
Fishermen of Chilika Lake of Odisha : An Enquiry into their socio - economic conditions

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Abstract

The study presents a case study of Chilika lagoon, India and focuses on the interaction between small-scale fishermen and middlemen. The small-scale fishermen have been exploited by specific middlemen and the underlying causes of the present fish marketing structure stem from indebtedness and the unstable situation because of perpetual conflicts over fishery resources among the fishers across Chilika lagoon. Climate change combined with human activities poses significant risks to people's livelihood especially in developing countries. Adaptation at the community level is of crucial importance in enabling them to respond to the direct and indirect effects of changes in climate. In a case study of fishing communities in Chilika lagoon, India, the focus is made on understanding climate change adaptation at the community level and scaling it up into the policy perspective through application of Sustainable Livelihood Approach. This article challenges the research and policy community to encourage the identification of locally negative constraints and positive strengths toward climate resilient communities in rural areas. The social capital impacts fisheries management at the local level in Chilika Lake located in the state of Odisha in India. In Chilika, the different fishing groups established norms and "rules of the game" including, but not limited to, spatial limits that determine who can fish and in what areas, temporal restrictions about when and for how long people may fish, gear constraints about what harvesting gear may be used by each group, and physical controls on size and other characteristics of fish that may be harvested. The members of fishing groups have shown that the bonding social capital is strong within the Chilika fishing groups. Bonding and bridging social capital keeps the fishers together in times of resource scarcity, checks violations of community rules and sanctions, and strengthens the community fisheries management. In contrast, linking social capital in Chilika appears to be weak, as is evident from the lack of trust in external agencies, seeking the help of formal institutions for legal support, and increasing conflicts. Trust and cooperation among fishers is crucial in helping to build the social capital. A social capital perspective on fisheries governance suggests that there should be a rethinking of priorities and funding mechanisms, from "top-down" fisheries management towards "co-management" with a focus on engendering rights and responsibilities for fishers and their communities.

Keywords: Social Capital, Common pool resource, Co-management, Global bio-diversity

Introduction

Fish and fisheries is an important sector in most of the developing and developed countries of the world from the stand point of income and employment generation. Fisheries sector occupies an important place in the socio-economic development of the country, as it contributes to economic growth and human welfare. It has been recognized as a powerful income and employment generator as it stimulates growth of a number of subsidiary industries and is a cheap source of nutritious food, besides being a foreign exchange earner in India (Ayyappan and Krishnan, 2004). This sector contributes to the livelihood of a large section of economically underprivileged population in our country. More than 200 million people worldwide are fish workers, which is just under 3 per cent of the global agricultural labour force. In India, about 14 million people are employed in this sector either directly or indirectly (Sugunan, 2008).. Apart

from this, the twin problems of unemployment and malnourishment 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 (Datta and Kundu, 2007). Fisheries sector, a sunrise sector in India, has recorded a faster growth than that of crop and livestock sectors (Kumar *et al.*, 2006). In the last 25 years, total fish production has been growing at an annual growth rate of about 4.60%, in which marine sector was growing at a rate of 3.24 and inland sector was growing at a rate of 6.20% (Ganeshkumar, *et al.*, 2008). For some years now, aquaculture has been seen as a possible savior for the overburdened capture fisheries sector and an important source of food fish for the poor (FAO, 1995; Williams, 1996). The present study has been undertaken to evaluate the socio-economic conditions of the fishing community, because Socio-

economic improvement of fishermen is considered to be the primary objective of revering fisheries development.

Introducing Chilika Lake

Chilika is the largest brackish water lake in Asia and also the second largest lake in the world. Chilika is situated between 19°28' and 19°54' North latitude and 85°05' and 85° 38' East longitude. A mix of estuarine, marine and freshwater ecosystem is observed here and the lagoon has a long history of sustainable fishing. According to the Directorate of Fisheries (Statistics 2000-01), the wetland supports 122,339 fisher folk who live in the 137 villages near Chilika. The Chilika lagoon remains a vital life line for more than 200,000 people in 141 villages who live in around the lagoon. The complex mix of resources in and around the lagoon (water, fish, land, forests and fauna) has an interrelated effect on community life.

Attempts have been made to carry out studies on socioeconomic conditions of the fishermen in Chilika lake of Odisha. Odisha is one of the maritime states of India situated at 170.49' and 220.54' North Latitude, 810.29' East Longitude on eastern coast of India, spread over an area of, 56,207 Sq. Kms. having beguiling charm, rural tranquility and 480Kms, of coastline dotted with some spectacular virgin beaches, lakes and lagoons, having excellent scope for development of inland, brackish water and marine fisheries. The strength of the fisheries sector in Odisha lies in the large under/un-utilized fresh water and brackish water resources with proper utilization of these resources, the fish production from capture and capture-cum-culture fisheries could be. Substantially augmented to meet the domestic market demands, create employment and income generating opportunities for the rural poor and enhance their food and livelihood security. Chilika having total fish landing was 7736.54Mt, total prawn landing was 5043.18 Mt, and mud crab was 285.90 MT during 2010-11. The resources were fully tapped and utilized to fulfill the domestic and export market demand. With diverse resources ranging from deep seas to lakes in the mountains and more than 10% of the global biodiversity in terms of fish and shellfish species, the country has shown continuous and sustained increments in fish production since independence.

Objectives Of The Study

The specific objectives of the study were

- (1) To study the socio-economic conditions of fishing communities of Chilika in Odisha.
- (2) To suggest guidelines for improvement of social and economic status of fishermen communities.

Methodology

Chilika Lagoon is divided into four sectors Northern, Central, Southern and outer Channels. The survey has been conducted in four villages namely Sundarpur, Baulabandha, Ramagarh and Arakhakuda from all the regions. The total sample size was 120 from all the four villages and probability proportion to sample size method used for selection of household and simple random sampling technique was used for data collection. The data on various parameters related to socio economic conditions collected and analysed. The results of the study are given below.

Results and Discussions

In the fisheries sector, socio-economic status of fishermen plays a key role in productive activities. Socio-economic parameters such as family size, age structure, customs, beliefs and habits, employment potentials, education and living standards of fishermen influence their response to new technology and their participation in development schemes. Studies on these variables attempt not only to explain the overall socio-economic conditions of the fishermen, but also to identify the factors constraining the realization of the full potential of traditional fishery and the appropriate area for government intervention (Sathiadhas and Panikkar, 1988). The interactions of personnel, psychological and situational factors always influence the earnings and the adoption of scientific fish farming. Hence, profile of the respondents is important to explain the possible relationships among different variables. Characteristics representing the personal and socio-economic attributes like family size and caste, housing, educational status and occupation are given in Table 1.

Table: 1 Percentage distributions of sample respondents by Age

Age (Years)	Sundarpur	Baulabandha	Ramagarh	Arakhakuda	Total
< 35	19.23	13.79	14.29	47.73	27.50
35-50	38.46	34.48	33.33	20.45	30.00
>50	42.31	51.72	52.38	31.82	42.50
Total	100.00	100.00	100.00	100.00	100.00

Table 1 shows the percentage distribution of respondents by age group. Age was classified into various groups starting from less than 35 going up to 50 plus. Three age groups were formed in all. Age group above 50 was the most frequent in all the villages of the cluster followed by age group 35 - 50. Among the four villages, Arakhanda

younger population, 47.73 of the sample represented is more than other villages. Only 42.50 percent of the total respondents represented the age group of above 50. This was mostly so on account of elder men looking after more strenuous work of the household and decision making in the families.

Table: 2 Distribution of respondents by family size

Family Size	Sundarpur	Baulabandha	Ramagarh	Arakhakuda	Total
<4	23.08	17.24	23.81	52.27	32.50
5 to 7	30.77	51.72	61.90	43.18	45.83
>8	46.15	31.03	14.29	4.55	21.67
Total	100.00	100.00	100.00	100.00	100.00

Table 2 presents absolute and percentage distribution of respondents according to the family size. A perusal of the data in table shows that 45.83 percent of the total respondents were having 5-7 members in their family.

Only 32.50 percent of the total respondents were having less than 4 members in their family. 21.67 percent having more than 8 members in the family.

Table- 3 : Percentage distribution of sample house hold by Literacy

Education Level	Sundarpur	Baulabandha	Ramagarh	Arakhakuda	Total
Primary	38.46	44.83	71.43	52.27	50.83
Middle	30.77	24.14	19.05	34.09	28.33
High School	23.08	20.69	9.52	6.82	14.17
Graduation	7.69	10.34	0.00	6.82	6.67
Total	100.00	100.00	100.00	100.00	100.00

Table 3 presents percentage distribution of respondents according to the level of education. A perusal of the table shows that half (79.16 percent) of the total respondents were primary and middle education level due to National Literacy Mission. Only 14.17 percent of the respondents educated up to high school. Only 6.67 percent of the respondents educated up to graduation. Thus the level of the house hold literacy is very low up to primary and

middle classes due to rural character. Moreover, it could also be due to economic compulsion and lack of proper awareness among people regarding education. Among four villages Sundarpur has the highest Keuta sub caste whose major occupation is only fishing. So in Sundarpur primary education is only 38.46 percentages among all other villages and it is lowest among other villages that are having primary education

Table- 4 : Distribution of household by House type

Housing type	Sundarpur	Baulabandha	Ramagarh	Arakhakuda	Total
Temparary	7.69	13.79	23.81	22.73	17.50
Kucha and Baboo	46.15	44.83	57.14	56.82	51.67
Pacca House	46.15	41.38	19.05	20.45	30.83
Total	100.00	100.00	100.00	100.00	100.00

Table 4 indicates that 69.17 percent of sample respondents have either Kuchha and bamboo or temporary house. Only 30.83 percent respondents have pacca house in the sample village. Reasons for that the sum of the sample respondents got the benefit of different government schemes for example, Indranivas Yojana sponsored by Central Government and Mo Kudia schemes sponsored by State Government. The similar pattern was observed in all the selected villages. It was observed from the table that 57.14 percent of respondents

having Kuchha and bamboo house in Ramagarh village followed by Arakhakuda, (56.82percent), Sundarpur (46.15 percent), Baulabandha (41.83percent) respectively. 46.15 percent household had the highest having Pucca house in Sundarpur because the region might have easy access to government scheme and more awareness among the sample respondent. Another reason may be that they are near the urban settlement in the Chilika block.

Table- 5 : Distribution of respondents by Caste group

Caste	Sundarpur	Baulabandha	Ramagarh	Arakhakuda	Total
Keuta	61.54	58.62	47.62	36.36	49.17
Kandara	30.8	17.2	28.6	18.2	22.5
Nolia	3.85	10.34	4.76	31.82	15.83
Tiara	3.85	10.34	19.05	9.09	10.00
Bengali Refugee	0.00	3.45	0.00	4.55	2.50
Total	100.00	100.00	100.00	100.00	100.00

Table 5 depicts most of the fishers in Chilika belong to fishers' caste, and fisher caste is divided into five sub caste groups classified as Keuta, Kandara, Nolia, Tiara and Bengali refugee. Among these five sub caste group two sub caste group classified as Keuta and Kandara dominated the sample as they jointly accounted for 71.67percent of the sample. Whereas Nolia contributed 15.83 percent of the total, Tiara represent 10.00 percent of the total and 2.50 percent were Bengali Refugee. The villages wise data show that village Sundarpur has highest Proportion (61.54) percent of Keuta followed by either Kandara (30.8) percent.

In all the villages the proportion of Keuta was higher than other remaining sub caste group.61.54percent, 58.62percent, 47.62percent and 36.36 percent in Sundarpur, Baulabandha, Ramagarh and Arakhakuda respectively. Keuta people spread whole area of Chilika Lake. While in Sundarpur, Kandara had the second position (30.8 percent). Kandara which is the lower sub caste among fishers sub caste and most of them live in southern sector and in Arakhakuda Nolia with 31.82 percent. Bengali refugee is not a caste. It means refugee fishers who escaped from Bangladesh to outer channels and Central sector of Chilika. They are also engaged in fisheries.

Table - 6 : Distribution of respondents by Ownership of boat

Boat owner	Sundarpur	Baulabandha	Ramagarh	Arakhakuda	Total
Owned	11.54	17.24	9.52	13.64	13.33
Partnership	19.23	13.79	14.29	40.91	25.00
Hired	46.15	51.72	23.81	27.27	36.67
Others	23.08	17.24	52.38	18.18	25.00
Total	100.00	100.00	100.00	100.00	100.00

Table.6 indicates that 74 percent of the sample respondents do not have own or partnership boat. This indicates that the majority of the population don't have enough resources to purchase or make a partnership for the boat. The similar pattern was observed in all the villages except Ramargh where 52.38 percent of sample respondents were dependent on other for fishing activities. The table revealed that 51.72 percent respondents in Baulabandha and 46.15 percent Sample respondent in Sundarpur hired the boat for catching the

fish as compared to their counter parts Arakhakuda 27.27 percent and 23.81 percent in Ramagarh. It indicates that the village Baulabhandha and Sunderpur have access to market as compared to counter parts. Only 11 to 17 percent of sample respondents have their owned boat for fishing activities. The reasons for low ownership of boats is because they do not have enough institutional credit support. Although two formal Institutions bank and SHG are operating in study area but the amount of credit was given not sufficient to own the boat

Table- 7: Distribution of respondents by ownership motorized and non motorized boat

Boat	Sundarpur	Baulabandha	Ramagarh	Arakhakuda	Total
Motorized	11.54	10.34	4.76	6.82	8.33
Nonmotorized	19.23	20.69	19.05	47.73	30.00
Not own	69.23	68.97	76.19	45.45	61.67
Total	100.00	100.00	100.00	100.00	100.00

Table .7 indicates that majority of the sample respondents (61.67 percent) do not have either motorized or non motorized boats .It means that majority of the respondents were dependent on the mercy of commission agent and money lender. The table also revealed that less than 35percent respondents have either motorized or non-motorized boat in all the sample villages except

Arakhakuda the percentage of sample respondent (47.3 percent) have non motorized boat. It indicates that they are only depending on fishing activities as compared to their counterpart in other sample villages. It may be concluded from the table that fishing is the main occupation in Arakhakuda since long.

Table- 8: Distribution of respondents by Income group

Income (Rs.)	Sundarpur	Baulabandha	Ramagarh	Arakhakuda	Total
30000 and less	23.08	20.69	19.05	18.18	20.00
30001- 40000	19.23	17.24	9.52	22.73	18.33
40001-50000	15.38	13.79	23.81	15.91	16.67
50001-60000	7.69	10.34	14.29	13.64	11.67
60001-70000	3.85	6.90	9.52	4.55	5.83
70001-80000	7.69	6.90	4.76	6.82	6.67
80001-90000	7.69	6.90	4.76	4.55	5.83
90001-100000	3.85	3.45	4.76	2.27	3.33
more then 1 lac	1.54	13.79	9.52	11.36	11.67
Total	100.00	100.00	100.00	100.00	100.00

The data in Table 8 indicate that 55 percent of the sample respondents have income below Rs 50000 per year. A similar pattern observed have income more than 1 lakh in sample villages. The income was from all source of means. The study indicates that the people engaged in fishing activities in Chilika area were spending their life much below the counter parts in urban area. It requires serious efforts of state as well as central government to uplift their condition. So they can also join main stream

of economic social and equitable distribution of growth. It was observed from findings of primary data that per capita income is much below in a study area as compared to national average which is more than 60000 per capita income. It is also providing further indication the state as well as central government should put more efforts or implement different welfare scheme to raise standard of living condition of population in the study area.

Table - 9 : Distribution of respondents by Land size group

Table 9 indicates that 13.33 percent sample respondents fall in the category of medium and large farmers. The similar pattern was observed in all the villages except Ramagargh where only 4.76 percent sample respondent fall in this category. The majority of the respondent in the study area belong to the category of small and marginal farmers. It is evident from the table that the study area is also follow national land holding patterns

where 82 percent farmers belong to this category small and marginal. The condition of the sample respondents was observed very bad in the village of Arakhakunda where 47.73 percent respondent having land holding of 1 acre or below. It indicates that in this village condition of fisher farmers is very worst .It is immediately both required Central as well state government intervention for the well being of fisheries farmers.

Table-10 : Number of Fishermen in Debts and its sources (multiple answers)

Village	Bank	SHG	Money lender	Relatives	Friends	Others	Total sample
Sundarpur	42.31	53.85	80.77	84.62	69.23	34.62	100.00
Baulabandha	44.83	41.38	82.76	68.97	51.72	31.03	100.00
Ramagarh	47.62	42.86	71.43	85.71	57.14	28.57	100.00
Arakhakunda	31.82	29.55	79.55	63.64	84.09	65.91	100.00
Upto 1 acre	23.08	27.59	28.57	47.73	34.17		

The majority of respondents depends for finance on different sources for example banks, SHG, moneylender, relatives, friends .The table 10 indicate interesting fact that less than 55 percent sample respondents have access to institutional credit in study area. Another interesting fact that more than 70 percent respondents take loan from moneylender. 85.7 percent respondents of Ramgarh borrowing money from relatives followed by sundarpur (84.63 percent), Baulabhanda (68.97 percent), Arakhakunda (63.64 percent) respectively. Intervention is required from formal financial institution to provide loan at lower rate of interest. It was also observed from the survey that money lenders are charging exorbitated rate of interest (36-60 percent).

management planning needs to address their socioeconomic status as a pre-condition for achieving conservation and use.

Suggestions and Conclusions
 In order to improve the socioeconomic conditions of the poor fishermen of Chilika lake some recommendations have been cited below.

1. There should be reactivation of the fishermen co-operatives and some self help group of fishermen to put forth their problems, hardships and offer solutions to their problems.
2. Role of middlemen should be reduced to enable the fishermen to sell their catch at appropriate price to get a good amount of profit.
3. Awareness program should be conducted periodically to educate the fishers about the use of the common pool resource without affecting the ecological condition of the lake.
4. Government should evolve suitable sustainable earning approach for this community particularly during ban period. Adequate compensation package and self sustainable approach of business model should be paid to them during the period of banning which will certainly improve their living condition.

Thus the socioeconomic assessment indicates prevalence of high levels of poverty within villages in and around the lake. Surveys indicate that more than 70% of households living in the villages fall below poverty line as compared to the state average of 52%. Access to basic social amenities as clean drinking water and safe sanitation is limited to only 16% of the population. Penetration of formal economic infrastructure for banking and credit is equally dismal. Assessments indicate that 76% of the population have access to credit from local moneylender often paying exorbitant rates of interest. Given the fact, the local community plays an important role in determining the ecological character of the lagoon,

5. Proper education facilities should be provided by opening schools, distributing educational kits, pursuing the fishermen to get inclined towards schooling of their children and monitoring regularly the ongoing classes.
6. In every occasion during the period of survey, the fishermen in the Chilika Lake complain about unauthorized fishing by prawn mafias and non fishermen communities. This problem should be tackled by the joint effort of Department of Fishery, and Chilika Development Authority Government of Orissa to prevent their entry.
7. The basic amenities like jetty, cemented bases at landing centers, roofed big house for keeping and weighing of fishes, proper weighing machine, cold storage, transport facility etc. should be provided by the government.
8. Sanction of loan should be provided with less interest.
9. The fishermen should be well aware of the different welfare schemes of government implemented from time to time. The government and NGOs should play a key role in this regard.
10. Implementation of more fishermen welfare oriented schemes including construction of low cost houses, coverage of more fishermen under the schemes like accident insurance and saving-cum-relief for overall socio-economic development of fishermen.

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