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Sustainable management of fishermen co-operative societies in India: A review

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Abstract

Fisheries in India has high potential for economic growth, nutritional security and socioeconomic development. This country is bestowed with diverse fishery resources. Traditionally, the fishery activities have been performed by fishermen through generations in this country and for collective production and better management of fishery activities, fishermen cooperatives have been formed. The fishermen cooperatives are organized into various tiers with PFCS at the bottom and FISHCOPFED at the top. Large number of fishermen cooperatives have been formed in India as revealed by the FISHCOPFED database. Scattered studies have been made by different authors about the condition and mode of functioning of fishermen cooperatives in this country. The important findings of the recent studies related to status of fishermen cooperatives in India have been discussed in this paper. It was found that there were regional imbalances in the mode of functioning of fishermen cooperatives, some were well managed under active monitoring and support of government but many cooperatives were facing different constraints for their survival. For the increase in fish production as well as socio-economic development of fishermen, sustainable management of fishermen cooperatives are very important. To achieve this, a comprehensive study throughout the country, focussing on various aspects of fishermen cooperatives has been proposed. The need for suitable policy implications for sustainable management of fishermen cooperatives in congruence with the modern technological development in the field of fisheries, environmental pollution and climate change have been mentioned.

Keywords: fishery, fishermen cooperatives, FISHCOPFED, constraints, sustainable management

1. Introduction

Fishery sector in India is now regarded as a sunrise sector from the view point of socio-economic development of the country. In recent times, with the involvement of modern technology and utilization of huge aquatic resources, Indian fisheries have been transformed into vast commercial enterprise. This sector has now got a very prominent place for the economic growth of the poor people of rural areas of the country. Fishery and aquaculture potentially contributed to the national income, nutritional security, employment opportunities, social objectives and export earnings (Ayyappan, S., and Diwan, A.D., 2006) ^[1]. Fisheries Sector of Indian Economy is a vital sector as it provides direct employment and livelihood to around 16 million people and to many more who indirectly depend on this Sector. In India, this sector showed an impressive transformation from a traditional subsistence activity to a well-developed diversified commercial enterprise with vast untapped potential (Fifth Report of Standing Committee on Agriculture, 2019-20) ^[2].

Starting as a purely traditional activity, Indian fisheries have now transformed into a large commercial enterprise with huge potential. At constant prices (2011-12), the share of fisheries sector in the total Gross Value Addition (GVA) of India, increased from 04.90% in 2012-13 to 12.00% in 2018-19. During the period, this sector records an increase of 179%. During financial year 2018-19, fisheries sector contributed Rs. 1, 28,011 Crore to the National GVA at (2011-12) constant prices (National Accounts Statistics, Ministry of Statistics and Programme Implementation, GOI, 2020) ^[3].

Fisheries sector is now one of the major contributors of foreign exchange earning in our country. India is now one of the leading seafood exporting nations in the world. India has rich and diverse fisheries resources ranging from deep seas to lakes, ponds, rivers and more than

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10% of the global biodiversity in terms of fish and shellfish species. The marine fisheries resources are spread along the country's vast coastline and 2.02 million square km Exclusive Economic Zone (EEZ) and 0.53 million sq.km continental shelf area. The inland resources are in the form of rivers and canals (1.95 lakh km), floodplain lakes (8.12 lakh hectares), ponds and tanks (24.1 lakh hectares), reservoirs (31.5 lakh hectares), brackish water (12.4 lakh hectares), saline/alkaline affected areas (12 lakh hectares) etc. The unutilized and underutilized vast and varied inland resources offer great opportunities for livelihood development and ushering economic prosperity (Draft National Fisheries Policy, 2020) [4].

2. Meaning and concepts of fishermen cooperatives

"A cooperative is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise" (Anbumani, K., 2007) [5]. As the fishermen generally comes from weaker sections of the society, they lack necessary monetary resources, knowledge of technological advancements and organizational capacity required for better fish production, storage, processing and marketing. Due to low income, they usually borrow money from fish merchants at high rates of interest. Thus, there is a vicious circle of indebtedness fostering exploitation. Formation of fishermen cooperative society can solve all these problems and fishermen in different countries have adopted the cooperative system of working to improve their fisheries all round as well as develop their socio-economic conditions.

A study conducted by the Council for Social Development in India confirmed the suitability of the fishermen cooperatives as a tool for promoting interests of fishermen. The study also emphasized the need for organizing active fishermen into cooperatives and for strengthening and encouraging the fishermen cooperative societies for performance of multi-purpose functions and social interest of their members. To ensure that a well-knit structure of fishery cooperatives is created in the country, the study recommended that, "Multi-functional Primary fishermen Co-operatives can be retained" (Mishra, B.K., 1997) [6].

3. History of fishermen cooperative societies in India

The modern co-operative society has its roots in England, when it started in 1844. The Fishery co-operative movement in India began in 1913 when the first fishermen society was organized under the name of "Karla Machimar (Fishermen) Co-operative Society" in Maharashtra. The state of West Bengal was the next to organize cooperative societies in fishery sector in 1918. In the same year, Tamil Nadu also organized one fishermen cooperative society. In India, with the National Federation of Fishermen Cooperatives (FISHCOOPFED), at top of the cooperative structure, there are 17 Federations at the State level, 108 Central Societies at the district & regional level and over 11,000 primary fishermen cooperative societies at village level. Membership of primary societies is around 11.39 lakhs covering about 21% of active fishermen in the country. Presently, the cooperative structure of fishermen cooperatives differs from state to state. While Kerala has got a two-tier structure (Primary and Apex), Maharashtra has 4 levels viz., Village, district, regional and apex. Consensus is gradually emerging to develop three tier structure viz., Primary fishermen cooperative Society (PFCS) at village level, Central Societies

at district level and State federations at the Apex level. (Mishra, B.K., 1997) [6]. In West Bengal, the fishermen Co-operative societies are arranged in three tier system. An Apex Federation at State Level called Benfish. There are Central Fishermen Co-operative Societies at District level and Primary Fishermen Co-operative Societies (PFCS) at Village level. At Present, the West Bengal has 18 CFCS, 906 PFCS and 1, 12,647 fishermen with primary membership of fishermen cooperatives (Statistical Hand Book of Fisheries, 2015-16, Govt. of West Bengal) [7].

4. Functions of Fishermen Co-Operative Societies

As provided by constitutional law of India, cooperatives are subject matter of concurrent list. The structural organization of cooperatives varies from state to state. Generally, cooperatives are arranged in four tier structures, viz., National federation of Fishermen cooperative limited, State federation of Fishermen's cooperatives, Central Fishermen cooperative Societies and Primary fishermen Cooperative societies. The main functions of fishermen cooperatives at different levels of organizations are given below (Sapovadia, V., 2004) [8].

I. Functions of national federation of fishermen's cooperative ltd.

- Arrange supply of fisheries inputs and equipments
- Transfer technology to fishermen through cooperatives
- Insurance cover to fishermen
- Procure pond / lake on lease basis for development of fish breed and sale of fish at reasonable price
- Provide consultancy services to the members of fishery cooperatives
- Setting up training cum demonstration units
- Marketing of fish and fish seed and promote exports
- Research and consultancy in fishery cooperatives
- Publications
- Liaison with government and other departments, cooperative institutions, international cooperative alliance and other agencies

II. Functions of State federation of fishermen's cooperative

- Promote and develop fishery cooperative in the state
- Raise capital through share, deposits and borrowings
- Procure and distribution of required fishery inputs and equipments
- Marketing of fish at reasonable rates
- Undertake processing activities and export of fish products
- Technical guidance
- Liaison with state government and other agencies

III. Functions of Central fishermen's cooperative societies

- Coordinate state federations and primary cooperatives
- Support primary cooperatives through various programme

IV. Functions of primary fishermen cooperative societies

- Motivate fishermen to organize cooperatives
- Procure fish from members and provide complete infrastructure for sale of fish
- Provide fish seed, net and other inputs and equipments
- Arrange technical guidance for members.

5. Fishcopfed Database

The National Federation of Fishermen's Cooperatives in India (FISHCOPFED) published statistical data on fishermen

cooperatives in their website which is given below:

Table 1: Statistics on Fishermen Cooperatives in India

SI No	Category	Number
01	Cooperative fishermen membership	29,69,328
02	Primary fishermen Cooperative Societies	18,550
03	District Level Societies	126
04	Regional Level Federation	03
05	State Level Federation	21
06	National Level Federation	01

Source: www.fishcopfed.in ^[9]

In order to develop a comprehensive database of primary fishermen cooperative societies in the country, FISHCOPFED has undertaken a primary survey of 18,550 primary cooperative societies across 26 states and 4 union territories in

India. This report presents an analytical status of primary fisheries cooperative societies in the country which is given in the following

Table 2: State-wise Number of the PFCS covered under the Primary Survey of Fishcopfed

SI No.	Name of State	No. of State Fedn.	No. of Regional Fedn.	No. of DFCS	No. of PFCS	Inland	Marine	Total Membership
1	Andhra Pradesh	1		13	2289	1858	431	2,58,411
2	Telangana	1		10	3933	3933	0	2,52,202
3	Assam	1			272	272		43,845
4	Bihar	2			510	510		4,10,007
5	Chhattisgarh	1		3	765	765	0	26,154
6	Gujarat	1		2	263	57	206	26,045
7	Goa				20	8	12	1,503
8	Himachal Pradesh				45	45	0	5,837
9	Jammu & Kashmir				1	1		18
10	Jharkhand	1			384	384	0	22,853
11	Karnataka	1		2	418	319	99	2,04,689
12	Kerala	1			386	156	230	3,48,466
13	Maharashtra	1	2	36	3315	2961	354	3,32,636
14	Madhya Pradesh	1		1	596	596	0	25,493
15	Manipur	1		3	240	240	0	18,433
16	Meghalaya				18	18	0	611
17	Mizoram	1			47	47	0	1,656
18	Nagaland				267	267	0	9,234
19	Odisha	1	1	2	657	317	340	1,38,143
20	Punjab			1	1	1	0	18
21	Puducherry	1		1	64	12	52	58,525
22	Rajasthan			1	34	34	0	4,130
23	Sikkim				8	8	0	230
24	Tamil Nadu	1		11	1353	360	993	6,01,620
25	Tripura	1			142	142	0	22,967
26	Uttar Pradesh	1		19	1011	1011	0	54,521
27	Uttarakhand				13	13	0	634
28	West Bengal	1		20	1433	1191	242	92,759
29	Arunachal Pradesh				11	11	0	230
30	Andaman & Nicobar Island	1			41	0	41	1,361
31	Daman & Diu				7	0	7	3,176
32	Lakshadweep	0	0	0	6	6	0	2,910
33	Haryana			1	0	0	0	11
	Total	21	3	126	18,550	15543	3007	29,69,328

Source: www.fishcopfed.in ^[9]

6. Important findings from the recent study made on Fishermen Cooperatives in India

- Nair S. R., *et al.* (2010) ^[10] studied the primary fishery cooperatives in Thane district of Maharashtra with an objective to evaluating their performance in marine sectors using normalization, scoring and ranking method. They found that The Primary fishery cooperatives in Thane district had made considerable contribution in

fishery development of the district and Arnala Fishermen Sarvoday Sahakari Society Ltd. got the first rank on overall performance among the 28 primary fishermen cooperatives surveyed by them. They pointed out that the organization of fishery cooperatives in Thane district of Maharashtra had created a substantial improvement in empowering fisher folk to effectively use fishery resources for their welfare. The study revealed that the

- coverage of Thane districts' fishery cooperatives in terms of credit, storage, preservation, transport, and marketing facilities was relatively better than other districts of Maharashtra. They suggested that 'productivity awards' should be given to the best performing fishery cooperatives at state level which would inspire other cooperatives to improve their performance.
- Sreeranganadhan K., (2012) ^[11] studied the role of co-operative societies in the marketing of fish and fish products in Kerala. Most of the fishermen surveyed him felt that their livelihoods and viability are generally threatened by irregular and relatively low level of income. He found that around half of the fishermen surveyed desired to quit the profession, but they have to continue fishing due to lack of other employment opportunities. His study revealed that eradication of poverty among fishermen community is possible only by freeing them from the clutches of middlemen and financiers and to market their catch properly. He pointed out that active involvement of co-operative organizations was needed and the interference of co-operatives in every walk of life of fishermen community was the only remedy for their socio-economic upliftment. He concluded that it was very clear from the study that co-operative organization was the only solution to solve the basic problems prevailing in the fishery sector.
 - Tyagi L. K., *et al.* (2013) ^[12] studied functioning of fishermen cooperative societies in selected states of India. They pointed out that that the fishermen cooperatives in India and other developing countries largely provided institutional support and social connectedness to the fishing communities. The fishermen cooperatives were aimed at increasing the maximum output from fishery resources and thus increasing the overall wellbeing of their members. The study mentioned that fishing co-operative societies had been studied by very few researchers in India and most of these studies were focused on performance of fishing cooperatives on production, marketing and financial aspects. According to them, fishing co-operative societies as a social organization had not adequately been studied in India. Their study covered 58 fishermen co-operative societies in 3 states, viz. Himachal Pradesh (HP), Madhya Pradesh (MP) and Uttar Pradesh (UP). The study found that the overall functioning of fishermen cooperatives in HP and MP was very high but it was low in UP. This difference was mainly due to effective management of fisherman cooperatives under active support of State fisheries department in HP and MP and which was lacking in UP.
 - Biswas M. P., *et al.* (2014) ^[13] studied the status of fisherwomen of east coastal states of India, viz. West Bengal, Orissa, Andhra Pradesh and Tamil Nadu. Although the fisherwomen in these states had high potential in the fishery sector, particularly in post harvest handling, preservation, processing and marketing of fish and fish products, the fisherwomen in these states were subjected to many deprivations and exploitations. The study found that a number of women cooperative societies had been established in Srikakulam district, Andhra Pradesh with the purpose to organize women for hand braiding of fishing nets, supply of twine, etc. But presence of such type of women cooperatives in fishery sector were largely lacking in other states. For increased productivity in the fishery sector and empowerment of fisherwomen the study stressed upon the role of institutional mechanisms such as formation of women fishermen cooperatives or women self help group (SHG) etc.
 - Chandrashekar B. S., (2014) ^[14] studied the problems and prospects of fishery co-operative societies in India. He mentioned that despite having good potential in fisheries in India, fishers could not substantially use for upliftment of their socio-economic status due to lack of institutional support. Hence, fishermen cooperatives seemed to be the most appropriate organization to improve the socio-economic status of fishers in the country. He pointed out that although fishery cooperative movement in India started way back in 1913, the progress of fishermen cooperative societies was quite slow in pre-independence era. Establishment of fishery cooperative societies had made impressive progress particularly after introduction of Five Year Plans in 1950-51. He studied the growth of fishermen cooperatives in India from 2000-01 to 2009-10 and found that there was a positive and stable growth over a period of 7 years. He concluded that poverty in fishing communities in the country necessitates liberalization of norms for fishery cooperatives and the fishermen should be supported through low interest rate financial loans. He suggested proper coordination between Central and State Governments in India to achieve continued growth in fishery cooperative sector and thus to improve economic condition of poor fishermen.
 - Haldar P. K., *et al.* (2015) ^[15] studied the performance of Fishermen cooperatives in Tripura. In Tripura, more than 95% of the population is fish eater and the state is known for the highest percentage of fish eating populations in the country. Rudrasagar Udbastu Fishermen Co-operative Society was the first fishermen co-operative society established in Tripura in 1951. Since then, 145 fishermen cooperatives were established in Tripura up to 2011-12. Out of total fish production of 53,350.24 MT in Tripura in 2011-12, the contribution of fishermen cooperatives was 316.242 MT. Apart from that, in the year 2011-12, the fishermen cooperatives in Tripura also produced 44.9 lakh fish seeds. The study revealed that out of 145 fishermen cooperatives, 78 Nos. were found in actively functioning state, and dormant and defunct fishermen cooperatives were 34 Nos. and 33 Nos. respectively. Out of the total 78 Nos. of actively functioning fishermen cooperatives in 2011-12, 15 Nos. were in high productivity groups (>2500 kg/ha), 18 Nos. were in medium level of productivity (1500-2500 kg/ha) and 45 Nos. were in low level productivity (<1500 kg/ha). The study divulged that the total number of active fishery cooperatives, fishermen members and water area decreased in Tripura from 2010-11 to 2011-12. They studied the performance of fishermen cooperatives in all 8 districts of Tripura. The study revealed that the production of the fishermen cooperatives in North Tripura, Gomti district and Dhalai district were good enough, because the members of the cooperatives had been actively participated to increase their productivity. They suggested the removal of organizational mismanagement, lack of entrepreneurial leadership and conflicts between the group members for enhancing the productivity of fishery cooperatives in the state of Tripura.

- Thakur A., (2015) ^[16] studied socio-economic status and other parameters of fish production of fishermen cooperatives, SHGs and Fishermen Groups involving 74 respondents in Bastar district of Chhattisgarh. The study revealed that the majority of the respondents belonged to middle age group (35-55 years), had middle school level education for fishery cooperatives and SHGs but the average education level of fishermen groups was primary school level. The number of female members was very high in SHGs (71.43%) as compared to male members (28.57%). However, the percentage of female members in fishermen cooperatives and fishermen groups was very less as compared to SHGs. Majority of the respondents worked in agriculture, animal husbandry as well as fisheries at a time. The study found that a greater number of members were found in fishermen cooperatives as compared to SHGs and fishermen groups, it was expected because cooperative societies work on a large scale. For fishery cooperative societies, SHGs and fishermen groups, the fish productivity found was 32.50 quintals, 42.22 quintals and 38.16 quintals per hectare of water bodies.
- Devi B. N., *et al.* (2016) ^[17] analyzed the gender composition in the ornamental fishery and found that 94% of the respondents in Mumbai and 96% of respondents in Chennai comprised of males and rest females. Conversely, 38% of the interviewees in Kolkata were women and rest man. This was basically because ornamental fisheries were structured around SHGs and cooperatives in which the presence of women was predominant in Kolkata.

7. Constraints faced by the fishermen cooperatives

- Pandya R. D., *et al* (2002) ^[18] studied the constraints in development of inland fish entrepreneurship in India. They pointed out that the major constraints for the development of inland fish entrepreneurship were the lack of availability of loans from nationalized banks in time, non availability of suitable training facilities, unavailability of technical guidance in time etc. The study revealed that the major constraints experienced by fishermen cooperatives were their undeveloped structure for marketing, inadequate transport facilities, untimely supply of seeds, high incidence of poaching of fish, low water level in the fish pond in winter and summer season etc. .
- Bhaumik U., *et al* (2005) ^[19] studied the constraints in enhancing fish production by the fishermen cooperatives. The study divulged that the major constraints faced by the cooperative society were (i) high level of pollution, particularly in urban areas with the entry of pollutants into the water bodies from untreated domestic sewage canal and in rural areas entry of pollutants in the form of chemical fertilizers and pesticides, (ii) outbreak of fish diseases, (iii) unauthorized fishing or poaching, (iv) non-availability of finance from governmental institutions, and (iv) high weed infestation in the water bodies etc.
- De H. K., *et al* (2006) ^[20] studied the constraints to community based aquaculture. Their study revealed that the major constraints of community based aquaculture were dominance of few individuals in taking decisions and policy making in whole affairs and the absence of community participation and mutual cooperation. They also identified the constraints as conflicts on distribution

on benefits among the members of fishery cooperatives, poor technical skill of fish farmers, and the presence of market intermediaries etc.

- Nair S. R., *et al* (2007) ^[21] made an evaluation of the business performance of the fishery cooperative societies in Vasai Taluka of Thane district, Maharashtra. The study revealed six major constraints of the fishermen cooperatives obstructing their operation and management. The six constraints faced by the cooperatives were as follows- (i) the study identified that lack of resources, mainly less catch from the seas and lack of suitable infrastructural facilities affecting the societies as the first problem (ii) the second problem affecting the societies was the involvement of middlemen in marketing who acted as money lenders/ traders in marketing and take their fish catch at very low rate (iii) the third problem affecting the societies was the lack of proper training or awareness especially to board members and staff members (iv) the fourth problem affecting the societies was unavailability of adequate finance mainly due to the lack of coordination between financial institutions and cooperative organizations (v) the fifth problem affecting the societies was the lack of organizational skill and technical know-how in management, supervision, accounting, record keeping etc. (vi) the sixth problem affecting the societies was the lack of cooperation among the members. To develop fishery sector and to provide sincere support to the fishermen cooperatives, the study suggested organizing of techno-financially feasible and professionally managed fishery cooperative societies.
- Thakur A., (2015) ^[16] found the constraints as poaching of fishes, law and order problem related to lease of water bodies, lengthy loan procedure by the financial institutions, heavy weed infestation in the water bodies, unavailability of suitable fish transport facility, dominance of some particular persons in decision making and intrinsic caste system, prevailed in the fishermen cooperative societies, SHGs and Fishermen Groups of Bastar district of Chhattisgarh.
- Sharma P., *et al.* (2018) ^[22] studied the major constraints faced by fishermen cooperatives in Southern Rajasthan and found that absence of floating nurseries, irregular supply of feed, lack of preservation and curing facilities, Poor economic condition of fishermen, ignorance of rules and regulation faced by the fishers and lack of updated information about price are the main constraints faced by fishermen in the study area.

8. Suggestions for sustainable management of fishermen cooperatives

- Mishra B.K (1997) ^[6] suggested that the State Governments should formulate separate provisions for fishermen cooperative to allot water bodies and avoid overlapping operation, finances, and structural linkages among fishery cooperatives in the state. As cooperative law does not allow membership of both husband and wife, which prevents women from participating in the management of the fishermen cooperatives, he suggested for the creation of provision for joint membership of husband and wife in cooperatives. He also suggested that cooperative marketing in India must be strengthened.
- Sapovadia V., (2004) ^[8] suggested that fishermen cooperatives of India may compete with international

corporations by adopting professional management skills coupled with cooperative strength.

- Vallathan M., (2005) ^[23] suggested that fishermen cooperative societies should develop their own processing units at fish landing centres.
- Nair S. R., *et al.* (2007) ^[21] studied the business performance of fishermen cooperatives in Vasai Taluka of Thane district and suggested that it is essential to organize techno- financially feasible and professionally managed fishermen cooperative societies.
- Chandrasekhar B. S., (2014) ^[14] suggested that to market fish profitably, ensuring a fair price for producers and consumers, cooperative marketing infrastructure must be developed in India. Funding for marketing infrastructure should be provided by central, state and local bodies, and then handed over for management to fishery cooperatives.
- Ekramuddin M., (2017) ^[24] studied the fishermen cooperatives in Birbhum district of West Bengal and suggested that number of cooperative credit societies should be increased and the fishermen be encouraged to take the benefit from this. He also suggested the problems of poor marketing and tricky exploitation of the middle man faced by the societies must be solved on urgent basis by respective government authorities.
- Krishna S. M., (2018) ^[25] suggested that “Community-based co-management is the only realistic solution for the majority of the World’s fisheries and is an effective way to sustain aquatic resources and the livelihoods of communities depending on them.” He concluded that community-based management was the approach needed for the long-term sustainability and profitability of the fishery under Fishermen Cooperative Societies.

9. Conclusion

The critical analysis of the above discussion reveals that although fishermen cooperatives have enough potentials in fisheries sector in India, but their progress is not uniform in all parts of this country. Sporadic studies have been made from different perspectives of the functioning and management of fishermen cooperatives in various parts of India but more studies are required to find out the exact ways for the betterment of fishermen cooperatives throughout the country. Some of fishermen cooperatives of the country are functioning very well but many are facing different constraints and are passing through morbid conditions. For the sustainability of fishermen cooperatives, emphasis should be given on the comprehensive study, focusing on the use of modern technology for fish production, storage and marketing in the cooperatives; transparency in the administration and management of fishermen cooperatives, participatory approach of all members in decision making, access to credit from banking sector, threat from environmental pollution and climate change and better condition of governmental monitoring and support. The incorporation of the outcome of the research study in policy decisions by the concerned ministry may achieve sustainability in fish production and livelihood of fishers under the cooperatives.

10. References

1. Ayyappan S, Diwan AD. Fisheries Research and Development in India. *Fishing Chimes* 2006;26(1):19-23.
2. Anonymous. Fifth Report of Standing Committee on Agriculture, 2019-20. Ministry of Fisheries, Animal

Husbandry and Dairying, Govt. of India 2019.

3. Anonymous. National Accounts Statistics. Ministry of Statistics and Programme Implementation, Govt. of India 2020.
4. Anonymous. Draft National Fisheries Policy, 2020. National fisheries Development Board. Ministry of Fisheries, Animal Husbandry and Dairying, Govt. of India 2019.
5. Anbumani K. International Marketing Conference on Marketing and Society, 8-10 April, 2007, Indian Institute of Management, Kozhikode 2007
6. Mishra BK. Fisheries Cooperatives in India. *International Cooperative Alliance, Co-op Dialogue* 1997;7(2):28-31.
7. Anonymous. Handbook of Fisheries Statistics (2015-16), Directorate of Fisheries, Govt. of West Bengal 2016
8. Sapovadia V. Fishermen Cooperatives: A Tool for Socio-economic Development. *IIFET 2004 Japan Proceedings*: 2004, 1-11.
9. Website of FISHCOPFED: www.fishcopfed.in
10. Nair SR, Pandey SK, Sharma A, Salim SS. An Evaluation of the Business Performance of Fishery Cooperative Societies in Vasai Taluka of Thane District, Maharashtra. *Indian Cooperative Review* 2010, 225-233.
11. Sreeranganadhan K. Role of Cooperative Societies in the Marketing of Fish and Fish Products in Kerala. Major Project report, UGC, New Delhi 2012.
12. Tyagi LK, Bisht AK, Pal A, Lal KK. Functioning of Fishing Cooperative Societies in Selected States of India: *Journal of Community Mobilization and Sustainable Development* 2013;8(1):90-93.
13. Biswas MP, Rao MRM. Fisherwomen of the East Coastal India: A Study. *International Journal of Gender and Women’s Studies* 2014;2(2):297-308.
14. Chandrashekar BS. Fishery Co-operative Societies in India: Problems and Prospects. *Global Journal for Research Analysis* 2014; 3(7):92-94.
15. Haldar PK, Saha S. An insight into the Performance of Fishermen Cooperative Societies in Tripura. *International Journal of Advanced Research and Innovative Ideas in Education* 2015; 1(5):879-889.
16. Thakur A. Assessment of status of the fishery cooperatives, SHGs and Fishermen Groups in Bastar District of Chhattisgarh. M.F.Sc. (Aquaculture) Thesis, Department of Fisheries, Indira Gandhi Krishi Vishwavidyalaya, Raipur 2015
17. Devi BN, Krishnan M, Ananthan PS, Pawar N. Socio-economic and livelihood profile of ornamental fish producers in India-the DFID approach. *Economic Affairs* 2016; 61(2):239-249.
18. Pandya RD, Patel BM. Constraints in Development of Inland fish Entrepreneurship. Paper published in Abstract brought out on national Seminar on Entrepreneurship Development in Agriculture 2002, 65.
19. Bhaumik U, Mittal IC, Das P, Paria T. Constraints in enhancing fish production. *Indian J. Extn. Edu* 2005;41(1):88-90.
20. De HK, Saha GS. Constraints to community-based aquaculture research. *Indian J. Extn. Edu* 2006; 42(3):66-68.
21. Nair SR, Pandey SK, Sharma A, Salim SS. Performance of Fishery Cooperatives in India- An Evaluation of Primary Societies in Thane District of Maharashtra. *Journal of Fisheries Economics and Development* 2007; 11(2):16-27.

22. Sharma P, Mazal B, Rani S, Sharma R, Masoodi Z. Constraints faced by the fishermen in collection of fish and adoption of technology in Southern Rajasthan. *Journal of Pharmacognosy and Phytochemistry* 2018; 7(3):2613-2615.
23. Vallathan M. An Economic Analysis of Production Trends and Marketing System of Marine Fisheries in the Union Territory of Pondicherry. Ph. D. Thesis, Pondicherry University, India 2005, 67-68.
24. Ekramuddin M. An Overview of impact of small scale fish farming on socio-economic growth in Birbhum district, West Bengal, India. *Journal of Entomology and Zoology Studies* 2017; 5(4):46-52.
25. Krishna SM. Co-management - Promise of sustainable fisheries in Telangana, India through stocking of fish seed in all the water bodies. *International Journal of Fisheries and Aquatic Studies* 2018; 6(6):92-99.