 8118 Km, 2.02 million sq. Km of Exclusive Economic Zone, 0.53 million sq. Km of Continental Shelf, 191024 km of River and Canals, 3.15 million ha of Reservoirs, 2.35 million ha of Ponds and Tanks, 1.3 million ha of Oxbow Lakes and derelict waters, 1.24 million ha of Brackish waters and 0.29 million ha of Estuaries offers vast potential for development of fisheries. Indian fishery sector is the 3rd largest fish producer and 2nd largest aquaculture producer in the world. Fish Production in 2017-18 were 3.69 million metric tonnes in marine and 8.90 million metric tonnes in Inland to the Total 12.59 million metric tonnes.

Indian fishery sector along with its allied industry has many more opportunities for livelihood generation, income generation, self-employment, socio-economic development along with entrepreneurship development in following areas:

1. Inland and Marine Capture Fisheries:

Capture fisheries has been practiced for thousands of years in marine as well as freshwater habitats. Several modern gears and crafts are used for catching in marine areas whereas level of mechanization and modernisation of fishing in inland areas is relatively inferior in many ways. With 2.02 million sq. Km of Exclusive Economic Zone (EEZ) spreads across the 8118 Km of shoreline along mainland and islands, Indian marine capture fishery production potential is estimated to be 3.94 MMT. Indian inland fishery resources comprising of 3.15 million ha of reservoirs, 1, 91,024 km of River and Canals, 2.35 million ha of Ponds and Tanks, 1.3 million ha of Oxbow lakes and derelict waters and 1.24 million ha of Brackish waters has huge potential for fish production. Even though the fishing methods in inland waters are not much advanced and mechanised compared to marine sector, potential for employment and entrepreneurship opportunities is huge. (Annual Report, 2017- 18)

2. Aquaculture:

Indian aquaculture is one of the prosperous sectors with tremendous potential for production of aquatic organisms. India achieved second position among the aquaculture producing countries through intensification and diversification in recent past. There are still huge potential and opportunities for revenue generation and employment through aquaculture. Aquaculture has showed better growth rates (6-7%) for past couple of decades. Aquaculture became an important fish production activity in almost all states of the country with diversified farming of several species of finfish, shrimps, crabs, mussels, oysters, plants and seaweeds in seawater in farms and in cages in open seas. Most of the resources suitable for aquaculture are still unutilized or under-utilized. Appropriate utilization of these resources will increase fish production, revenue and employment manifold. Moreover, culture-based capture fisheries are also taking roots in the country to enhance per unit area production from freshwater reservoirs.

3. Ornamental fishery:

Ornamental fish sector is one of the promising sectors to create employment and revenues in minimal space and investment. India is endowed with vast ornamental resources ranging from several fish and plant species to variety of accessories suitable for ornamental fish industry. The Indian potential in ornamental industry is

estimated to be around 30 billion USD. Ornamental fishery provides the opportunity to setup small scale to export oriented large setups. Separate business facilities can be setup for ornamental fishes, aquarium, accessories, feed, etc. Moreover, servicing of large aquarium tanks as well as household aquarium may also provide several employment opportunities.

4. Seed production:

Diversification, intensification and enhancement of culture activities will require increased seed. The increase in demand of seed of various aquatic cultured species will require setting of new hatchery and seed production facilities. This will open doors for new entrepreneurship and employment opportunities.

5. Fish processing:

India produced substantial amounts of fish through capture and culture activities from marine and inland waters. The country has not only been able to meet the demand of the fish for the domestic need, it has also been able to add substantially to the foreign exchange earnings through export of fish and fisheries products. Being highly perishable, fish catches need to be processed with appropriate methods for long term preservation and utilization. Most of the industry processed fish and fishery products are exported through cold chains. The export mainly consists of fish and fish products such as frozen Shrimp, frozen and dried seafood items have presently emerged as the largest group in agricultural exports of India. More than 50 different types of fish and shellfish products are exported from India to 75 countries around the world. Tonnes of jobs and employments are offered in fish processing industry. Many new and advanced methods of fish processing, new products, methods, etc. are added daily making this sector vibrant and full of opportunities for employment and large-scale entrepreneurship development.

6. Net Fabrication:

Fishing nets are integral part in almost all fishery activities such as culture and capture of shellfishes, finfishes as well as other aquatic organisms. Nets or fishing gears are evolved from being simple pointed wooden projectile to advanced and complex nets over past centuries. The fabrication and manufacture of these nets and gear is carried out by small artisan to large scale industrial ventures. There is continuous demand for different types, shapes and amounts of nets and gears used in fishery activities. Many of the Indian net fabricating industry are exporting quality of fishing nets, traps, cages and other fishing gears to majority of the countries of the world. Some of the industries have gained expertise in design and manufacture of culture cages and other units which has huge worldwide demand, which can assure huge employment and revenues.

7. Craft fabrication:

Fishing boats and crafts are essential mainly in capture fishery. There is huge demand for different types of fishing crafts ranging from simple dugout canoe to large industrial fishing ships. The fabrication, construction and maintenance of fishing crafts provides huge employments. Some of the fishing ships require hundreds of workers for its regular operations. Moreover, regular maintenance, repair, navigation, harbouring, etc., generates substantial employment opportunities.

8. Fish Feed

Intensification and diversification of aquaculture systems has paved ways for development and flourishing of fish feed industry. Fish feed industry is still in developing stage with huge prospective owing to country's vast resources and potential for aquaculture. There is huge demand for feed in aquaculture sector for different culture species. Feed is served to fishery sector in wide variety ranging from simple agro residues to complexly enhanced and nutritiously balanced diets. The development and manufacture of feed will produce huge number of employment and revenue opportunities.

9. Medicine, Chemicals & probiotics:

Development, diversification and improvement in aquaculture, ornamental and other fishery sector will increase the demand for different medicines, chemicals and probiotics. This increased demand will generate many employment and revenue opportunities.

10. Value added & imitation products:

There are some industrial set-ups carrying out value addition to the fishery products and producing ready to eat fish products. Such value-added products are finding its demand in the market. Moreover, many imitation fish products are prepared from low-cost fish products. Development in the value added and imitation fish product industry will also give rise to substantial and employments,

11. Allied sectors:

Growth and development of fishery will attribute the employment and entrepreneurship opportunities in many allied sectors such as transportation, cold chain, freezing, navigation, packaging, pharmaceuticals, leather, jewellery, etc.

Fishery sector needs to focus on areas which will improve fish production as well as the Economic condition of fisherman folk-

- Sustainable and judicious utilization of fishery resources and their conservation.
- « Optimizing production through modern technologies
- » Diversification of the species and products.
- Crop insurances, cash credit,
- Cold chains and market linkages,
- Handling and post-harvest storage infrastructure and
- Value addition of products and reducing losses
- Development of science and technology through research
- Fisheries is multidisciplinary subjects where conscious effort are required to convey the science and technology to the common people, fish farmers and primary producers.

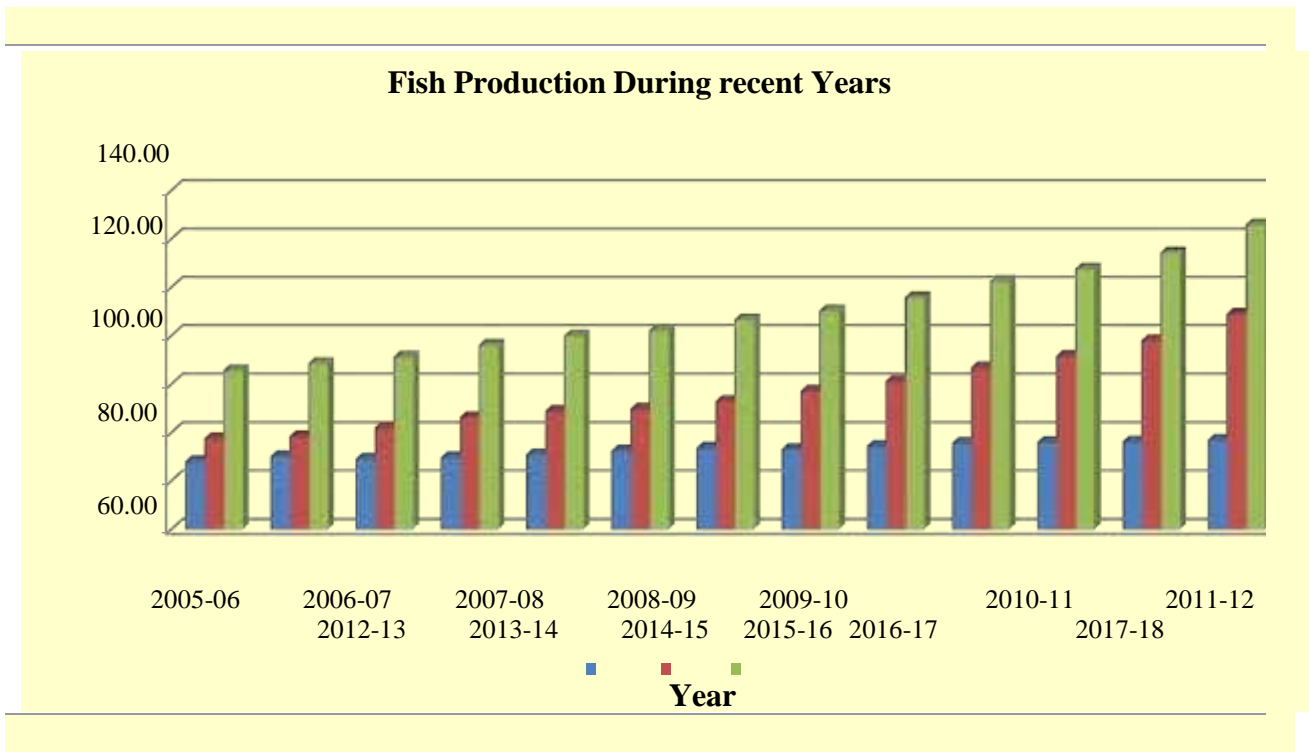


Fig1: Fish Production During recent Years

Source: Handbook on Fisheries Statistics 2018 by Government of India Ministry of Fisheries, Animal Husbandry and Dairying Department of Fisheries

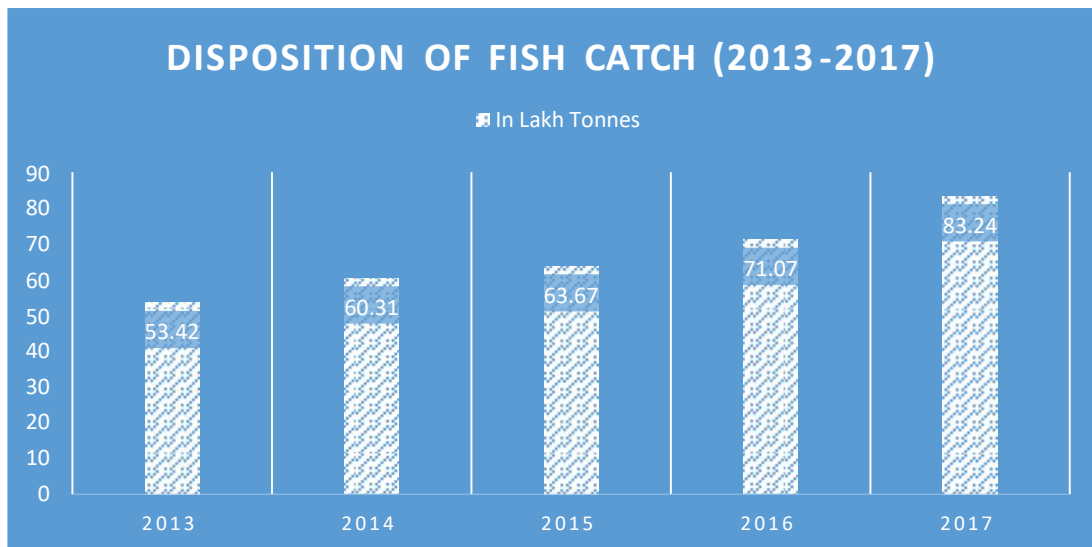


Fig2: Disposition of Fish Catch (2013-2017)

Source: Handbook on Fisheries Statistics 2018 by Government of India

Ministry of Fisheries, Animal Husbandry and Dairying Department of Fisheries

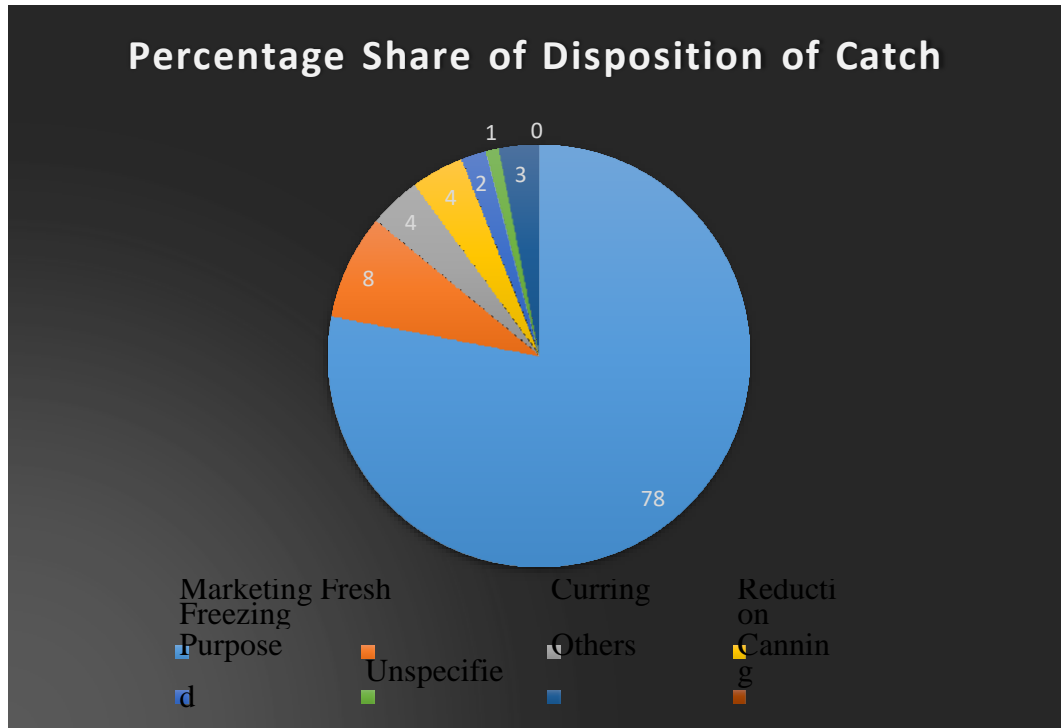


Fig.3: Percentage Share of Disposition of Catch

Source: Handbook on Fisheries Statistics 2018 by Government of India Ministry of Fisheries, Animal Husbandry and Dairying Department of Fisheries

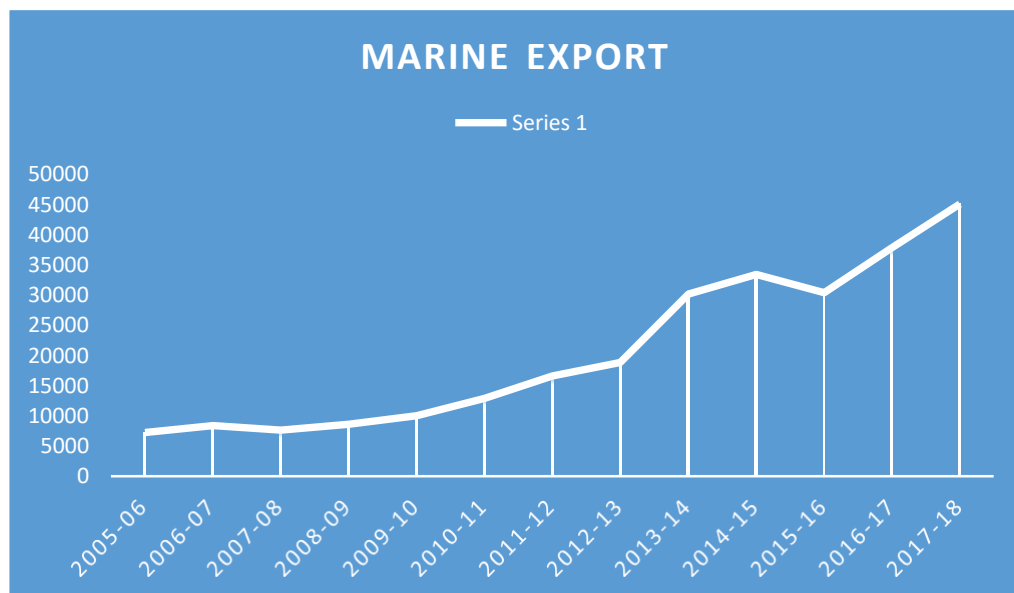


Fig. 4: Marine Export

Source: Handbook on Fisheries Statistics 2018 by Government of India Ministry of Fisheries, Animal Husbandry and Dairying Department of Fisheries

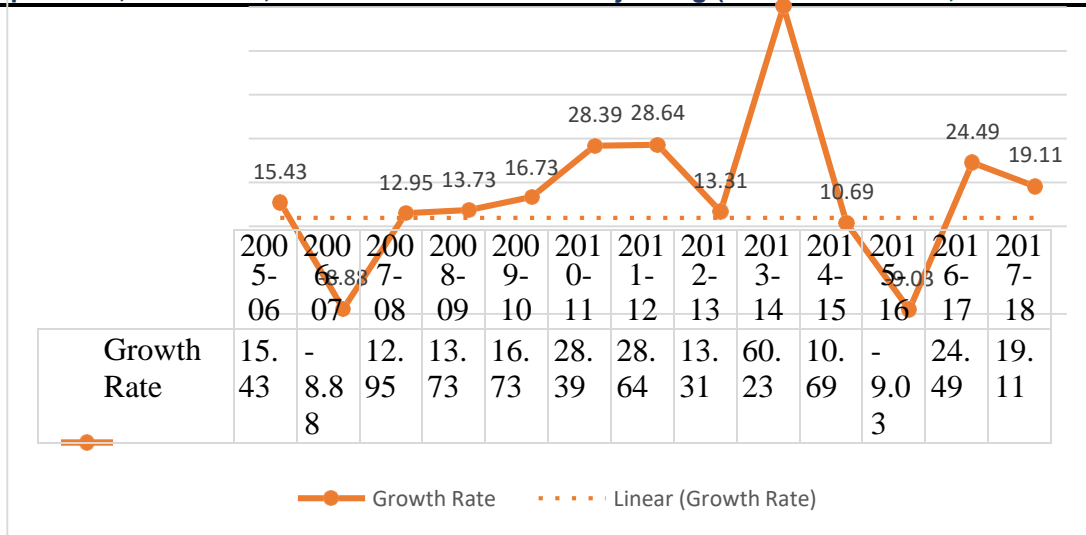


Fig.5: Growth Rate of Marine Fisheries Export

Source: Handbook on Fisheries Statistics 2018 by Government of India Ministry of Fisheries, Animal Husbandry and Dairying Department of Fisheries

Overview:

Technology developments

Technology developments in fish processing sector offer scope for innovation, increase in productivity, increase in shelf life, improve food safety and reduce waste during processing operations. A large number of value-added and diversified products both for export and internal market based on fish, shrimp, lobster, squid, cuttlefish, bivalves etc. have been identified. However, the commercialisation of fish products still poses lot of challenges to the entrepreneur and researcher in terms of optimization of technologies and ultimately developing the technologies into a commercially viable business plan. In this regard, the Indian Council of Agricultural Research (ICAR) has started a Business Incubation Unit at the Central Institute of Fisheries Technology (CIFT) exclusively for the Fisheries sector through the World Bank funded National Agricultural Innovation Project (NAIP). It is designed to accelerate the growth and success of entrepreneurial start-up efforts through the mobilization of an array of business resources and services. Later in 2016 an Agri-Business Incubation Centre (ABI) was established in CIFT under the XII plan scheme of National Agriculture Innovation Fund (NAIF) of ICAR. The role of the ABI Centre is to facilitate the innovator and the researcher to turn their ideas into commercial ventures with focus on incubation and business development programme, including entrepreneurship, skill development and Grassroots innovators activities.

Health benefits of fish

As a rich source of nutrients, fish provide a good balance of protein, vitamins and minerals, and a relatively low caloric content. In addition, fish are excellent sources of Omega-3 polyunsaturated fatty acids which appear to have beneficial effects in reducing the risk of cardio-vascular diseases and are linked with positive benefits in many other pathological conditions particularly, certain types of cancer and arthritis.

Fish represents an excellent option as a major source of nutrients. On a unit caloric basis fish can provide a broad range of nutrients. A high intake of fish is compatible with a reduction of both calorie and saturated fatty acid intakes. Coronary heart disease, hypertension, cancer, obesity, iron deficiency, protein deficiency, osteoporosis and arthritis are contemporary health problems for which fish provide a number of nutritional advantages and some therapeutic benefits. Nutritional factors of importance are calories, proteins, lipids, cholesterol, minerals and vitamins.

Conventional finfish and fishes potentially provide from 100 to 200 kcal/100g, which is mainly attributed to the protein and fat contents of fish. The amount of carbohydrates in fish is very small. Finfish usually contains less than 1% carbohydrate whereas shellfish have very low-fat content. Compared to other

muscle food, they contribute very low-fat calories to the averaged diet. The most important constituent of fish muscle is protein. The protein content in fish varies from 17 to 25%, though values as low as 9% are sometimes encountered as in the case of Bombay duck. Fish protein is highly digestible because of very low stroma protein and has an excellent spectrum of essential amino acids. Like milk, egg and mammalian meat proteins, fish protein has a high biological value. Cereal grains are usually low in lysine and/ or the sulphur containing amino acids, whereas fish protein is an excellent source of these amino acids. In diets based mainly on cereals, fish as a supplement can, therefore, raise the biological value significantly.

Fish oil contains primarily the Omega-3 series of fatty acids. The polyunsaturated components of fish lipids can be effective in reducing plasma lipids. Epidemiological data from Japan and the Netherlands indicate that frequent consumption of fish even in quantities as low as 30g/ day may have beneficial effects in reducing heart disease.

Consumption of medium (100g) to large amounts especially triglycerides, prevent thrombosis and ameliorate ischemic heart disease. These effects are mediated by the Omega -3 PUFA of fish lipids which alter the production of certain biologically important components called eicosanoid. The efficiency of the Omega -3 PUFA Components is influenced by the amount ingested and the concentration of other unsaturated fatty acids in the diet, especially Omega

-6 PUFA. Squalene, an isoprenoid molecule present in shark liver oil in higher quantities, has been reported to possess antilipidemic, antioxidant and membrane stabilizing properties. Fish and shellfish, particularly anchovies, clams, oysters and sardines are rich sources of vitamin B12.

Fish consumption is compatible with optimum dietary practices / recommendations and that substitution of fish for other foods can help to maintain a balanced nutrient intake compatible with a low-fat consumption. In addition, the consumption of fish- or more precisely, fish lipids – may provide significant health benefits.

Entrepreneurship Initiatives in Fisheries Sector

Fisheries sector with its important role played in the socio-economic development of the country has become a powerful income and employment generator, and stimulates the growth of a number of subsidiary small, medium and large-scale industries. In order to translate the research results arising from the field of fisheries and other agricultural sectors, ICAR have set up an innovation-based Business Incubation Centre (BIC) at the ICAR-Central Institute of Fisheries Technology (CIFT), Cochin. BIC is managed by Zonal Technology Management – Business Planning and Development (ZTM-BPD) Unit and aims at establishment of food business enterprises through IPR enabled ICAR technologies.

BIC supports operations on business projects as a measure of enhancing the foundation for new technology-based industries and establishing a knowledge-based economy. It focuses on finding new ways of doing business in fisheries and allied agricultural fields by finding doors to unexplored markets. The Centre helps prospective entrepreneurs, by providing pro-active and value-added business support in terms of technical consultancy, infrastructure facility, experts' guidance and training to develop technology-based business ideas and establish sustainable enterprises. It acts as a platform for the speedy commercialization of the ICAR technologies, through an interfacing and networking mechanism between research institutions, industries and financial institutions. The Incubator at ICAR-CIFT differs from traditional Business Incubators as it is tailored specifically for technology-based industries and is operational at an area with a high concentration of fish production. This industry- specific incubator also allows new firms to tap into local knowledge and business networks that are already in place. BIC offers their services to industries not only in Cochin, but also all over India through virtual incubation. Beyond promoting business growth, the Centre is also trying to bring its benefits to all the fisheries communities in India.

This unique Business Incubator is now known as a “One Stop Shop”, where entrepreneurs can receive pro-active, value-added support in terms of technical consultancy, and access to critical tools such as entrepreneur ready technologies, vast infrastructure and other resources that may otherwise be unaffordable, inaccessible or unknown.

Process of Incubation

The Business Incubation Centre targets entrepreneurs, from fledgling start-ups in need of basic small scale processing capacity to sophisticated businesses in need of R&D back up, office infrastructure and pilot / test market processing facility for the development of new products. It possesses good infrastructure facilities suitable for providing direct incubation of nine entrepreneurs in a corporate environment within the premises of ICAR-CIFT, at a time. The purpose of direct incubation is to support emerging companies through their infancy. BIC apart from being a multi-tenant facility with on-site management that delivers an array of entrepreneurial services to clients operating with the facility, it also serves clients that are not located in the facility through virtual incubation or incubation without walls.

The Centre regularly conducts industry interface and technology promotional programmes for sensitization of entrepreneurs and to identify interested potential candidates for physical and virtual incubation. The Clients at BIC get the privilege of meeting Scientists, Business Manager and Business Associates directly, to discuss and finalise the strategies to be adopted to take the business forward. It is also the peer-to-peer relationships that develop within the incubator, that ensures the delivery of basic services such as how to actually incorporate a business; what are the legal issues; how to take intellectual property protection; how to do basic accounting and cash flow; how to do business presentations etc. Those kinds of skills are what are transmitted as part of the incubation process.

The residency period for direct incubates is normally for two years, extendable by another year in special cases, depending on the progress of incubation. As the business venture becomes mature enough, the concessions and the facilities provided to the incubate companies will be gradually withdrawn. Each incubate of the Unit will have to pay to the Institute a charge for utilization of space, at a rate concessional to the benchmark rate which is the prevailing market rent realizable. Incubate mentoring will continue in virtual mode after graduation, on need basis.

Services and facilities offered by ICAR•CIFT Business Incubator

The Centre through its business support services provides links to supporting industries; upgrade technical / managerial skills; provide scientific / technical know-how; assist in market analysis, brand creation and initial test marketing; protect IP assets; and find potential investors and strategic partners.

Incubation facilities under one roof are:

- Furnished office suites within the premises of ICAR-CIFT, with shared facilities like secretarial assistance, computing, copying, conferencing, video conferencing, and broad band internet and communication services.
- Pilot level production lines
- Culinary facility
- Access to modern laboratory facilities for product testing and quality control
- Access to well-equipped physical and digital libraries

Pilot Level Production Lines

A state-of-the-art generic semi-commercial production facility is made available to incubating entrepreneurs for developing value added products from fish. For the tenants, the pilot plant is an ideal testing arena to determine the commercial viability of new products. The plant also serves as a process lab, a place to see how processing equipment impacts food products under varying conditions. There are production lines for pre-processing, cooking, retort pouch processing, canning, sausage production, extruded products, chitin & chitosan, smoking, curing & drying, breading & battering and product packaging. By providing access to these resources, the Centre greatly reduces one of the major barriers to the commercialization of institute technologies by smaller firms - the high capital cost of intermediate or large-scale process equipment.

Business Services

The business-oriented services offered assistance in complying with business regulations and licensing procedures, financing, information services, marketing, and tailor-made services designed for the various tenant enterprises.

Incubator clients can also gain special advantage in terms of tax savings through special regulations for Business Incubators. A wide variety of services, with the help of strong associations throughout the Business Incubation Network is noted.

Step by Government of India to Boost Fisheries Sector

From the governance and organisational view point, the fisheries sector has a long way to go to unleash the potential of blue economy. First, South Indian Federation of Fishermen Societies, working in the marine fisheries sector, can help bring the necessary reforms to marine fisheries since it follows an AMUL-like cooperative model with a three-tier federal structure. With over 9,104 member fishermen, organised through 153 primary fishermen marketing societies in Southern peninsular, the federation renders various services to 65,000 fish workers, including non-members, for the last two decades. Second, the FM made two important announcements for strengthening fisheries extension by mobilising 3,477 'sagar mitras' and promoting 500 fish farmer producer organisations. Therefore, it is important to draw insights from states that have catalysed livelihood promotion of small-scale fishermen.

For instance, a donor agency and NABARD-funded integrated fish farming project was implemented in coastal regions of Odisha in 2011. A voluntary organisation, Gram Utthan, promoted four farmer producer companies with a paid-up capital of Rs 1 lakh for strengthening the market linkage of freshwater aquaculture in FY19. These organisations were hand-held by international donors for capacity building and World Fish for culturing the improved variety freshwater fish.

Third, skilling is important to subsistence of marginalised fishermen. In FY17, about 121,560 fishermen had undergone skill development training with an allocated budget of Rs 2.36 crores. Union Budget 2020 has aimed for skilling fishermen through fisheries extension akin to 'Matsya Vigyan Kendras' in collaboration with the Central Fisheries Research Institute.

Department of fisheries was created in 2019 (By Gov. of India)

A separate ministerial portfolio, Ministry of Fisheries, Animal Husbandry, and Dairying was created in 2019 by the central government, with two separate departments- department of fisheries and department of animal husbandry & dairying to focus on livestock and fisheries in the country. The main role of the department is promotion of policies and strategies aimed at the sustainable and responsible development of fisheries and aquaculture in both inland and marine waters. Inland fisheries and aquaculture are the main components of the fisheries sector in India whose production is more than twice that in marine fisheries. The geographical diversity in India is also ideal for both marine and inland fisheries, thereby making it one of the lead producers of fish globally. India's coastline extends over 8,118 kilometres with an Exclusive Economic Zone of 2.02 million square kilometres.

Recently, the government announced Pradhan Mantri Matsya Sampada Yojana as a part of the Atmanirbhar package. Even before this, the central government has been implementing various schemes and allocating funds for the development of the sector. A centrally sponsored scheme was rolled out in 2015 for five years (up to 2019-20), by the NDA Government by merging all the ongoing schemes under an umbrella known as Blue Revolution: Integrated Development and Management of Fisheries. Through Mission Blue Revolution, the government plans to focus on enhancing fish productivity, by increasing fish production at a growth rate of 6% to 8% and create necessary infrastructure.

The major components of the umbrella scheme include:

- Development of inland fisheries and aquaculture
- Development of marine fisheries- infrastructure and post-harvest
- National Scheme for Welfare of Fishermen

- Monitoring, Control and Surveillance of need based interventions
- Institutional Arrangement for Fisheries Sector
- Strengthening of Database and Geographical Information System
- National Fisheries Development Board and its activities

Target of 20 million tonnes by 2022-23

In October 2018, the government launched the Fisheries and Aquaculture Infrastructure Development Fund (FIDF) to meet the infrastructural requirements in the sector. The target set was to produce 15 million tonnes by 2020 by supporting Blue Revolution. FIDF also aims to achieve a sustainable growth of 8% to 9% to increase India's fish production to 20 million tonnes by 2022-

23. Under FIDF, a corpus of ₹10,000 crores was announced in the Union Budget in 2018. An estimated fund size of Rs 7522.48 crores comprising of Rs 5266.40 crores was to be raised by the Nodal Loaning Entities (NLEs), Rs 1316.6 crores through beneficiaries' contribution and Rs 939.48 crores budgetary support from Government of India. Furthermore, the government also extended the facility of Kisan Credit Card to fisher folk for meeting their short-term working capital requirements.

PRIORITY TECHNOLOGIES AND NATIONAL STRATEGIES

Overview

The previous chapters covered profiles of fisheries technologies, institutions, and stakeholders. They also assessed supply and demand trends, as well as the impact of alternative options for policy, management, and technology. The final task involved synthesizing all the information presented earlier in order to (a) identify appropriate technologies and (b) formulate national action plans, which together would lead to increased and sustained benefits to poor households from fisheries production.

The identification of technologies to be recommended for an investment program directed at fisheries production to benefit the poor was accomplished by means of a priority-setting exercise on the numerous options that were enumerated and assessed in the foregoing chapter. The exercise was conducted by fisheries technical experts from participating research institutes.

The formulation of national action plans was achieved by a participatory process. National-level consultations were under-taken in the selected developing member countries (DMCs) in the form of national workshops participated by multispectral representatives from industry, policy and planning, management, education, research and development (R & D), and training. The participants were presented with research findings from the project, namely, profiles of fishing and aquaculture technologies, policy and institutional perspectives, socioeconomic profiles of the fishers and fish farmers, and fish demand-supply analysis including preliminary results of the fish projection models. These consultations concluded with the formulation of national action plans (NAPs). By nature of the process, the NAPs cover an expansive checklist of directions and thrusts for orienting fisheries development towards the long-term welfare of the poor. The specific value of each NAP is to provide a blueprint for effective planning and policymaking within the relevant participating DMC.

Criteria for priority setting

The methodology for ranking and selecting the technologies was developed in a workshop where research partners from all the nine participating countries agreed to adopt five criteria for prioritizing pro-poor aquaculture and fishing technologies. These criteria are: (1) production efficiency, (2) food and nutrition security, (3) employment generation, (4) impact on the environment, and (5) acceptability by the poor.

Efficiency

The application of technology generally results in higher yield and subsequent returns from the production. Hence, as new fishing gear technology should increase fish catch with the same effort, post-harvest technology should reduce losses during processing. The adopted technology should increase

profitability and give adequate rates of return for any additional investment.

Food and nutrition security

Food and nutrition security refers to accessibility to adequate food, including fish, by all household groups. An important issue is to provide cheap protein to a growing population. The desired technology should lead to greater availability and improve affordability of fish and fisheries products for the poor. The corresponding indicators are the retail price and consumption share (by value) of fish species produced under the given technology.

Materials:

Sampling:

The study utilized the people of age group from 21 years to 60 years which included both probability and non-probability sampling techniques to create a sampling frame. In probability sampling, stratified sampling was used whereby different categories of students, Professors and stakeholders were included in the survey. In this study the target population was the students whois currently pursuing in the subject of Fisheries, Professors who are involved in Academics as well as Research development and the Entrepreneurship engaged in fish farming and trade-related activities. Convenient sampling is a sampling technique that allows a researcher to select cases or units of observation as they become available to the researcher (Mugenda and Mugenda, 2003).

Methods:

This study gathered data required to achieve the required objectives. Both primary and secondary data was gathered. Data was collected using Survey Method through questionnaires. The questionnaire was appropriate because the targeted respondents were assumed to be literate as well as to ensure uniformity in the way questions were asked. Equally, respondents feel free to answer sensitive questions because they are not required to disclose their identity (Mulusi, 1998) as cited by Mugambi (2006). The questionnaires used both open-ended and close-ended questions. The parameters to be evaluated were presented in the form of Close-ended questions, which aimed at collecting quantitative data while open-ended questions that provided qualitative data. The mode of distribution of questionnaire was online and thus, was easy to reach beyond the population in different states and countries. Statistical evaluation was represented in the form of Graphical representation and Pie charts for studying comprehensive strategies in Fisheries.

Pilot Study:

Piloting was conducted to check the questionnaire content, structure, sequence, meaning and ambiguity of questions. The questionnaire was pre-tested by administering it to a sub-sample of seven respondents, which was 10% of the sample population. Use of validity and simple language for easy interpretation of the Questionnaire.

Data Analysis:

Raw data was evaluated and scrutinized by ensuring completeness, accuracy and consistency of information by detecting and addressing the noted errors and omissions. The data was then organized (classified) into different categories based on common characteristics and attributes. The data by use of descriptive statistics of mean, mode and median which was done and finally presented by use of frequency tables and percentages.

Table1: Criteria and Indicators for Prioritizing Capture and Aquaculture Technologies

Criteria	Indicators		
	Aquaculture fisheries	Capture	Post-harvest
Efficiency cost	Gross return/total cost	Gross return/total	Gross return/total cost
	Operation cost/kg fish produced	Operational cost/kg fish produced	Minimum loss during Processing (%)
	Vulnerability to natural hazards on catch of	Adverse effect on poor fishers	-
Food/nutrition of fish produced through the technology	Retail price of fish produced through the technology	Retail price through the technology	Retail price of fish produced through the technology
	Quantity share of fish produced by the system in the poor's fish consumption (%)	Quantity share of fish produced by the system in the poor's fish consumption (%)	Quantity share of fish produced by the system in the poor's fish consumption (%)
	-	-	Scoring of food safety
Employment (%)	Labour factor share (%)	Labour factor share	Labour factor share (%)
	No. of jobs generated (person-days/US\$100 invested or scoring)	No. of jobs generated (person-days/US\$100 invested or scoring)	No. of jobs generated (person-days/US\$100 invested or scoring)
	Higher share of women in the employment (% or scoring)	-total	Higher share of women in the total employment (% or scoring)
Environment impact on bio mass	Degree of waste discharge (scoring)	Adverse (including by catch) (scoring)	Impact on environment (waste from post-harvest)(scoring)
	Risk of disease spread on ecosystem (scoring)	Adverse impact (scoring)	-
	Adverse impact on bio-diversity	-(scoring)	-
Acceptability fixed + operational capital)	Low investment needs (total = fixed + operational capital) (scoring)	Low investment needs (total = fixed + operational capital) (scoring)	Low investment needs (total = fixed + operational capital) (scoring)
	Simplicity of technology (scoring)	Simplicity of	Simplicity of

technology		technology
(scoring)		(scoring)
Social, cultural, and legal	Social,	Social, cultural and
cultural and legal		legal
acceptability (scoring)	acceptability	acceptability
(scoring)		(scoring)
Compatibility with natural	Promotion	Utilization of locally
of community		available
resources endowment	participation	raw materials
(scoring)		
accessible to the poor		

Employment

An important consideration when designing aquaculture and fisheries technologies is the generation of employment opportunities for the rural poor. Labour markets in underdeveloped countries are far from efficient, often trapping the poor in conditions of chronic underemployment. Neither does self-employment provide an outlet for the poor, due to the lack of access to capital for starting a productive enterprise. Women in particular are discriminated against even though they often are breadwinners in many poor communities and are great assets to the fishery industry, especially in the seafood processing sector. The corresponding indicators for this criterion are labour factor shares in the total cost, the number of jobs generated per unit, and the percentage of women employment in the total labour requirement.

Acceptability

Any successful implementation of a fishery technology must gain wide acceptance and support of the general community. Due to inequitable access to capital, the poor cannot typically afford technologies with high investment requirements. The technology should also be compatible with the local endowments of natural resources. Simplicity of the technology means ease of adoption. The indicators under the acceptability criterion are: investment needs of the technology; simplicity or ease of adopting the technology; natural resource endowment of the area; and social, cultural and legal acceptability of the technology as perceived by poor fishers, fish farmers, and processors.

A systematic procedure was adopted in prioritizing the technologies using the aforementioned criteria and their corresponding indicators. First, each criterion was assigned a given weight that, in turn, was split into weights of indicators corresponding to the criterion. The weight assigned to a criterion varied according to the relevance of the criterion to the technologies applied in a particular country. Second, scores were given to each indicator of each criterion. The technology score was computed as a weighted average of indicator and criterion scores; this score was then used for ranking the technologies. Ranking of technologies Freshwater aquaculture technologies ranks of major pro-poor freshwater aquaculture technologies in the nine Asian countries. The top-ranked grow-out technologies are mostly extensive, improved extensive, or semi-intensive. The top-ranked technology for Bangladesh, India, Indonesia, Thailand, and Vietnam is carp Polycultured in ponds, in the extensive or improved extensive system (except Vietnam, which prioritizes the semi-intensive system). The same technology is ranked second in China. Other methods for carp rearing are ranked either second or third in China, India, and Thailand.

National Action Plans

The ranking of technology options (and their underlying methodology and data) provides valuable guidance for a pro-poor investment program on research and development (R & D) and technology promotion. Such an investment program can materialize only within an overall strategy for fisheries. The NAPs provide a broad statement of strategies and viable options for increasing and sustaining benefits from fish production for the poor. The checklists of strategies and options for the selected countries are presented in table

Table 2. Strategies and Management Options for Inland and Marine Aquaculture

Country	Strategies and management	Target	Responsible
Bangladesh DOF, private	<p>1. Development of aquaculture in inland pond and floodplain through carp polycultured and community-based aquaculture of carps and non-invasive species</p> <p>2. Demonstration of pro-poor aquaculture technologies monoculture, carp polycultured, sea bass and milkfish monoculture, along with training of Department of Fisheries (DOF) officials and farmers</p> <p>3. Hatchery development via quality controls to overcome inbreeding and hatchery regulations</p>	<p>1. Small-scale fish farmers</p> <p>2. Small-scale fish farmers from external via GIFT</p> <p>3. Hatchery operators</p>	<p>1. Small-scale fish sector's cooperation and farmers, officials</p> <p>2. Small-scale fish cooperation and farmers, officials funds from external via GIFT</p> <p>3. Hatchery sources</p> <p>2. DOF and external organizations</p> <p>3. DOF and private sector, external organizations</p>
China	<p>1. Expansion of aquaculture areas to underused water areas</p> <p>2. Development and dissemination of pro-poor, environment-friendly technologies</p>	<p>1. Small-scale fish farmers (immediate term)</p> <p>2. Small-scale fish farmers and low-income consumers (immediate and long terms)</p>	<p>1. Private sector and foreign investors</p> <p>2. National government and private sector</p>
India	<p>1. Improvement of catfish seed production along with treating fisheries at par with agriculture sector, i.e., input subsidies, income tax rebate</p> <p>2. Infrastructure development in terms of extension services and market provision</p> <p>3. Enhancement of intergovernmental cooperation to promote aquaculture</p> <p>4. Support of ownership rights especially in watersheds and coastal areas</p>	<p>1. Fish farmers and consumers in states that fish have not been popular.</p> <p>2. Fish farmers</p> <p>3. DOF, Irrigation Department and other concerned departments</p> <p>4. Landless farmers</p>	<p>1. DOF, national and state governments, and private sector</p> <p>2. National and state governments, and private sector</p> <p>3. National and state governments</p> <p>4. Local and state governments</p>

Indonesia	<ol style="list-style-type: none"> Promotion of tilapia hatchery and grow-out technologies via self-organized groups, infrastructure development, human resource development, and market expansion Promotion of shrimp, milkfish, and seaweed hatchery and grow-out via similar means as in the case of tilapia 	<ol style="list-style-type: none"> Fish farmers, traders, and consumers Fish farmers, traders, and consumers 	<ol style="list-style-type: none"> National government with regional cooperation, NGOs National government with regional cooperation, NGOs
Malaysia	<ol style="list-style-type: none"> Expansion of production via new culture areas, production technologies, incentives, human resource development and environmental considerations Input use efficiency and cost reduction via improvement of aquaculture technologies, and R & D Marketing, value-addition, and trade promotion <p>through farm accreditation, compliance with HACCP and good management practices/other international (SPLAM), trade requirements, market linkages national</p> <ol style="list-style-type: none"> Establishment of aquaculture industrial zones and infrastructure government, and infrastructure Training for fish farmers, researchers and scientists, R & D with respect to input use, costs, new species and value-addition 	<ol style="list-style-type: none"> Small-scale fish farmers and private sector (2000-2010) Small-scale fish farmers and private sector (2000-2010) 	<ol style="list-style-type: none"> DOF, DOE DOF, research institutes and universities Malaysian Aquaculture Farm Small-scale Certification processors and private sector (2000-2010) Small-scale fish private sector farmers and private sector (2000-2010)
Philippines	<ol style="list-style-type: none"> Promotion of milkfish and tilapia hatchery and grow-out technologies, and seaweed nursery and grow-out units, organized governments, via self-organized groups, commodity council, central and satellite hatcheries, infrastructure development, credit facilitation, human resource development, and market information network and expansion Institutionalization of international trade standards, i.e., HACCP 	<ol style="list-style-type: none"> Local government units, organized farmers, private sector Local government units, organized farmers, private sector 	<ol style="list-style-type: none"> Local government small-scale fish farmers, private Indonesian sector resource development, banks, support from external small-scale fish farmers, private sector Local and national governments, CODEX Alimentarios

3. private sector (2000-2010)

Philippines	<ol style="list-style-type: none"> Establishment/strengthening of fishers organizations as pipelines for technical assistance, credit facilitation, provision of infrastructure, dialogue generation, and national government incentives, and training 	<ol style="list-style-type: none"> Organized small-scale fishers, women Organized small- 	<ol style="list-style-type: none"> 1. Organized small-governments 2. Local
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governments,
 Exploration and exploitation of non-
 scale fishers, private sector
 commercial fishers 3. Local
 Effective enforcement of laws 3.
 Illegal fishers, small- Bureau of Fisheries
 and commercial and Aquatic
 scales Resources (BFAR)-
 national government

2.
 traditional fishing
 grounds
 government,
 3.

India

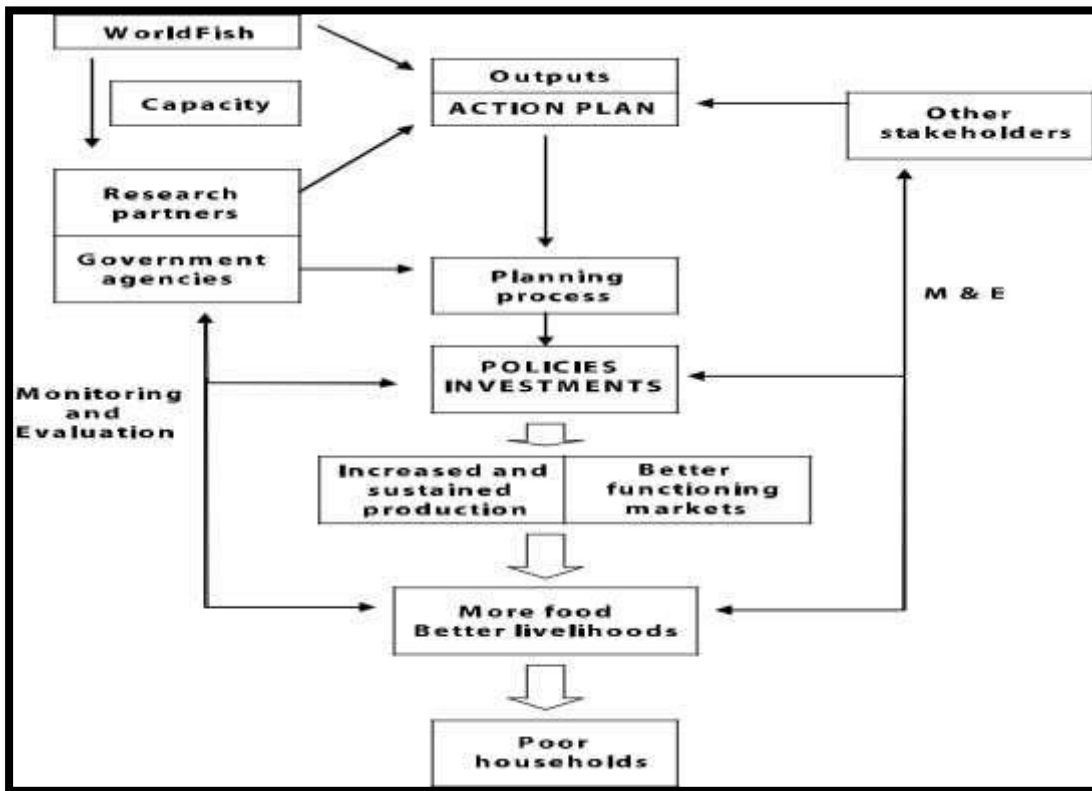
The NAP for India suggests the implementation of a fisheries development strategy based on the following activities:

- Adopt a people-centred approach, rather than a commodity-centred approach.
- Adopt a systems approach
- Prioritize technologies for the poor at national, regional, and household levels.
- Build skills and human capital of poor fishers.
- Maintain ecological sustainability.
- Enhance investment and reorient policies to facilitate percolation of benefits from trade to all sections of society, particularly the poor and women.
- Explore the domestic market, so far regarded as a “sleeping giant”.
- Innovate and strengthen institutions and policies.
- Monitor the development programs, make on-course corrections, and assess the impacts of all programs.
- Strengthen the fisheries database and use it for better planning and policymaking in the sector.

Aquaculture should be given high priority in the national fisheries strategies. Technologies of seed production of catfish are to be improved. A hatchery system for the support of aquaculture is to be developed, especially for the domestic market. The extension service system is to be strengthened to upgrade the technical skills of fish farmers in production and processing of fish, and to promote aquaculture among the poor.

Some state governments are advised to treat fisheries at par with agriculture in all aspects, including input subsidies and income tax rebate. For other states, the strategies point at better coordination of fisheries activities with other departments, such as the Irrigation Department. There is also a problem of ownership rights in large watersheds that requires immediate attention. Similarly, the policy of land leasing and rights is to be rationalized. Marine aquaculture, recognized for its foreign exchange contribution and its role for reducing poverty and providing livelihood to women, should be developed in accordance with the aforementioned principles.

Fig 7: Developmental and Economic Statistics Flowchart



OBSERVATION:

The socio-personal variables viz., gender, age, preferred employment, participation in training, interaction with entrepreneurs and mass media contact were also studied adopting suitable scoring procedures to understand the socio-personal profile of respondents and interpret the results meaningfully.

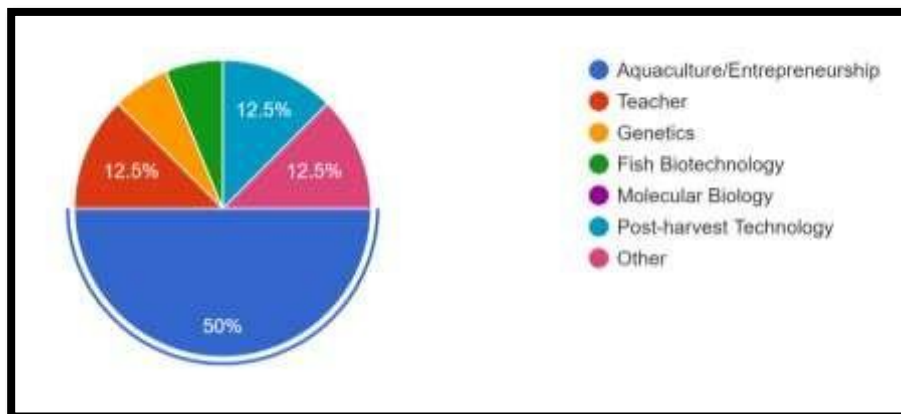


Fig 1. Pie chart depicting career option of the respondents

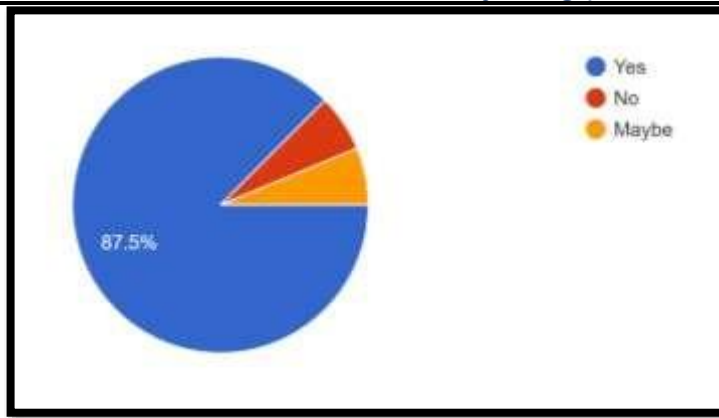
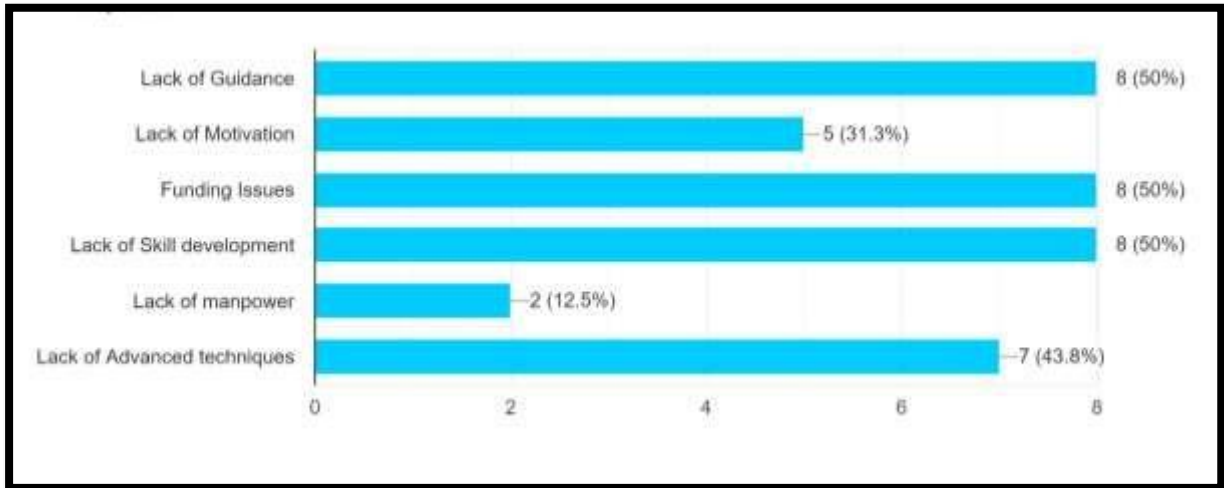
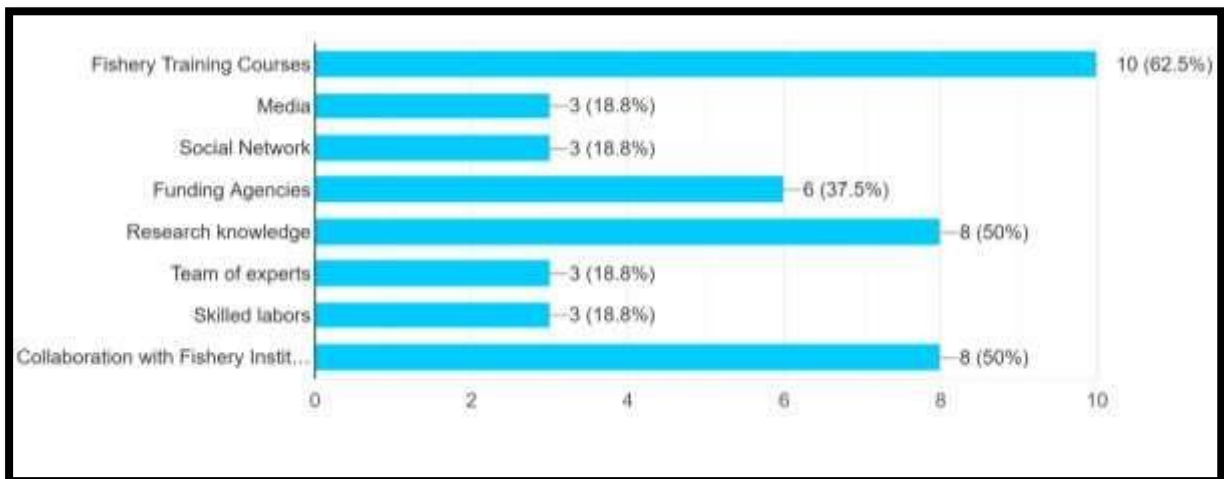


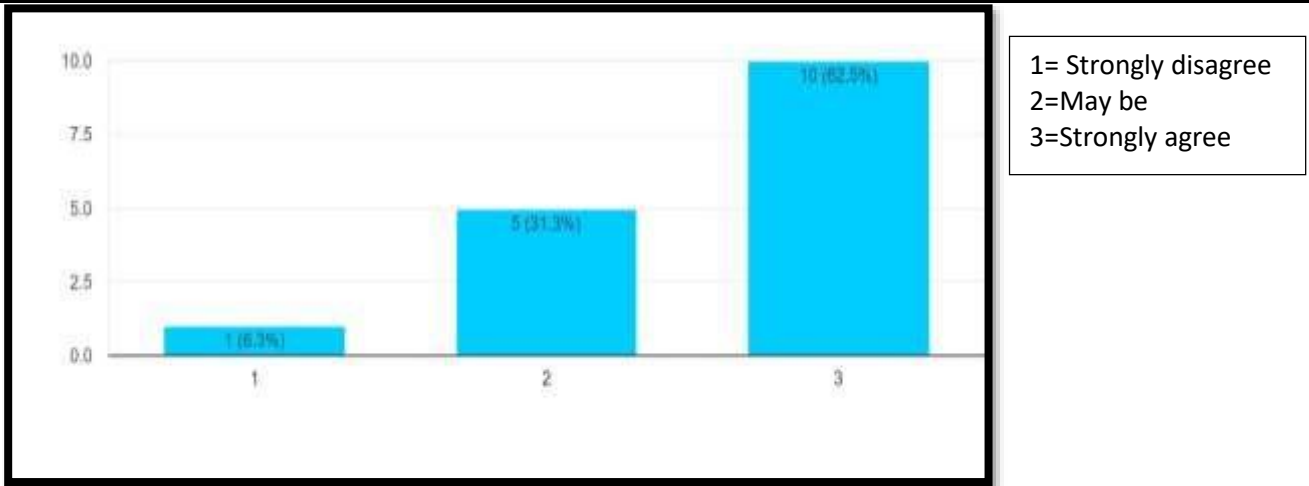
Fig2: Pie chart showing employment potentiality in Fishery-Entrepreneurship.



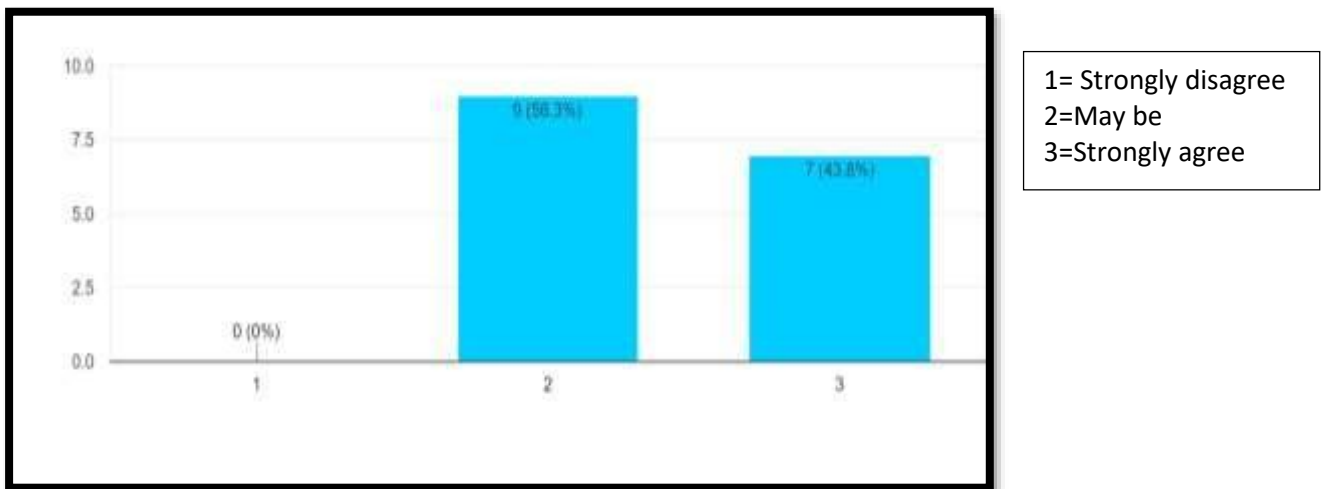
Graph1: Parameters influencing for hindrances in Fisheries sector.



Graph2: The parameters through which awareness for career advancement and Entrepreneurship can be created.



Graph3: Role of Field work and Practical Implications in Career Development.



Graph4: Lack of effective coordination among different government agencies and Ministries (Irrigation, Revenue, Agriculture, Environment & Forestry, and Fisheries) is responsible for creating least awareness about Career Advancement in Fisheries.

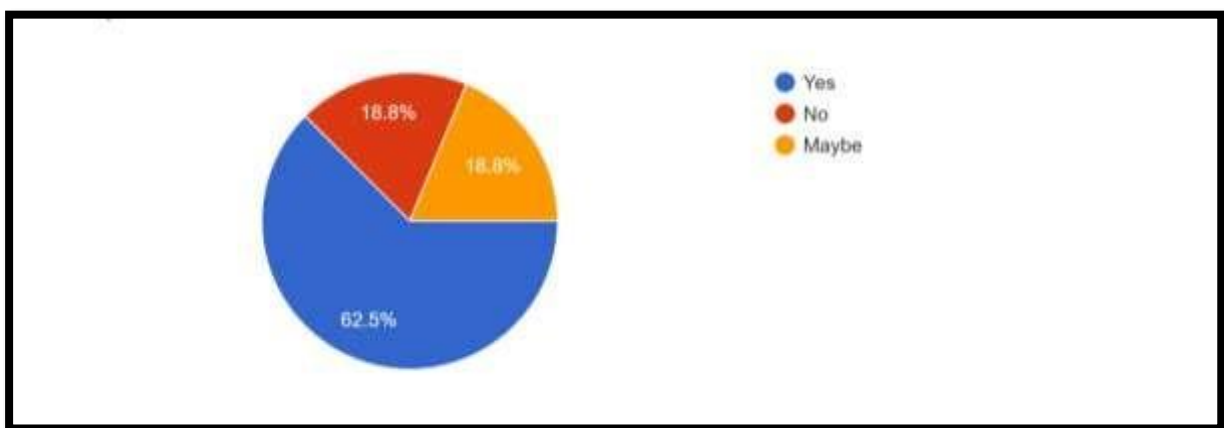


Fig3: Impact of Exotic fishes (silver carp, Tilapia, Thai magur, etc.) on increasing demand in Aquaculture

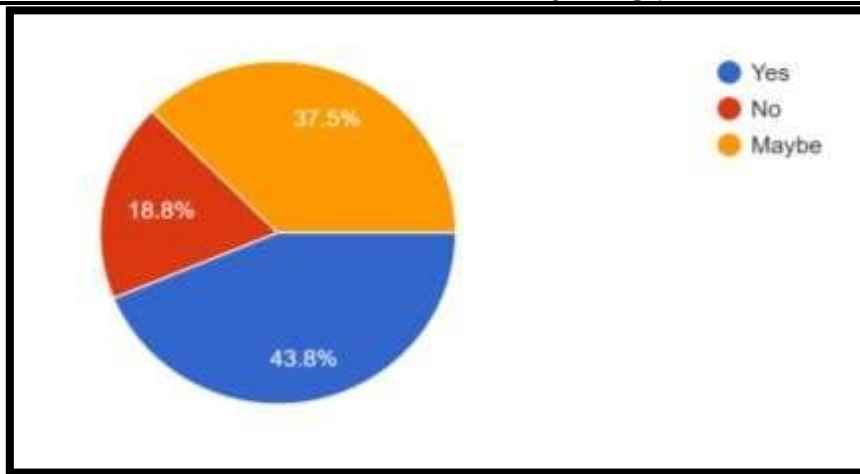


Fig4: Awareness about Norms and Regulations in Fisheries

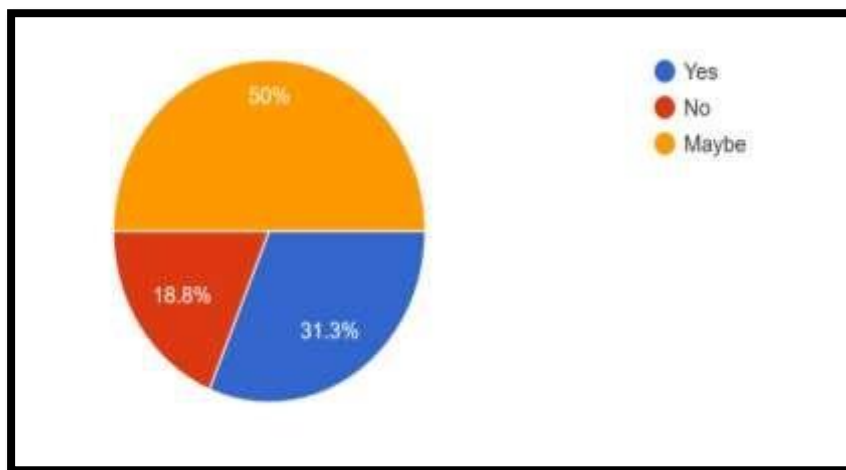


Fig5: Salaried Job versus Self-Employment

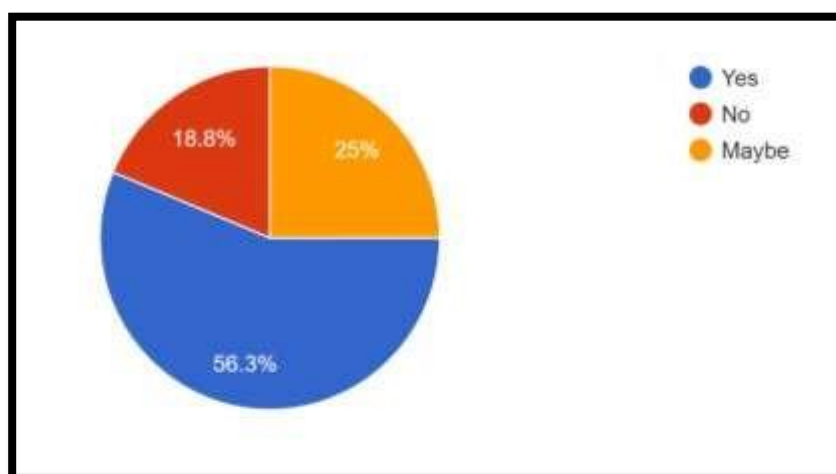
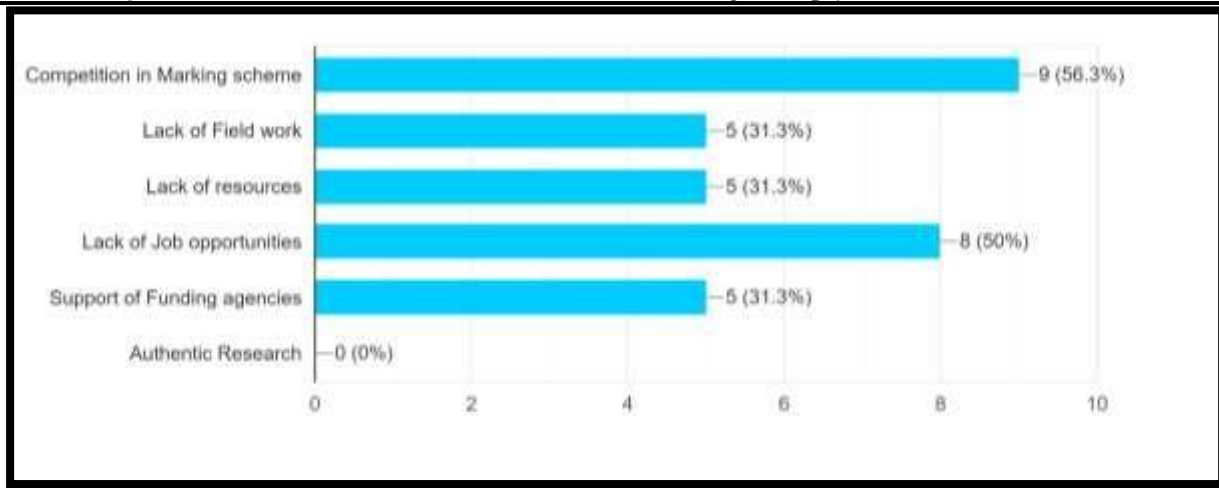
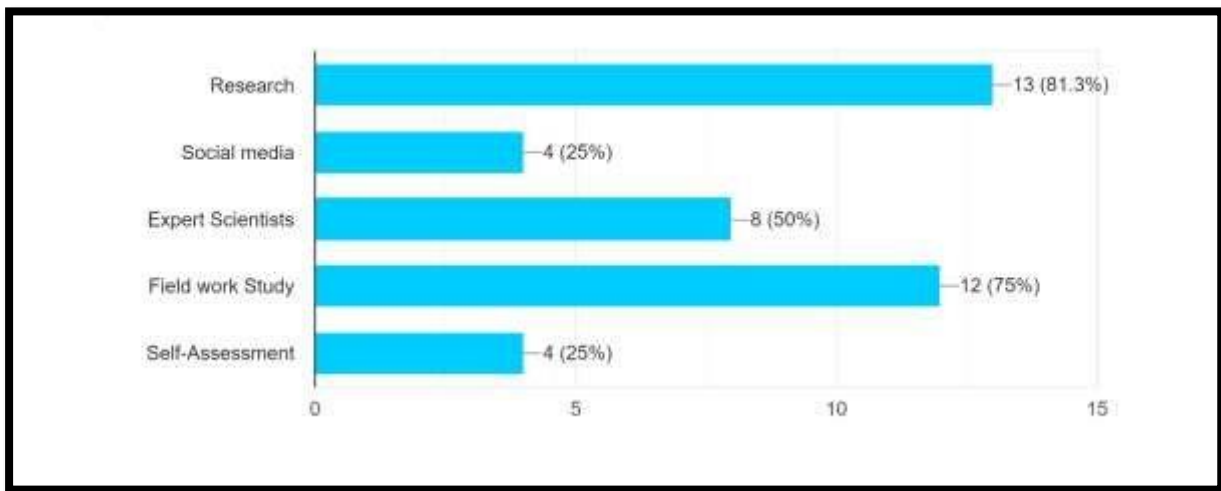


Fig 6: Impact of Family business in Entrepreneurship motivation in Fisheries.



Graph 5: Parameters challenging in future Career development in Fisheries postPandemic



Graph 6: Parameters for evaluating Knowledge-based learning in Fisheries

RESULTS:

The parameters which were evaluated depicted variable results according to the study conducted. As a career option, 50% of the respondents highlighted Aquaculture and Entrepreneurship as an emerging career option which is evolving and profitable. The potentiality of career advancement in Fisheries sector is 87.5%, which is emphasizing on the optimistic approach in Fisheries sector pertaining to Career development. Lack of guidance, motivation, funding issues, lack of skill development, lack of manpower and advanced techniques were considered as different parameter, in which 50% of the respondents had stated that lack of guidance, funding issues and lack of skill development were the reasons for decline in Career options in Fisheries. The training programs in Fisheries were highlighted as the major criteria for creating awareness for Career development and Entrepreneurship. 82.5% of the respondents concluded that online and offline training modules would create an increase in creating awareness pertaining to the job opportunities in Fisheries, followed by 50% respondents emphasizing on Research knowledge as one of the important factors for enhancing the knowledge in Fisheries sector. The Importance of Field work and Practical Implications were also important for Career development,

but the technical knowledge gained throughout this Pandemic situation brings together all the eminent researchers across the globe which adds advantage to the Career advancement in Fisheries sector. The Lack of effective coordination among different government agencies and Ministries (Irrigation, Revenue, Agriculture, Environment & Forestry, and Fisheries) is responsible for creating least awareness about Career Advancement in Fisheries. 62.5% agreed that the Impact of Exotic fishes (silver carp, Tilapia, Thai magur, etc.) has tremendously increased demand in Aquaculture. 50% of the respondents preferred salaried job when compared with Self Employment due to a regular income without risk. The start-up of Entrepreneurship needs family back-up as a business was the major reason for less percentage of people going into business strategies. When the parameters challenging the future career development in Fisheries post Pandemic were evaluated, 56.3% stated that competition in Marketing scheme, 50% respondents marked lack of job opportunities will be a major issue followed by 31.3% respondents choosing lack of resources, funding agencies as challenges during the crisis in Pandemic. Research being one of the major parameters for updating the knowledge and evaluation the development of Fisheries, 81.3 % opted for research and 50% respondent guidance from Expert Scientists.

DISCUSSION:

A synthesis of priority technologies and action strategies

While the foregoing national strategies are country-specific, a number of common issues and responses can be identified. These key points can be made on the national action plans for fisheries.

➤ Demand and supply

1. Fish is a major source of the poor in Asia. Demand for fish will continue to rise, in both domestic and foreign markets, due to increasing populations and per capita incomes in the developing world. This implies a continuous scarcity of fish, which, if not met by rapidly growing supplies, will lead to declining fish consumption and pose a threat to food security. Supply and demand projections confirm the likelihood that in at least two cases (Bangladesh and the Philippines), the per capita consumption of fish may fall over the next 15 years.
2. Expanding supplies will have to come from farmed fish rather than fish caught in the wild. The selected DMCs recognize that capture fisheries have reached or are approaching production limits. Significant expansion in production to meet growing demand and to widen livelihood opportunities can only be sought in aquaculture. For capture fisheries, especially in marine inshore areas, the thrust is to sustain productivity of natural stocks through prudent management.

➤ Aquaculture

3. For aquaculture, supply growth is sought through a combination of productivity improvement and area expansion. The former is pursued by a combination of R & D investment, as well as extension and technical support to close efficiency gaps, which are more prominent in the small-scale, non-intensive sector.
4. Delivering benefits of aquaculture growth to the poor entails prioritization of commodities consumed by the poor, and technologies adopted by enterprises operated by or employing them. At the same time, these commodities should have a favourable market to ensure economic viability and return on development investments. On this score, carp aquaculture and integrated-aquaculture- agriculture systems rate the highest. Depending on the country, other major species (tilapia, catfish, etc.) may also be on the list of priorities.

5. Maintaining sustainability and mitigating environmental deterioration affecting fisheries growth are key concerns. Here, low-value, freshwater aquaculture, while posing its own risks (e.g., invasive species), also rates well against the other capture and culture systems.
6. Brackish water and marine aquaculture offer very promising economic returns, particularly from foreign exchange earnings. However, as currently practiced, the poor cannot afford the scale and investment required to generate these returns. Environmental impacts could also be adverse; hence, despite a favourable market outlook, for most countries, these systems are rated behind low-value aquaculture as pro-poor and sustainable technologies. Nevertheless, they maintain their place in all the aquaculture development strategies. In general, the countries are optimistic about reorienting the systems towards greater participation by small entrepreneurs, and poor rural workers, in addition to setting up organizations of poor fish farmers.

➤ Capture fisheries

7. Only offshore capture fisheries are targeted for significant increases in fishing effort, investment, and production, in the expectation that the poor will benefit through employment on offshore vessels and related activities onshore (e.g., landing sites and processing). On the contrary, coastal capture fisheries are targeted for capacity and employment reduction, in conjunction with better resource management.
8. Capacity reduction entails a strategy for minimizing economic dislocation. Again aquaculture and related activities (e.g., processing, tourism) are to be promoted to absorb exiting fishers, although absorption outside fisheries also needs to be facilitated through credit schemes, training programs, and other support.
9. For the remaining fishers, stronger and more effective management measures should be put in place. Here the management options vary, from decentralization and co-management, to centralized administration under command-and-control. The bottom line is improved formulation and enforcement of fishing rules, which may require different institutional arrangements across countries.
10. Pro-poor technologies to be promoted are small-scale gear, such as gill net and hook-and-line. Resource rehabilitation and enrichment measures will be undertaken.
11. Inland fisheries are important due to their significant contribution to food security and livelihoods for the rural poor. Establishment of community organizations for managing common areas, as well as investments in appropriate stock enhancement and enrichment systems, are promising means of delivering benefits to the poor, particularly for countries with large inland fisheries, reservoir areas, and seasonally flooded lands.

➤ The supply and value chain

12. All the countries recognize that fish production exists within a wider economic context, namely, a supply and value chain beginning from input supply, through post-harvest services, processing, and marketing. Constraints to growth lie at upstream and downstream portions of this chain, such that focusing only on fish production would likely yield low or even negative returns on development investments.
13. On the input side, the major constraint is the unavailability of quality fish seed, and lack of access to credit for poor farmers and fishers. Both problems need to be solved by hatchery and brood stock programs as well as credit schemes.

14. On the post-harvest and side, wastage and poor quality of final products characterize practices. To achieve standards, there is a need in landing and post-harvest in training of fishers and in building processing enterprises. Global food safety standards need to be enforced, particularly term consequences processing costs are modest compared to repercussions on market access in case of non-compliance.
15. All the countries highlight the need for government agencies to get their act together in terms of coordination, policy consistency, and quality of human resources (especially in extension and research). Cooperation across agencies is critical in addressing the natural resource context of capture fisheries and culture, which requires rationalization of policies on land use, water management, and competing demands between sectors (rural versus urban areas, agriculture versus industry, and demands within agriculture, including fisheries).
16. On the marketing side, inefficiencies and lack of competition must be addressed. Price policies, particularly on tariffs for imported products, may need to be reduced to the detriment of some fish-producing subsectors. However, tariff reforms may, on the whole, be beneficial to food security and even sectorial growth.
17. Organizing poor fishers, farmers, and processors is the preferred option in handling developments in global trade and technological change that tend to favour large-scale operations. A collective, pro-poor approach confronts great challenges in light of the geographic dispersal of fish producers, as well as traditional resistance to community-based institutions. Cooperation from other stakeholders, such as private investors and NGOs, may in some countries be drawn upon to meet this challenge.
18. The NAPs call for greater regional collaboration, particularly in the area of trade negotiation, to counter the arbitrary imposition of non-tariff barriers and protectionist measures in developed countries, as well as to harmonize procedures and standards in conducting South-South and North-South trade.

Career Advancement

In addition to this, there is also a scope of self-employment in this field. After, owning degree of B.A.Sc., you can also open your own enterprise. You will also get the opportunity to work in abroad where you can do business in the field of aquaculture, fish processing export and import. Fisheries professionals in aquaculture sectors are demanded in African countries. In the field of fisheries, you can become an aquaculturists, farm managers, exporters, traders, breeders and modern fishermen's, etc.

The job titles of fisheries are given below:

- Fisheries Biologist
- Fisheries Extension Officer (AEO)
- Fisheries Officer
- Fishery Manager
- Fishery technician
- Fishery Observer
- Assistant Fisheries Development Officer (AFDO)
- District Fisheries Development Officer (DFDO)

Recruiters:

- Fisheries Development Board
- Food Department
- Banks
- Food Processing and Technology
- Fish Breeding Farms

Justification of Work

Fish is a source of valuable animal protein and is now considered a health food. This has resulted in increased consumer demand. Fish is now more expensive than meat and other animal foods. Being a highly perishable commodity, fish require immediate processing and various options are available for the value addition of fish. Fish processing, particularly seafood processing and marketing have become highly complex and competitive and exporters are trying to process more value added products to increase their profitability. Value can be added to fish and fishery products according to the requirements of different markets. These products range from live fish and shellfish to ready to serve convenience products. In general, value-added food products are raw or pre-processed commodities whose value has been increased through the addition of ingredients or processes that make them more attractive to the buyer and/or more readily usable by the consumer. It is a production/marketing strategy driven by customer needs and perceptions.

As there are competitions in the field of Fisheries due to excess qualified professionals and less awareness about the career in Fisheries. It is noteworthy to focus upon the challenges of students and people with different professions to acquire the knowledge of Fisheries correlating with the parameters to be developed for improvement of careerdevelopment and Entrepreneurship.

The mode of evaluation of the different parameters of awareness about the career options and the difference between the changes in career advancement in pre- and post-Pandemic situation is a matter of research interest. The norms and regulations as per the Government of India needs appropriate implementation and awareness in people belonging to the rural sector and fishermen community to enlighten the career advancement in the society. The research needs more validation for the awareness of the career development and Entrepreneurship during the Pandemic situation which supports technical knowledge and challenges towards Field work and Experimentation in Fisheries sector.

Conclusion

Fish processing and value addition has evolved over the years as the sunrise sector in Agriculture domain. Globally many new species are being introduced in the Aquaculture sector. A comprehensive study on the suitability of these species for value addition has to be carried out to propose optimized utilization protocols. Functional fish products will be in much demand in future; the challenge will be to retain the functional benefits of fish & shellfish meat by way of adopting product specific processing protocols or alternate delivery systems for sensitive components. These issues offer ample scope for Innovation coupled with entrepreneurial skills for the creation of wealth and employment in fisheries sector.

Aquaculture correlates with Entrepreneurship as an innovative career advancement in Fisheries sector. The effect of Post-Pandemic on Career development highlights the competition and lack of job opportunities due to Inflation. The Research strategies needs more implementation amongst the students for better awareness in Career advancement and Entrepreneurship in Fisheries with the help of Expert Scientists. The Training courses and Collaboration with Authentic Research Institutes with funding agencies would be major parameters depicting an optimistic approach towards multi- disciplinary arenas in Fisheries Sector. The Field work has to be implemented with virtual visit and supporting advanced technical support needs to be implemented in every age group to develop better job opportunities in

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