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Socio-Economic Appraisal of Culture Based Fishermen: Case Study in West Bengal

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ABSTRACT There exists a great deal of direct and indirect employment potential associated with inland wetlands of our country. However this can be implemented only when these are well organised and managed through effective participation of relevant primary and secondary stakeholders. Fishermen constitute the primary stakeholder group on whose capacity and disposition to toil and labour depends the prospect of fishing industry considerably. Their unique efforts in providing night time labour, source of traditional know-how and sense about the quality of pond water and soil are extremely important for its sustainability. Without perceptible improvement in their socio-economic condition, inland fishery development itself will be at stake. Disparate living standard , differential access to income earning capacity and other amenities are likely to generate discontent among fishermen and weaken their motivation to participation in fishing activity. Case study in Burdwan district in West Bengal indicate the generally divergent and poor standard of fishermen in terms of access to basic amenities of life. Ameliorative measures like health insurance, better training and credit facilities, provision of easy access to input , reclamation of hitherto unused wetlands and need based public grants are some of the means that can prevent exodus from the fishing occupation.

INTRODUCTION

There is no doubt that the twin problems of unemployment and mal-nourishment at the rural sphere in India can be simultaneously addressed to by proper and planned utilization of available local resources through involvement of local people. Wetlands for example have a tremendous potential in this context, if properly conserved and utilized for pisci-culture. These wetlands are often left unutilized or improperly utilized because of lack of proper initiative or awareness of people residing around them or even lack of co-ordination and management problems (Katiha, 2001; Singh et al., 1994). Proper management policy involving appropriate choice of inputs can have a major impact on employment in fishing that may influence the poverty in the concerned locality (Heady, 2000). The wet lands have tremendous potential for inland fishery. However the tapping of these resources is conditioned by the proper identification of truly concerned stakeholders, their access to required know-how and technology and status in the society. There is supposed to be a close socio-ecological institutional link between the use of technology, extraction of natural resources and their impact on human resources (Prakash et al, 1997). These are interrelated and interact upon each other in such a complex manner that beyond a point of technological intervention there may arise the problem of unsustainability in the organic relation between these two types of resources. In the context of fishery the aforesaid relation is so intense that within a well defined range of technological intervention, efforts to strengthen fish cultivation not only benefits the fish production groups (FPG)/ fishermen co-operative societies (FCS) involved with its rearing and harvesting, but also the vast range of interrelated functioning groups including fishermen, who are directly or indirectly involved in fishery occupation. Aquaculture accounts for the greatest part of employment creation in the fishing industry. It provides direct employment to fishermen and to those engaged in excavation/ renovation/ reclamation of ponds. Besides this, there arises tremendous possibilities for expansion of related tertiary sector employment including preservation, processing, transporting and marketing of fish products and ancillary sector like fish feed, soil fertiliser producing industries which can make provision of huge additional employment potential. Among these divergent beneficiaries of fishing industry, fishermen constitute the key group on whose capacity to toil and work the expansion of the tertiary sector depends to a considerable extent. Their special feature involved in the intensity of their night time efforts in catching fish, their

acquired knowledge about the condition of the pond /tank in which they operate and their relative scarcity in the context of the inland sector, highly makes it imperative that their socio- economic condition be upgraded over time, so that their capacity to provide sustained efforts is maintained. In India development of fishermen is often restricted to the traditional fishing communities near the coastal areas in maritime states while the interest of those associated with inland fishery is relatively neglected.

The frequency or regularity of fish catch, its volume and yield of profit from an aquaculture enterprise, efficiency in management, the involvement of the members in the co-operative/ group in the management pattern of an aquaculture pond are likely to have a bearing on the socio-economic status of the fishermen who are primarily engaged in catching fish from the concerned ponds. Disparity in the standard of living, differential access to income earning capacity and other perquisites are likely to give rise to the growth of discontent amongst the relatively indigent fishermen, thus partially weakening their urge to wholeheartedly participate in the activity of fishing (Boyce, 1994). Even their devotion to work may be shaken because of a sense of relative deprivation.

However one point that merits mention in this context is that even though a sense of relative deprivation may exist in some fishermen, often they get reconciled to their lot partially because of their relative illiteracy and no alternative skill embodiment and partly because they tend to be sticky to their acquainted atmosphere rather than opting for uncertainties involved in relatively unknown locality. But their brewing discontent may get channelised to their offspring who might deviate from their traditional fishing job.

In India, Bengal occupies the topmost position in contributing to inland fish production and for this purpose the state has been offered the national productivity award for consecutive nine years. The district of Burdwan is the biggest one in the state and characterized by the existence of several fishery ponds dispersed in industrial and agricultural belt of the district. Despite increasing importance of inland fishery, several fishery co-operatives/groups are beset with untoward socio-cultural and economic features (Rahim et al., 1994). In many cases these are formed of illiterate/semi literate, indigent fishermen who lack the knowledge of latest fishery technology and proper attitude to fishery development (Chakraborty et al., 2005). This vicious circle is further strengthened by lack of institutional support and finance that hinder their smooth performance. These co-operatives are supposed to play an important role not only for the development of fishery but also for the amelioration of the status of fishing community. Furtherance of the prospect of a fishing enterprise depends in a critical way on the attitude, capability and expectation of the fisherfolk. associated with the co-operatives/groups. There is assumed to exist a spiraling relation between improved status of the fishermen and sustained development of fishery activity (Capistrano et al., 1997) . Of late the co-operatives are striving to put significant efforts to develop the fisher community. Since the immediate impact point of fishery development programmes is the benefit perceived by the fishermen, in order to assess the efficacy of such programmes as well as that of efforts of co-operatives, it is felt doubly imperative to objectively focus (a) on the overall socio-economic status of fishermen in different geographical locations (b) relative level of difference between fishermen at urban and rural areas and (c) asses the degree of dependence of their perceived state of living condition on diverse socio-economic factors.

METHODOLOGY

In order to have an idea of the socio-economic condition of the fishermen involved in respective fish production units, data have been collected by personal interview method on the basis of a pre-structured questionnaire from different sample ponds in the district covering different locations. Since inland fishery vary in their natural surroundings and environmental aspects, purposive sampling has been adopted to choose the location area and ponds to focus on the socio-economic status of the fishermen as associated with the corresponding diversity of environmental surroundings of the fishery pond. Accordingly 8 ponds have been selected from 5 locations within the district of Burdwan as revealed in table 1.

Location 1: Muchipara region in Kanksa block and Ausgram block near Kanksa. This area is located in the industrial belt of the district (on a side of Durgapur town). Here we have selected municipal sewage fed fishery (Khatpukur) and Ausgram culture fishery.

Table 1: Location-wise distribution of selected ponds

Location No.	*Block*	*Type of Fishery*	*Population Size*	*Sample size*
1	Kanksa block (Muchipara)	Sewage fed fishery Culture Fishery	2	1
	Ausgram II (Near Kanksa)		1	1
2	Raniganj block (Baktarpur)	Open Cast Pit Culture	1	1
3	Burdwan Municipality	Diesel Contaminated Culture Fishery	1	1
4	Khandaghosh, Raina I and II blocks	Capture and Culture	(a) 2(culture) (b)3(capture/ culture)	(a)1(culture) (b)1(capture/ culture)
5	Ketugram II Block (Katowa)	Capture and Culture	3(capture/ culture)	(a) 2(capture/ culture)

Location 2: Baktarpur region in Raniganj Block. This is located in the coal (mineral belt) of the district. Here we find the existence of open cast pits (OCP) being used for pisciculture.

Location 3: Loco tank of Burdwan Municipality.

Location 4: Khandaghosh Raina I, Raina II Blocks. This area is located in the southern part of Damodar river and it is the agricultural belt of the district. Sample fishermen connected to Notumohanpur and Chhatadighi FCS have been considered in this region.

Location 5: Ketugram II block of Katowa subdividion. It is located on the outskirts of Katowa town at the confluence of Bhagirathi and Ajoy rivers. This area is also located in the agricultural belt of the district. Naliapur and Sankai are the two FCS selected here.

It was observed that there existed difference with respect to the number of fishermen involved with the selected FCS/FPG. In some cases the number was less than 30. Besides this, residentially the fishermen in each sample pond were found to be distributed over a number of paras (small locality). All the fishermen in cases of FCS having less than 30 members, were considered for study. But in cases where the number exceeded 30, the sample size was determined as proportional to each small locality population for ensuring its spread throughout the population as much as possible. Due to the generality of adverse residential locations, the survey units i.e fishermen families were selected according to convenience sampling procedure, and the representativeness of data is taken care of by the aforesaid nature of data collection . In the process a sample of altogether 224 fishermen had been selected out of a population of 676 such households.

The entire data, from the perspective of simplicity of analysis have been arranged into a tabular form, pertaining to the household environment and earning opportunities of the respective households. Better endowment of these basic opportunities are assumed to keep the fishermen in relatively good mental and physical state of health which is likely to have impact on their intensity of fishing efforts and hence productivity.

We make a comparative study of the socio-economic condition across the fishermen residing at Burdwan town (proper) and those residing in rural sphere of the western and eastern part of the district as well as the fishermen associated with two adjacent riverine/cum pond fisheries . We also estimate Gini coefficient as a measure of the extent of economic inequality among fishermen in the respective cases. Besides this, we also fit a logit model to ascertain the impact of factors in explaining the extent of probability for a fisherman to assess his socio-economic condition as improved or not.

RESULTS AND DISCUSSION

Comparative Socio-Economic Position of the Fishermen in Burdwan Town and Those Residing in the Rural Part of the District

From the following table it is suggested that in terms of housing type, toilet facility, per capita income (P.C.I), access to fuel source, average family size etc, fishermen in Locotank on the average enjoy a better life compared to the units on the rural side of the Burdwan district. A glance at the table 2 gives a comparative position of fishermen associated with these fish production units.

Khatpukur is managed by a self financing

co-operative group. Lack of managerial knowledge and poor monitoring of environ-mental parameters associated with this sewage fed fishery has led to unsteady financial condition and uncertain prospects. This is reflected in poor condition of fishermen with lower average per capita income, low literacy and total dependence on collected fuel inputs. However residential proximity to urban region has led to full adoption of inhouse toilets. When compared to that of Locotank or even the Khatpukur group, the average condition of a fisherman at Open Cast Pit (OCP) in terms of access to the basic parameters of life , turns out to be even worse. Open Cast Pit is located in the coal belt of the district, is not properly managed due to dearth of financial inputs, lack of maintenance of environmental standards, inadequate active interest of local panchayet and other institutional bottlenecks. This has led to steady backward condition of fishermen associated with this tank. Fishermen here with poor rural base and a substantial per cent of illiteracy have mostly failed to adopt sanitary norms, pucca houses and avoid forest dependence for fuel. Ausgram FCS is located in the lower catchment area of river Ajay and surrounded by agricultural region. The fishermen here have a mixed achievement in terms of the aforesaid parameters when compared to that of the said fish production units. Panchayet led sanitation campaign has made substantial inroad here as 75 per cent have adopted inhouse toilet norms. Despite poor housing standards and literacy level, fishermen here often with side agricultural operations, are content with their living standards. Overall, it may be said that proximity to the market and association in an urban culture, easy availability of social and educational infrastructure, better earning opportunities in the presence of efficient economic management of the FPG etc., explain the relatively overall better off position of the fishermen in the Burdwan town compared to that of rural base at the western side of the district Chhatadighi and Natumohanpur are located in eastern part in lower catchment of alluvial track of river Damodar. Irrigation facility and existence of multiple cropping have added to high income prospects of the region. Fishermen in Chhatadighi mostly combining fishing with side agricultural work, are somewhat better endowed with the facilities of life compared to that in Notumohanpur. With a larger percentage of literacy, higher average P.C.I and better access to fuel compared to that of Natumohanpur, fishermen in Chhtadighi have been quick to the adoption of sanitary norms as propagated by the gram panchayet.

Since Sankai and Naliapur are located in adjacent geographical regions (at the confluence of the river Bhagirathi and Ajay), there is no great difference in their access to fishing occupation and hence their average level of per capita income. The economic condition is rather deplorable as the fishermen in these regions do not feel the incentive to take active interest in the management because of lack of adequate funds and water areas. Increasing dearth of the availability of fish in flowing river as well as insufficient pond water areas commensurate with the number of members have gradually turned the fishermen averse to fish culture. The condition of fishermen at Sankai , despite the predominance of large size families are marginally better than that of Naliapur. Here it is found that 59 per cent of the surveyed families live in pucca houses, while in Naliapur the corresponding number is only 41 per cent. The sanitation programme here, however, has attained comparatively better results. It is notable that about 68 per cent of the families in Sankai have got access to pucca toilet facilities which is almost

Table 2: Selected socio-economic features of fishermen families within the study area

F.P.G/F.C.S	*Sample Size*	*House type (Pucca/Mixed) (per cent)*	*Inhouse Toilet (Per cent)*	*Average P. C.I (Rs)*	*Literacy (per cent)*	*FuelSource (per cent)*	*Average Family size (mode)*
Locotank FPG	11	55	100	668	75	100(pur+coll)	4
Khatpukur	10	30	100	272	42	100(coll)	7
Open Cast.Pit (OCP)	21	5	0	318.68	45.76	100(coll)	5
Ausgram	48	10	75	385.03	40	77(coll)3(pur)20(both)	6
Notumohanpur	29	27	50	269.8	61	100 (coll)	4
Chhatadighi	20	15	90	450.5	69	20 (coll)10 (pur)70 (both)	5
Naliapur	51	41	37	257.84	53	45 (coll)24 (pur)31 (both)	5
Sankai	34	59	68	262.45	62	100 (coll + pur)	5

double the percentage in case of Naliapur. The adoption of sanitation norms although not cent per cent, is relatively praiseworthy in Sankai. This is partly explained by the higher percentage (62 per cent) of literacy than that (53 per cent) in case of Naliapur. In most of the cases the families have to depend on collected sources for fuel supplemented marginally by purchased materials. This really induces great stress on the female and children . Despite marginally better off position compared to Naliapur , about 79 per cent of the families in Sankai perceived no betterment in their living condition over the past few years. This is a matter of serious concern which can hardly be ignored. Affinity to living in rural regions, availability of common pool resources for easy earning of a subsistence livelihood, relative immobility due to low skill and literacy and a culture gap between rural and urban regions still prevent exodus of fishermen from the traditional fishing occupation to other sectors. However further widening of the gap must have to be controlled by suitable amelioration measures before the disparity in the economic conditions becomes too acute to bind the future generations in traditional fishing operation.

Income Inequality Across the Fishermen

Income inequality in terms of Gini coefficient is tabulated in the following table 3. Fishermen associated with the four FCS like Ausgram , Notu, Naliapur and Sankai and the Locotank FPG fall in relatively homogeneous income group as the measure of income inequality is found to be on the lower side. Excepting Locotank there is found to be relatively high magnitude of illiteracy and low average P.C.I amongst them who possess similar type skill and have no great variation in their access to fishing opportunities.. Only a smaller portion of fishermen here fall in above primary literate group who can possibly earn from other subsidiary sources because of relatively higher occupational mobility. But this does not greatly affect overall income inequality. On the other hand, Gini coefficient is observed to be large in Khatpukur, Open.Cast Pit and Chhatadighi areas where proportion of fishermen with education above primary level is relatively high. The people with relatively higher level of education may have alternative/additional income earning opportunities and may share major part of the total income generated in a locality leading to an increase in income inequality. The high correlation coefficient, 0.90, between Gini coefficient and percentage of fishermen having education above primary level indicates the same. Since income inequality is not a desirable factor for better functioning of a co-operative, it is all the more desirable to avoid it by raising the literacy level of all the fishermen alike while ensuring their access to better but similar kind of income earning opportunities. Mere low inequality co-existing with low literacy and low income earning opportunities is not a healthy proposition.

Table 3: Gini measure of economic inequality across different FCS/FPG.

FCS/FPG	*Gini coefficient*
Locotank	.165
Khatpukur	.517
O.C.P	.396
Ausgram	.122
Notumohanpur	.328
Chhatadighi	.57
Naliapur	.226
Sankai	.311

Details of Specific Social Features of Fishermen Across the FCS/FPG

Caste and sex composition as well as average age and details of educational level of the fishermen associated with the respective ponds are given in table 4. All the fishermen (100 per cent) associated with Locotank, Notu, Naliapur and Sankai ponds were scheduled castes while the corresponding figures in case of Khatpukur, OCP , Ausgram and Chhatadighi are 80, 76.19, 97.95 and 60 per cent respectively. Excepting Notu beel, male members of the fishermen's family were directly involved with fishery activities, while the female members took care of household functions. In case of Notu pond only, women constituted 3.5 per cent of the fishermen, who could combine indoor functions with outdoor fishing activities.

Average age of fishermen in the sample ponds varied within the range of 47.38 and 37.36 years with no great variation in between as is evident from the table 4. Qualification wise illiteracy was highest in case of the four FCS i.e., Ausgram (71.42 per cent) followed by Sankai (55.88), Naliapur (54.9) and Notu (44.82)in 2nd, 3rd and 4th position respectively. Interestingly the lowest level of illiteracy was observed at Chhatadighi (5

Table 4: Cast structure, sex, average age, literacy level & perceived economic condition of the fishermen at different FPG/FCS

F.PG/F.C.S	*S.C (Per cent)*	*G.C (per cent)*	*Sex(percent) M*	*F*	*Av Age Group (Years)*	*Qualification (per cent)*			*Perceived improvement in socio-economic condition (per cent)*	
						Illiterate	*Upto primary*	*Above primary*	*Yes*	*No*
Locotank	100	0	100	0	37.36	36.36	36.36	27.27	54.54	45.46
Khatpukur	80	20	100	0	40.9	20	20	60	40	60
O.C.P	76.2	23.8	100	0	38.85	33.33	23.8	42.85	14.29	85.71
Ausgram	97.95	2.05	100	0	47.38	71.42	10.2	18.36	83.33	16.67
Notu	100	0	96.5	3.5	45.48	44.82	24.13	31.03	40	60
Chhatadighi	60	40	100	0	44.7	5	45	50	35	65
Naliapur	100	0	100	0	41.62	54.9	17.65	27.45	49.01	50.99
Sankai	100	0	100	0	42.05	55.88	20.58	23.52	20.58	79.42

S.C: Scheduled caste; G.C: General Caste; M : male ; F: female

per cent). Khatpukur (60 per cent), Chhatadighi (50 per cent), O.C.P (42.85 per cent) occupied the upper positions regarding above primary level of education of the fishermen. For the other co-operatives/groups there was not marked variation in respect of above primary education level. Statistically it is observed that excepting Locotank and Ausgram, most of the fishermen in other locations expressed dissatisfaction at the present level of socio-economic condition. A good proportion has of course answered positively. Although their actual condition is still not that much developed upto the desired level their response has perhaps been influenced by their perception of improvement compared to some previous wretched condition. This matter is visibly evident in case of Locotank and Ausgram where majority expressed satisfaction in the present state of their condition. In general low income, illiteracy, poverty, family size, poor toilet facilities, lack of knowledge about better fishing methods, management inefficiency, lack of institutional support , caste, gender etc explain the dissatisfied state of mind of the fisherfolk.

State of Living Condition as Perceived by Fishermen

The perception of improvement of the socio-economic condition by the fishermen was recorded by noting their response either in the positive or negative sense. This perception considered as qualitative dependent (represented by 1 for + ve sense and 0 for –ve sense) variable is assumed to be explained by variables like total family income, family size, toilet type, selected social features like caste, age, sex and ratio of above primary to total members in the family. Summary statistics related to explanatory variables and results of logit estimation related to 224 fishermen from the sample study areas are given in the table 5.

Number of correct predictions is 148. The implication is that in 66% of the cases the finding of marginal probabilities support the actual perceptions. The significant impact of family income and ratio of above primary to total members indicate that these socio-economic variables amply influences the perception of the fishermen's living conditions. Low Per capita income or even low average family income in the surveyed families in all the localities revealed their generally poor condition . This also explains their poor housing status , lack of electricity, poor access to sanitation etc. Absence of toilet in most of the families really indicates their level of plight and health hazards. Govt sanitation programme is yet to make full inroad to all the families in the considered samples. Heavy dependence on collected fuel source involves a major time and effort of women and children . Achieving 100 per cent literacy is still a distant goal despite diffusion of mid day meal and other efforts. One major positive impact of govt. programmes has been the availability of water within the neighborhood of most the families in the sample localities. However the level of poverty observed in the families hardly enable them to save any tangible amount of their meagre income. In the absence of savings, it is urgently felt to introduce a system of social insurance for providing benefit to the poor fishermen in their hours of urgent need.

Table 5: Summary statistics and results of logit estimation related to perceived state of socio-economic condition

Explanatory variables	*Average*	*Standard deviation*	*Estimated Coefficient*	*t-ratio*
Total family income	1662.15 (mean)	1652.36	0.426(E –03)	2.818
Family size	5 (mode)	-	-0.106	-1.287
Toilet type	open field(mode)	-	-.858	-0.275
Ratio of above primary to total members	.57 (mean)	.367	-.856	-2.0443
Sex	Male (mode)	-	-.375	-1.216
Age	43.4 (mean)	11.5	.263 E-02	.2033
Caste	Other than general (mode)	-	.8566	1.5118
Log likelihood ratio	24.9647 d.f 7 Sig 1.34 E- 08			
Percentage of correct prediction	0.66			
Sample size	224			

CONCLUDING OBSERVATIONS

Despite the differing location specific features some broad aspects can still be identified in almost all the sample ponds, which need to be highlighted. For instance the fishermen associated with FCS/FPG are in general rather poor, semi literate /illiterate and hardly have any other alternative job opportunity to switch over. The little amount that they could possibly save get drained away for buying medicine or for servicing of the nets which for most part of the year remain idle. For fuel and water, the two important ingredients of household maintenance, most of them have still to depend on outdoor collection. The aforesaid conditions are manifest mostly in rural areas compared to urban sector. Some of these features like poor family income, low level of literacy, family size etc coupled with poor financial inputs have left many of the fishermen in unimproved state of economic condition. Instability in earning potential from fishing occupation has in many cases compelled the offspring of the fishermen to turn to alternative employment prospects. This trend need to be countered by ameliorative steps. Ensuring access of fishermen in poorer rural co-operatives to credit support from various financial institutions, National Bank for Agricultural and Rural Development (NABARD) etc on congenial terms, provision of quality seed and feed, role of non-governmental organisations (N.G.O) or local institutions in the spread of literacy, or even spread of distance education through print or electronic media, are essential prerequisite for preventing potential exodus of people from traditional fishing occupation in near future. Income inequality in some of these cases, although low has been found to be coexistent with low literacy and low income earning opportunities. The latter phrases need to be replaced by higher terms for all alike. Poor literacy and lack of training have in many cases hindered the adoption of improved technology. Human resource development programmes with emphasis on sanitation and health insurance, better training facilities, adoption of small family norms, together with reclamation of hitherto unused wetlands and need based public grants are some of the means that can activate the rural fishers. Besides this proper marketing facility for the harvested fish, storage facility within easy reach of the fishermen covering a number of co-operatives or group and even provision of dissemination of time-to-time information about market prices and demand to the fishermen, can provide viable fishing strategies conducive to a successful eking out of a liveli-hood. It might be difficult to implement all these strategies simultaneously in all the cases, but implementation of site-specific combinations of several of these strategic options at different degrees have emerged to be extremely necessary to resuscitate the condition of fishermen and rejuvenate the prospects of a viable fishery enterprise.

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