Investigations on the need matrix of Primary Fishermen's Cooperative Societies in the district of North 24 Parganas, West Bengal

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Abstract

The central objective of the formation of Fishermen's Cooperatives is to uplift the income, wellbeing and socio-economic status of members through sustainable development and utilization of water resources under its possession. Primary Fishermen's Cooperative Societies (PFCSs) in West Bengal face diverse problems, impacting their internal functioning and thereby not yielding the desired outcomes of poverty alleviation of fisher folks and sustainable development of water bodies. Studies on fishermen's cooperatives in the state are limited and majority has focused on socio-economic status of its members, marketing channels involved and constraints faced by them. Under such circumstances, it is imperative to assess the need-based expectations of these cooperatives for necessary policy changes focused on strengthening them. The present paper reports the findings from the study undertaken for 39 functioning PFCSs in the district of North 24 Parganas, West Bengal, for delineating crucial need-based assistances, as perceived by office bearers of these societies, that can aid in improving the functioning of these societies towards augmentation of fish production and meeting the socio-economic aspirations of its members. Office bearers of PFCSs responded against pre-designed questionnaires assigned for their society through mutual consensus. The outcome of the study revealed that infrastructural support was viewed as the most important assistance needed by majority of PFCSs in the district. Financial support and welfare measures were jointly viewed as second major expected assistance by most of the PFCSs. Technical support was felt next in line with expected assistances followed by policy interventions at the end.

Key words: PFCS, Fishermen, Perceived assistances, Policy interventions

INTRODUCTION

Despite a notable increase in fish production from 14.43 lakh ton (LT) to 17.42 LT during 2010-11 to 2017-18, there has been a consistent deficit concerning fish production and demand in West Bengal. 2017-2018, recorded a deficit of (-) 0.42 LT (Department of Fisheries, 2019). For achieving the government's target of doubling fish production by 2023 and bridging the deficit gap, augmentation of fish production through optimum utilization of water resources and infrastructural and human resource development in the fisheries sector is imperative. Holistic planning for phase-wise intensification of fish culture in the state should include mobilization, monitoring and management of all the available water resources; especially the big water bodies of 5 acres and above, whose contribution towards the fish production is much

below the optimum level. The majority of such water bodies are under the possession and management of Primary Fishermen's Cooperative Societies (PFCSs), which are not well organized and need strengthening. Fishery cooperatives are considered instrumental in increasing fish production, employment generation and amelioration of the socio-economic condition of fishermen. The role of cooperatives in India as a tool for improving the socio-economic status of the fishermen community who at large are considered amongst the weakest in the society is well documented (D'cruz, 1998). Since there exists, ample opportunity in fish product exports, the fishery cooperatives can contribute to the national economy as well (Sapovadia, 2004).

The percentage area of water bodies under the possession of PFCSs in West Bengal accounts

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for 6.31% of the total impounded water system. However, their contribution in fish production basket accounts for a meager 3.30% (0.515 LT) of the total inland fish production of 15.57LT (Department of Fisheries, 2019). West Bengal has witnessed a significant increase in the number of fishery cooperatives over the years. Presently the state has 1215 fishery cooperatives with a recorded water area of 27153.62 ha and a membership of 131578 fisherfolks. However, the overall status of these societies is dismal as only 38% (i.e., 469) and 13% (i.e., 159) have been reported to be functional and semi-functional respectively; whereas, the remaining 49% fall under non-functional, not-interested and not-traceable categories (Directorate of Fisheries, 2017).

The overall performance of fishery cooperatives in India is not encouraging (Prakash, 2000). The major hindrances in achieving the desired outcome from fishermen's cooperatives can be attributed to poor management, lack of skill enhancement mechanism, discouraging productivity and production trends, inadequate infrastructure facilities, problematic finance management and poor linkages amongst concerned organizations (Planning Commission, 2002). Apart from these some inherent traits in the fishermen community, viz., lower educational levels, poverty, lack of political and social awareness, hinder the overall prospects of organized development of these societies. Lack of effective management was one of the prime factors for the collapse of the cooperative movement in the fisheries sector (Annamalai, 1996). Substantial increases in operational cost over the years, accompanied by a reduction in total fish catch are major impediments faced by many cooperative societies (Gopal *et al.*, 2010). Shortage of quality fish seed is another detriment impacting overall productivity (De *et al.*, 2012). Inaccessibility and lack of awareness of the latest technologies in aquaculture also posed a major hindrance in achieving the desired levels of production (Bhaumik *et al.*, 1992). Identifying the constraints that hinder the growth of fishery cooperatives and addressing the expected assistances of appropriate stakeholders, will aid

in providing genuine support to the underperforming cooperatives in a region.

Despite several prevailing government schemes in the fisheries sector, the PFCSSs in the state are lagging in delivering their expected potential to achieve fish production and socio-economic changes. There is a need to recognize the unidentified gaps contributing to the differences between the desired outcomes from the implemented schemes to that of ground-level progress. One such gap can be addressed by taking into consideration the need perception of the target group. It is imperative to take into account the expected needs of PFCSSs through the office bearers who are collectively responsible for the day to day functioning of the societies. Decisions on the culture practices adopted, social and economic reforms undertaken, impact the overall functioning of the societies. For strategizing short-term and long-term policies for PFCSSs, need-based analysis is one of the key factors.

With this background, the present study aims to find out the expected need-based assistances of PFCSSs to formulate a possible support extension mechanism that will aptly strengthen and better the performances of the fishermen's cooperatives in the fishery resource-rich district of North 24 Parganas in West Bengal. The results of the present study will assist in identifying the gaps, if any, between, the actual needs of PFCSSs and the schemes being offered to them. Furthermore, it will aid in modifying the existing schemes, if required and framing future policies concerning the functioning of PFCSSs that will aptly balance profit maximization, revenue earning, resource utilization and socio-economic upliftment of poor and downtrodden fisherfolks. It will also aid in designing and implementing site-specific developmental projects for these societies to mitigate their constraints and help them resuscitate.

MATERIALS AND METHODS

Study Area and data collection

The present study was carried out in the district of North 24 Parganas of West Bengal, India, which is located in the tropical zone from

Table 1. Fishermen's Cooperatives in North 24 Parganas in 2016

No. of Co-ops	No. of members	Recorded water area (ha)	Annual turnover (Rs.)	Table Fish production (kg)
74	8072	1950.30	151200750	3417934

(73 PFCSs+1 Central Fishermen's Cooperative Society)

(Directorate of Fisheries, 2017)

latitude 22°11' 6" - 23°15' 2" N and longitude 88°20' - 89°5' E. The selection of district was based on the fact that with a total of 73 PFCSs (40 Functional, 12 Semi Functional, 15 Non-Functional, 6 Not traceable), North 24 Parganas is one of the forerunners in terms of the existence of active registered fishermen cooperative societies in the state (Table 1). Fisheries occupy a significant place in the economy and livelihood of people in the district, as it is endowed with diverse water resources viz., impounded freshwater including beels and baors (26008 ha), sewage-fed fishery (1560.35 ha) and brackishwater (35371 ha) (Department of Fisheries, 2019). The total fish production of the district was 206983 metric ton (MT) in 2017-18, ranking third amongst all the districts in West Bengal (Department of Fisheries, 2019), corroborating the importance of aquaculture and fishery enterprises in the region.

The study was conducted for one year during 2018-19 and was based on the collected data from primary sources via field surveys and secondary data from reports of Govt. of West Bengal. For the present investigation only functional PFCSs were taken into consideration. Out of the total 40 functional PFCSs, data were collected from 39, since the only ornamental-fisheries cooperative society in the district was not considered for the present study. Depending on the kind of water bodies under the possession of PFCSs, they were grouped as freshwater (n=28), brackishwater (n=7) and sewage-fed (n=4) societies. The office-bearers of these societies were interviewed with the help of a pre-tested, structured questionnaire in the local language to gather primary data. Each society was assigned with a single questionnaire and the responses through the office bearers were

collectively reflected through mutual consensus against the single questionnaire for that particular PFCS. Each PFCS was treated as a single unit of sample, making the sample size for freshwater, brackishwater and sewage-fed PFCSs as 28, 7 and 4, respectively, thereby comprising 39 samples (N=39) in total.

Variables and their measurement

The possible expected need-based assistance that will enable the societies to do better their performances in terms of fish production, management and overall functioning were collected from the office bearers in each of the functional PFCSs through a pre-designed schedule comprising of open-ended questions. The collected information was then systematically grouped under different categories and sub-categories of expected assistances and eventually analyzed by using suitable statistical tools. The five broad expected areas of assistance were categorized as Financial, Technical, Infrastructural, Welfare and Policy interventions. Each category was further subdivided into different aspects of the expected assistance (Table 2).

To measure the intensity of these expectations *vis-a-vis* their relative importance, item-wise frequency table was used. Based on the total frequency, the intensity of the need was calculated and categories of assistance along with the subcategories were ranked accordingly to develop a need matrix. The calculation of the intensity of need from the available frequency and population of PFCS was developed for the present study. Intensity of need = Total frequency/Population wherein, population means the number of PFCS

RESULTS

Financial assistance

The intensity of need for financial

Table 2. Categories of assistances expected by PFCSs

Financial	Technical	Infrastructural	Welfare	Policy interventions
Easy accessibility to bank loans	Dissemination of technology through training	Renovation and reclamation of water bodies	Housing schemes	Lease rent fixation
Bank loan at a lower rate of interest	Availability of quality fish seed and feed	Construction of office and community hall	Old-age pension	Strengthening of marketing channel
Managerial subsidy	Physicochemical analysis of soil and water	Establishment of hatchery	Health insurance scheme	Assured market prices
Financial assistance under government schemes	Easy access to disease diagnostic centre	Other infrastructural facility	Provident Fund like landless agricultural labourers	Crop insurance

assistance was maximum in the case of sewage-fed societies followed by brackishwater and then freshwater PFCSs (Table 3). Amongst the subcategories, managerial subsidy recorded the highest frequency for freshwater societies. Brackishwater societies registered easy access to bank loans as the topmost expected financial help. For the sewage-fed societies the most prioritized financial help was that of financial assistance under govt. schemes.

Technical assistance

Frequency data for expected technical assistance (Table 3) revealed that the availability of quality fish seed and feed is the most preferred technical support for freshwater and sewage-fed fishery societies of the district. For brackishwater societies access to disease diagnostic centre was the most wanted technical support. Physicochemical analysis of soil and water and access to disease diagnostic centre recorded the same level of intensity of need for the sewage-fed societies.

Infrastructural assistance

Renovation and reclamation of water bodies was the most expected infrastructural support for all the societies covered under the present study (Table 3). Other infrastructural facilities, viz., crafts and gears, approach road, pump sets and storage facilities recorded the same level of intensity, like that of reclamation of water bodies, for brackishwater and sewage-fed societies.

Welfare measure expected

Housing schemes were the most crucial category of welfare measure expected by the freshwater societies and sewage-fed societies (Table 3). In the case of brackishwater, old age pension ranked as the topmost expectation. Old age pension, health insurance scheme and provident fund for landless agricultural labourers (PROFLAL) alike scheme, were ranked in order of preference under expected welfare measures for freshwater societies.

Policy intervention expected

Policy intervention in matters of lease rent fixation occupies the top position in the case of all the societies under the study (Table 3). The second most important expectation is towards strengthening marketing channels.

Need matrix

Perceptual mapping of category-wise expected assistances of PFCSs (Table 3), featuring the total frequency for expected fields of assistances, reveal that most of the PFCSs under the present study feel that infrastructural facilities will aid them to perform better. Financial and welfare measures were jointly registered as the second most important expected field of assistance followed by technical assistance in the third and policy interventions in the last positions. Need matrix (Table 3), depicts the intensity of need of categories of expected assistances, as High (≥ 1.0), Medium (<1.0 to 0.5) and Low (<0.5).

Table 3. Category-wise expectations and need matrix of PFCs (Sample size: Freshwater PFCs – 28, Brackishwater PFCs – 7, Sewage-fed PFCs– 4)

Fields of expectation	Types of expectation	Frequency of expectation				Intensity of need				Ranking		Overall ranking of preferences of expectation		Need matrix based on intensity of need			
		Fresh water		Brackish water		Total		Fresh water		Brackish water		Fresh water		Brackish water		Fresh water	
		water	expectation	water	expectation	water	expectation	water	expectation	water	expectation	water	expectation	water	expectation	water	expectation
Financial expectation	Easy access to bank loans	5	4	1	10	0.17	0.57	0.25	0.57	0.25	0.57	III	I	III	Low	Medium	Low
	Bank loans at lower interest rate	2	1	0	3	0.07	0.14	0	0.14	0	0.14	IV	IV	-	Low	Low	Low
	Managerial subsidy	14	3	3	20	0.50	0.43	0.75	0.43	0.75	0.43	I	II	II	III	Medium	Low
	Financial assistance under govt. schemes	8	2	4	14	0.30	0.28	1	0.28	1	0.28	II	III	I	Low	Low	High
Total		29	10	8	47	1.04	1.42	2	1.42	2	1.42						
Technical expectation	Dissemination of technology through training	4	2	3	9	0.14	0.29	0.75	0.29	0.75	0.29	II	IV	II	Low	Low	Medium
	Availability of quality fish seed and feed	12	3	4	19	0.43	0.43	1	0.43	1	0.43	I	III	I	Low	Low	High
	Physicochemical analysis of soil and water	2	4	2	8	0.07	0.58	0.50	0.58	0.50	0.58	III	II	III	Low	Medium	Medium
	Access to disease diagnostics centre	1	5	2	8	0.04	0.71	0.50	0.71	0.50	0.71	IV	I	III	Low	Medium	Medium
Total		19	14	11	44	0.68	2.01	2.75	2.01	2.75	2.01						
Infrastructural expectation	Renovation and reclamation of water bodies	17	7	3	27	0.61	1	0.75	1	0.75	1	I	I	I	Medium	High	Medium
	Office and community hall	12	1	0	13	0.43	0.14	0	0.14	0	0.14	II	III	-	Low	Low	Low
	Establishment of Hatchery	3	2	1	6	0.11	0.29	0.25	0.29	0.25	0.29	III	II	II	Low	Low	Low
	Other infrastructural facility	12	7	3	22	0.43	1	0.75	1	0.75	1	I	I	I	Low	High	Medium
Total		44	17	7	68	1.58	2.43	1.75	2.43	1.75	2.43						

Table 3., Cont. ...

DISCUSSION

For continued growth in the fishery cooperative sector, it is essential to identify the constraints and extending site-specific need-based support to the PFCSSs. Fishery activities in the district under the present study are largely location-specific. The actual needs of PFCSSs are imperative for a bottom-up strategy for the development of fisheries. The needs and views of PFCSSs aid in strategizing policies for bettering their performances (Pegu *et al.*, 2019). Special thrust is required for understanding the need matrix of target PFCSSs for extending any kind of genuine support.

Providing financial assistance to fishermen was one of the main objectives of organizing fishery cooperatives in India. Unfortunately, the financial institutions and cooperative banks have failed to play a role in extending need-based financial support to the fishermen cooperatives (Chandrashekar, 2014). The lack of coordination between financial institutions and cooperative organizations results in inadequate institutional finance which hinders the effective performance of fishery cooperatives (Nair *et al.*, 2007). The finding that availability of requisite finance combined with easy access to credit facility is essential to meet up the rising cost of fishery inputs and overall management of the society agrees with similar studies conducted on economic and financial constraints faced by fishery cooperatives (Nair *et al.*, 2007; Sau *et al.*, 2012; Chandrashekar, 2014; Mahanayak *et al.*, 2017). The maximum intensity of need for financial assistance registered by sewage-fed societies can be explained by the fact that such PFCSSs are mostly located in urban vicinity and therefore are more adept in recognizing fisheries as an attractive investment destination. Managerial subsidy registered as lucrative financial assistance by most societies as it is extended as a grant without any condition of repayment.

Fishermen require updated technology skills to compete in a business environment. For the dissemination of technology, training

institutes and development agencies need to play an effective role (Sapovadia, 2004). Despite technical and technological support provided by various agencies, PFCSSs need more modernized and efficient technical help. Basic and refresher training continually to update technical skills stand out as a prominent need of the fishers. In addition, intensive training for entrepreneurship development (Halder and Saha, 2015) should be extended to the members of fishermen's cooperatives for enabling them to profit from changing business scenarios. Lack of proper training amongst the cooperative members featured as one of the major constraints involved in the management and operation of the fishery cooperatives in a study by Nair *et al.* (2007). The result from this study emphasizes the need for training along with regular physicochemical analysis of soil and water, and disease diagnostics as important aspects that require to be addressed for increased production in fishery cooperatives (Bhaumik *et al.*, 1992; Sau *et al.*, 2012; Ghosh and Biswas, 2016; Mahanayak *et al.*, 2017). Availability of quality fish seed and feed at reasonable rates was considered as the most important factor for economically viable culture-based fishery cooperatives and agrees with studies carried out by Bhaumik *et al.* (1992) and De *et al.* (2012). With the intensification of aquaculture, there is a growing demand for quantitative and qualitative fish seed and feed, which was blaringly reflected in the study.

Supportive agencies of the central and state governments have been providing funds for infrastructure development for fishery cooperatives (Chandrashekar, 2014). However, PFCSSs need support for different items for maintenance, improvement, expansion, diversification and modernization of infrastructure (Table 3). The results based on fishers' perception validate scientists' perception (Nair *et al.*, 2007; Goswami *et al.*, 2013; Chandrashekar, 2014) that the need for infrastructural development is a prerequisite for the proper functioning of fishery cooperatives.

The emphasis on the need for infrastructural support is in complete agreement with the outcome of the study conducted by Ghosh and Biswas (2016) who suggested that restoration and development of the oxbow lakes in the Ganga river basin will aid in the augmentation of fish production in the fishery cooperatives of the region. Most of the PFCSs in the district are aware that the problem of reduction in fish production in the beels because of siltation can be substantially addressed by reclamation and renovation of these water bodies. The necessity for the establishment of hatcheries expressed by brackishwater and sewage-fed cooperatives will ensure timely availability of quality fish seeds for regular stocking in required numbers and will curtail the recurring cost significantly. Other infrastructural facilities viz., crafts and gears, approach road, pump sets and storage facilities are site-specific and deserve attention on a case-to-case basis.

Supports for fiscal, technical and infrastructural needs to PFCSs assist in community development. Importance of individuals who form communities needs more emphasis than ever before. Individual fishers are poor with low accessibility to the benefits of the developments around them. In this context, it is necessary to take note of fishers' aspirations and needs that will pave the way for designing and implementing welfare measures for their social transformation. Sanitation and health insurance are effective means for bettering the living conditions of fishers through human resource development programmes (Datta and Kundu, 2007). Improvement in their living conditions was aspired through housing schemes by the majority of PFCSs in the district. Most of the PFCSs viewed old-age pension as a likely solution to mitigate the sufferings of old aged fishers. Some of the PFCSs were aware of the PROFLAL scheme for agricultural labourers and expected similar schemes for fisherfolks.

The majority of PFCSs in the study area feel that policies related to lease rent fixation should prioritize the interests of the cooperatives and should not burden them with exorbitant

economic rent. Some fishery cooperatives in the country provide complete marketing infrastructure to their members for selling their catch at remunerative prices. The involvement of middlemen in marketing is a major concern that adversely affects the profitability of fishery cooperatives (Nair *et al.*, 2007; Sau *et al.*, 2012). The need for strengthening the marketing channel felt by most PFCSs is in similar lines with the study by Chandrashekar (2014) who suggested that in India cooperative marketing must be developed to ensure fair prices both for producers and consumers.

The need matrix indicated distinct needs concerning the type of society under consideration. Since the culture practice in freshwater, brackishwater and sewage-fed societies vary significantly, their demands vary accordingly. Considering all the societies under the present study, the infrastructural expectation was topmost. This can be attributed to the fact that the majority of the societies are freshwater and dependent on beels for culture practice, which in turn are silted and require renovation for augmenting productivity. Keeping in view the increasing cost of fishery inputs, the majority of PFCSs in North 24 Parganas district being culture-based, call for investment-oriented financial services. The high expectations for welfare measures are due to the fact that fishers, in general, belong to socio-economically backward communities and aspire for improving their living conditions through welfare schemes. The PFCSs seek technical assistance to equip themselves with the latest technologies for enhanced production and resource management. Policy interventions in core matters of lease rent fixation and strengthening of marketing channels for protecting the interest of fishermen's cooperatives were felt by the PFCSs in the district.

The present study has highlighted the needs of the majority of PFCSs in North 24 Parganas district and it emerged in the decreasing order of infrastructural support, financial support, welfare measures, technical support and policy interventions. This investigation suggests that the need matrix of

PFCSS is imperative for the effective formulation of new schemes and for midcourse correction of ongoing programmes to achieve desired outcomes.

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