COOPERATIVES AND FPOS: FISHERIES AND AQUACULTURE BUSINESS MODELS

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Introduction

Fish farming is a rapidly growing industry across the world, with an increasing demand for fish and seafood products. In recent years, the concept of Fish Farmer Producer Organizations (FFPOs) has emerged as a popular model for promoting sustainable fish farming practices and improving the socio-economic conditions of small-scale fish farmers. FFPOs are collective organizations of fish farmers who come together to achieve common goals related to the production, marketing, and value addition of their fish and seafood products. These organizations aim to provide small-scale fish farmers with a platform to access technical, financial, and marketing support, which they would otherwise find difficult to access individually. Presently, several FFPOs are operating across the world, which have been successful in improving the livelihoods of small-scale fish farmers. In India, for example, the National Fisheries Development Board has been promoting the establishment of FFPOs as a means to improve the socio-economic conditions of small-scale fish farmers. The PMMSY scheme of the Government of India, to be implemented over a period of five years from 2020-21 to 2024-25, seeks to ensure the socio-economic development of fishers, fish farmers, and fish workers with the goal of doubling their incomes. The scheme includes the establishment of 500 Fish Farmers Producer Organizations/ Companies (FFPOs/Cs) to empower fishers and fish farmers and enhance their bargaining power. Among these, 300 FFPOs will be set up under PMMSY, while the remaining 200 will be established through convergence with the Department of Agriculture, Cooperation, and Farmers Welfare's ongoing FPO Scheme. Additionally, the Department aims to establish a total of 720 FFPOs through convergence with other schemes and programs of the central and state governments, in collaboration with the Department of Agriculture, Cooperation, and Farmers Welfare, Ministry of Agriculture and Farmers Welfare.

The need for cooperatives and FPOs and their role in business development

Taken together, small and marginal holdings (below 2 hectares) constitute 85 per cent of the farming community in India. Small farmers face various farm- and household-specific transaction costs, limiting their ability to participate in input and product markets. As food preferences change toward a diversified, higher-quality diet due to income and population growth, small-farm commercialization is crucial to meet this rising demand. Aggregation models are potential institutional interventions that help redress the constraints of small farms, wherein groups of producers jointly manage resources or access credit, inputs, information, and product markets to reduce transaction costs. Successful aggregation models have shown increasing economies of scale, decreased transaction and coordination costs, improved access to markets, and investment in yield-stabilizing technologies like irrigation and improved crop varieties to be the main benefits of organizing farmers.

In the past, cooperatives were the most common form of aggregation model in rural India. Except for dairy and sugar, cooperatives in India have been mostly ineffective due to issues involving incompetent management, political interference, financial irregularities, and corruption within the organizations. Poor management also made many cooperatives dependent on government funds for working capital. Cooperatives mandated government representation on their governing boards, allowing political interference in their functioning which further hindered growth.

What is the need for an FPO?

Farmers/ fishers in India face tremendous hardships which include the following –

- Small Size of landholdings. Nearly 86% of farmers are small and marginal with average land holdings in the country being less than 1.1 hectares.
- Good quality inputs are out of reach of small and marginal farmers mainly because of the exorbitant prices of better seeds.
- Less or no accessibility to large-scale mechanisation.
- Challenges in marketing their products due to lack of economic strength. In the absence of sound marketing facilities, the farmers have to depend upon local traders and middlemen for selling their farm produce which is disposed of at an extremely low price.
- FPOs help in the collectivization of such small, marginal and landless farmers/fishers to give them the collective strength to deal with such issues.

Aim of FPOs

The main aim of FPO is to ensure better income for the producers through an organization of their own. Small producers do not have the volume individually (both inputs and produce) to get the benefit of economies of scale. Besides, in agricultural and fish marketing, there is a long chain of intermediaries who very often work non-transparently leading to the situation where the producer receives only a small part of the value that the ultimate consumer pays. This will be eliminated. Through aggregation, the primary producers can avail the benefit of economies of scale. Farmer Producers will also have better bargaining power in the form of the bulk buyers of produce and bulk suppliers of inputs.

Difference Between Cooperative Societies and Producer Companies

Table 1 shows the major key differences between Cooperative Societies and Producer Companies.

Features	Co-operatives Producer Company	Producer companies
Registration	under Co-operative Societies Act	Companies act
Membership	Open to any individual or co-operative	Only to producer members and their agencies
Professionals on Board	Not provided	Can be co-opted
Area of operation	Restricted	Throughout India
Relation with other entities	Only transactional based	Can form joint ventures and alliances
Shares	Tradable within membership only	Not tradable Tradable within membership only

Member stakes	No linkage with no. of shares held	Articles of association can provide for linking shares and delivery rights
Voting rights	One person one vote, but Ro C and government have veto power	One member one vote
Reserves	Can be created if made profit	Mandatory to create reserves
Profit sharing	Limited dividend on capital	Based on patronage, but reserves must and limit on dividend
Role of government	Significant	Minimal
Disclosure and audit requirements	Annual report to regulator	Very strict as per the Companies Act
Administrative control	Excessive	None
Borrowing power	Restricted	Many options
Dispute settlement	Through co-op system	Through arbitration

PMMSY and FPOs

The *Pradhan Mantri Matsya Sampada Yojana* (PMMSY) represents a significant investment in the fisheries sector, focusing on the socio-economic development of stakeholders and the establishment of FFPOs to support fishers and fish farmers. By enhancing their bargaining power and economic empowerment, the scheme aims to bring about positive transformation and sustainable growth in the fisheries sector in India. In addition to providing a platform for accessing technical, financial, and marketing support, FFPOs also promote sustainable fish farming practices. They encourage the adoption of eco-friendly farming practices that reduce the impact of fish farming on the environment. FFPOs also promote the use of high-quality fish feed and the adoption of good aquaculture practices to improve the health and productivity of fish farms.

Current status of FPOs in India

There are over 33711 FPOs across India with 28.2 lakh stakeholders with over Rs 4000 crore revenue in 2022-23 (Source: - FPO Platform for India, Tata Cornell Institute). The Government of India has launched the Formation & Promotion of 10,000 FPOs Scheme with a clear strategy and committed resources to form and promote 10,000 new FPOs across India. Rs 6866 crore has been allocated for this scheme. (Source: -Formation and Promotion of 10,000 Farmer Producer Organizations (FPOs), Operational guideline).

Fish farmer produce organisation as envisaged under PMMSY

Fish Farmers Producer Organization (FFPO) is a generic name, which means an association or group of fishers or fish farmers or fisheries stakeholders, with the primary objective of carrying out sustainable fisheries value chain business by whatever name called,

(i) registered under any law for the time being in force; or

(ii) promoted under a scheme or programme supported by the Central or State Government

In alignment with the larger mandate of PMMSY, the primary objectives of developing Fish Farmer Producer Organisations have been envisioned to:

- Economically empower the fishers and fish farmers and enhance their bargaining power by achieving economies of scale.

- Enhance productivity through efficient, cost-effective and sustainable resource use.
- Realize higher returns for fishers and fish farmers through better liquidity and remunerative market linkages for their produce.
- Build capacities of fishers and fish farmers to develop entrepreneurial skills for making the FFPOs economically viable and self-sustaining.
- Develop vibrant and sustainable income-oriented fisheries value chains.

Broad services and activities to be undertaken by FFPOs

The FFPOs may provide and undertake the following major services and activities across the fisheries value chain:

Production and productivity

- Supply of quality inputs like seed, fingerlings, brood stock, fish feed, fishing nets and other inputs for production at reasonable rates.
- Undertake Pond Culture, Pen Culture, Cage Culture, RAS, Raceways, Bio-floc etc. related fish culture activities for both inland and marine regions.
- Dissemination of Technology, Quality control and other fisheries-related activities and innovations.
- Undertake aggregation of smaller lots of farmer-members produce.

Post-harvest management and infrastructure

- Make available need-based production and post-production machinery and equipment like storage – Ice flakes, ice boxes, and transportation/logistic support – reefer vans, insulated cargo and such other machinery and equipment on a custom hiring basis for members to reduce the per unit production cost.
- Make available services offering value addition like cleaning and assaying. sorting, grading, packing and fish farm-level processing facilities at a user-charge basis at a reasonably cheaper rate.
- Undertake high-value addition/processing units for better price realization and exports.
- Traceability-related interventions can also be proposed by FFPOs.
- Undertake higher income-generating activities like cold chain development, seed/broodstock production, ornamental fisheries, seaweed cultivation, cold water fisheries, fish kiosks, aquarium manufacturing etc.
- Undertake any activity (including but not limited to microfinance, e-market, technical support, repairs and maintenance services for boats, motors, cold chain, reefer transport etc.) associated with fisheries supply chain as door-step support

Marketing and branding

- Branding, packaging, labelling, and standardization of products.
- Market the aggregated produce with better negotiation strength in marketing channels offering better and remunerative prices.
- Facilitate market information about the produce for educated decision-making in production and marketing.

- FFPOs may also undertake the operation of fish vending kiosks at various urban centres. Development of fish and fisheries-related products/by-products and tie-ups for domestic and export sales

Composition of FFPO

The FFPOs may comprise of the following.

- Fishers
- Fish Farmers
- Fish Workers and Fish Vendors
- Fisheries entrepreneurs

Or any other person(s) associated with the fisheries sector as decided by the Dept. of Fisheries, Government of India.

Strategy for FFPO formation

The formation and promotion of FFPO is based on the Fisheries Business Cluster Area, which is broadly defined as follows.

"Fisheries Business Cluster Area" for FFPO formation, promotion, operations and management herein means a geographical area wherein a fisheries-related business can be formed for leveraging economies of scale in the entire fisheries value chain in a sustainable manner. Thus, potential growth clusters will be identified to enhance the competitiveness of the fisheries sector, facilitate economies of scale, generate higher incomes and accelerate growth and expansion of the sector in an organized manner.

The Fisheries Business Cluster Area is to be identified by the Cluster-Based Business Organization (CBBO), with the approval of the implementing agency, which has engaged the CBBO and in consultation with the respective State Government / UT Administration Departments concerned.

CBBOs will undertake feasibility studies which will have two components

(i) A diagnostic study including a baseline survey to determine produce similarity, existing gaps and potential activities, interventions in terms of infrastructure, services, etc. required in the fisheries business value chain including inputs, production, harvesting, processing, cold chain, quality assurance, branding, packaging, market linkages, credit linkages, exports, use of technology etc. The baseline survey should also identify the current situation of small and marginal fish farmers, SC/ST and landless farmers for aggregation to identify the minimum geographic area for potential interventions etc.

(ii) Business Plan to establish a fit case for the formation of an economically viable FFPO in a sustainable manner.

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BIODIVERSITY CONCERNS IN AQUACULTURE AND FISHERIES DEVELOPMENT

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Introduction

The United Nations 2030 Agenda for Sustainable Development was implemented on 1st January 2016, which encompassed 17 Sustainable Development Goals (SDGs). The agenda 'Transforming our World' forms a roadmap for people and the planet to ensure sustainable development with a holistic perspective, addressing economic, social and environmental concerns apart from a major objective of eradicating extreme poverty in the world. Among the 17 SDGs, the first one (No Poverty) and the second one (Zero Hunger) are envisaged with a vision to end hunger and malnutrition by the year 2030. However, factors such as climate change, degraded ecosystems and increased biodiversity loss pose a serious threat to economies, global food security and the environment. It is estimated that around 811 million people suffer from hunger and 3 billion cannot afford healthy diets (FAO-SOFIA, 2022). Hence, we urgently need to transform our agri-food systems to ensure food security for the growing population. Owing to their high protein content, and availability of Polyunsaturated Fatty Acids (PUFAs) and micronutrients, aquatic foods play a vital role in global food security and also address the issue of malnutrition faced by many countries. Integrating fisheries and aquaculture products in food systems strategies on a global level would effectively address the issue of hunger and malnutrition to a great extent.

Fisheries and aquaculture: Global scenario

The role of fisheries and aquaculture in providing food, nutrition and employment has been recognised globally and its significance has increased in the recent past. Aquatic foods provide about 17 percent of animal protein on a global level and in certain countries in Asia and Africa, it is more than 50 percent. The sector employs an estimated 58.5 million people in primary production alone and in that around 21 percent are women. Furthermore, it is estimated that including subsistence and secondary sector workers, and their dependents, about 600 million livelihoods depend at least partially on fisheries and aquaculture. The fisheries and aquaculture production reached a record of 214 million tonnes in 2020, worth about USD 424 billion and comprising 178 million tonnes of aquatic animals and 36 million tonnes of algae. Among the aquatic animals harvested, capture fisheries contributed 90 million tonnes (51 percent) and aquaculture contributed 88 million tonnes (49 percent). The trend in the production and consumption of aquatic foods (Table 1 & Fig. 1) shows that the present production is about 60% higher than the average production in the 1990s and consumption (20.2 kg per capita) is more than double the rate 50 years ago (9.9 Kg per capita). Of the overall production of aquatic animals, around 157 million tonnes (89%) were used for human consumption and 20 million tonnes were destined for non-food uses, such as production of fishmeal and fish oil. The international trade of fisheries and aquaculture products generated around USD 151 billion in 2020, down from the record high of USD 165 billion in 2018 mainly due to the outbreak of COVID-19. However, fish is one of the most traded food commodities worldwide.

Sustainable fisheries and aquaculture are key components of sustainable development and play a significant role in eliminating hunger, promoting health and reducing poverty. Fisheries and aquaculture are a source of employment, and income generation and offer ample opportunities for economic development. Prospects for sustainable development and meeting goals related to ending poverty and hunger are therefore greatly enhanced if the long-term sustainability of fisheries and aquaculture are ensured. Under the SDGs for Agenda 2030, SDG 14 pertains to fisheries which in principle covers both capture fisheries and aquaculture. The currently defined indicators are mostly related to capture fisheries, while for aquaculture development, almost all SDGs are relevant (FAO-SOFIA 2022). At the recent Global Conference on Aquaculture in Shanghai, participants identified strategic priorities for accelerating sustainable aquaculture development and optimizing aquaculture's contribution to the SDGs.

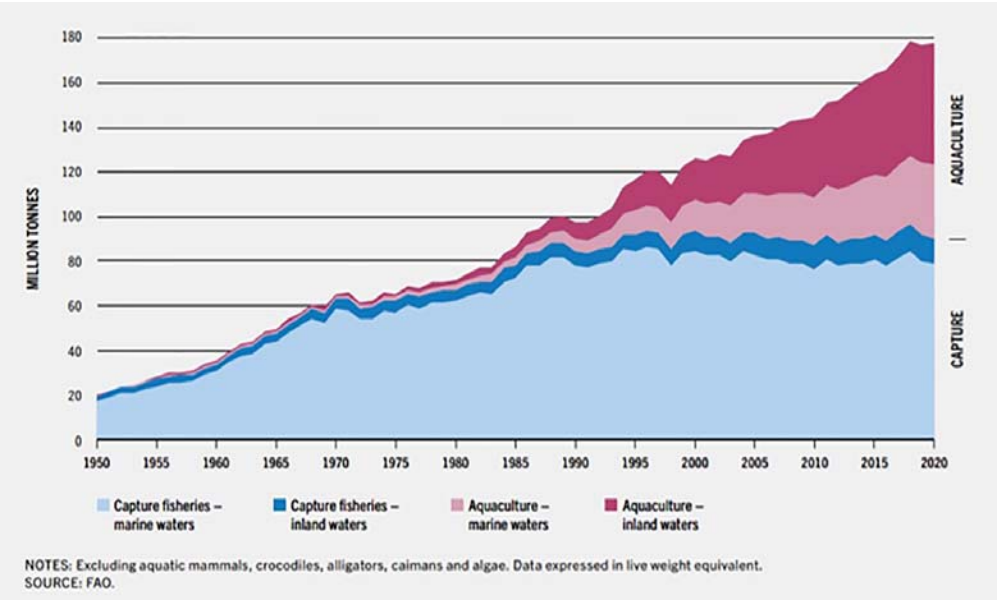

Fig. 1. World fisheries and aquaculture production trend (FAO- SOFIA 2022)

Table 1. Global fisheries and aquaculture production, utilisation and trade (FAO-SOFIA, 2022)

Parameters	1990s	2000s	2010s	2018	2019	2020
	Average per year					
	Million tonnes (live weight equivalent)					
Production						
Capture						
Inland	7.1	9.3	11.3	12.0	12.1	11.5
Marine	81.9	81.6	79.8	84.5	80.1	78.8
Total capture	88.9	90.9	91.0	96.5	92.2	90.3
Aquaculture						
Inland	12.6	25.6	44.7	51.6	53.3	54.4
Marine	9.2	17.9	26.8	30.9	31.9	33.1
Total aquaculture	21.8	43.4	71.5	82.5	85.2	87.5
Total world fisheries and aquaculture	110.7	134.3	162.6	178.9	177.4	177.8
Utilization[2]						
Human consumption	81.6	109.3	143.2	156.8	158.1	157.4
Non-food uses	29.1	25.0	19.3	22.2	19.3	20.4
Population (billions)[3]	5.7	6.5	7.3	7.6	7.7	7.8
Per capita apparent consumption (kg)	14.3	16.8	19.5	20.5	20.5	20.2
Trade						
Exports - in quantity	39.6	51.6	61.4	66.8	66.6	59.8
Share of exports in total production	35.8%	38.5%	37.7%	37.3%	37.5%	33.7%
Exports in value (USD 1 billion)	46.6	76.4	141.8	165.3	161.8	150.5

[1] Excluding aquatic mammals, crocodiles, alligators and caimans and algae. Totals may not match due to rounding.

[2] Utilisation data for 2018-2020 are provisional estimates.

[3] Source of population figures: United Nations 2019. Revision of World Population Prospects. In UN: New York. Cited 22 April 2022.

https://population.un.org/wpp

SOURCE: FAO

Biodiversity concerns

Biodiversity is the variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part, which includes diversity within species, between species, and of ecosystems. Biodiversity is important in human-managed as well as natural ecosystems. Decisions humans make that influence biodiversity affect the well-being of themselves and others (www.greenfacts.org).

Freshwater, coastal and marine ecosystems harbour a variety of aquatic biological diversity that greatly contributes to the economic, social and cultural well-being of communities around the world. Fisheries and aquaculture are dependent on this biodiversity. Biodiversity is not only the source of wild-caught fish but also sustains the habitats which serve as feeding, spawning and nursery sites which are essential for wild fish recruitment. However, there are currently several fisheries that are not sustainably managed,

besides aquaculture operations and practices with significant negative impacts on biodiversity and habitats (CoP13 of CBD).

All developmental activities must be undertaken with a precautionary approach to ensure that biodiversity is not adversely affected. This holds good in the case of aquaculture and fisheries development. This is evident from SDG14 about "Life below water", which aims to conserve and sustainably use the oceans, seas and marine resources for sustainable development.

The developmental activities of capture fisheries include mechanisation and motorisation of the traditional boats and the development of factory vessels apart from various advanced techniques in fish detection, harvesting and post-harvest processing. The negative impacts include overfishing and over-exploitation of the natural stocks, marine pollution resulting from oil spills, industries and other discards including plastics into the sea. All these ultimately affect biodiversity.

Overfishing continues to be a major problem in the world's oceans and inland waters and causes significant pressure on biodiversity. Persistent overfishing has a severe impact on marine biodiversity, driving the collapse and local extinction of several species. Further, destructive fishing practices, such as dynamite fishing and bottom trawling in vulnerable habitats such as coral reefs, seagrass beds, and sponge grounds, are of particular concern. The pressures on biodiversity resulting from detrimental fisheries and aquaculture practices are likely to increase unless immediate actions are taken to curtail the same.

Aquaculture, on the other hand, has both positive and negative impacts on biodiversity. The positive impact is that the development of aquaculture minimises the dependence on capture fisheries which reduces the fishing pressure on wild populations which will be a beneficial effect because of biodiversity concerns. However, it also has negative impacts if not carried out in a responsible manner such as the escape of cultured species that can become invasive in non-native areas, the release of effluents that cause eutrophication, conversion of ecologically sensitive areas for aquaculture, disease transmission to wild fish, threat of over-exploitation of wild stocks for preparation of a fish meal as a protein source for feed mills etc.

As per the Global Sustainable Development Report 2023, the quadrennial progress report towards attainment of SDGs, released by the United Nations emphasizes that much more needs to be done to achieve the ambitious targets for the Agenda 2030. As all the 17 SDGs are interlinked to ensure inclusive growth, developmental measures are imperative in all sectors including fisheries and aquaculture to achieve these targets. However, it should not be at the cost of compromising the well-being of biodiversity. Hence the present challenge in front of the world is to strike a balance between developmental measures and sustainable management and conservation of biodiversity.

Conclusion

Fisheries and aquaculture constitute a major food production system that can contribute considerably to addressing global food security, malnutrition, livelihoods and human welfare. Hence the development of this sector can contribute to addressing most of the SDGs, especially SDG1 and SDG2 about poverty, hunger and malnutrition. For aquaculture development, almost all the SDGs are relevant (FAO-SOFIA 2022). To rebuild fishery stocks, effective management of capture fisheries is essential. This can be achieved at the country and regional levels if member countries can effectively utilise international instruments such as the United Nations Convention on the Law of the Sea, the Code of Conduct for Responsible Fisheries and related implementation tools.

As per the document released in connection with the Conference of the Parties to the Convention on Biological Diversity (CBD) in its thirteenth meeting at Cancun, Mexico in 2016, approaches for enhancing the integration of biodiversity and sustainability of fisheries include: (i) Making greater use of rights-based and innovative fisheries management systems, such as community co-management, that provide fishers and local communities with a greater stake in the long-term health of fish stocks; (ii) Eliminating, reforming or phasing out those subsidies which are contributing to overfishing; (iii) Enhancing, in each country, monitoring and enforcement of regulations to prevent illegal, unregulated and unreported fishing by flag-vessels; (iv) Curbing fishing practices and gears that cause serious adverse impacts to the seafloor and to the non-target resources; and (v) Developing marine protected area (MPA) networks and other effective area-based conservation measures, including the protection of areas particularly important for fisheries, such as spawning grounds, and vulnerable areas. Even though fisheries and aquaculture can contribute to addressing food security and malnutrition, their development needs to be carried out responsibly without causing any threat to biodiversity.