Original Research Article

Comparative analysis of economic profile of fish farmers and fishers in Kamrup District, Assam

Economic analysis of Fish farmers and Fishers in Kamrup District, Assam, India

ABSTRACT

This study was conducted to explore the understanding of economic condition of Fish farmers and Fishers in inland fisheries of Assam, a north-eastern state of India that is rich in inland fisheries resources and represent the condition of many developing countries. A survey of 60 fish farmers and 60 fishers was conducted in Kamrup, a representative district of the Indian state, from 1 October to 31 December 2015.Fish farmers and fishers are selected randomly. An ex-post-facto research design was followed to carry out the study that have already occurred .A structured Interview schedule was developed incorporating relevant points to accomplish the Objectives set for the study. It is observed that fish farmers of Bazera development block are lagging behind from fish farmers of Hazo Development Block. The study revealed that fish farmers has a better income as compared to fishers purely from fisheries sector alone and block wise analysis revealed that Hajo block is better positioned in terms of the income of both fishers and fish farmers as compared to Bezera block. This paper explores to understand the status and cause of existing income so that developmental policies and conservation measure of resource can be oriented in right perspective.

Keywords: *Fishers, Income, Block, Fisheries.*

INTRODUCTION

India is the second largest fish producing and second largest aquaculture nation in the world [1]. The total fish production during 2015-16 (provisional) is at 10.79 million metric tonne (MMT) with a contribution of 7.21 MMT from inland sector and 3.58 MMT from marine sector. Inland fisheries have emerged as a major contributor to the overall fish production in the country with a share of 66.81% [2]. Within this sector aquaculture has emerged as the major contributor. Its share to the total inland fish production has improved from 34 percent in mid-1980s to about 80 percent in recent years [3]. India is endowed with huge inland water resources which comprises 29,000 kms of rivers, 0.3 million ha of estuaries, 0.19 million ha of backwaters and lagoons, 3.15 million ha of reservoirs, 0.2 million ha of

floodplain wetlands, 2.36 million ha of ponds and tanks and 0.72 million ha of upland lakes. Though the production breakup of different water bodies is not available, it is established that ponds and tanks are the major sources of aquaculture production whereas capture fisheries production from rivers and estuaries contribute only a small share of the total inland catch. The bulk of the inland capture production comes from reservoirs and floodplain wetlands, which are managed on the basis of culture-based fisheries or various other forms of enhancement [3]. Roughly 14.5 million people are directly involved in the fisheries sector of the country. This sector besides meeting the domestic needs and livelihood of such huge population also generates foreign exchange earnings to the tune of US$ 3.51 billion (2012–13) which amply justifies the importance of the sector on the country's economy and in livelihood security [4].

Assam is the most water resourceful state in the North East part of the country. Fisheries sector is considered as an important economic activity in the state of Assam. The state with a geographic area of 78,438 km^2 (30 % of the North Eastern Region) is gifted with vast aquatic resources comprising of floodplain wetlands (locally known as *beels*), swamps, reservoirs and ponds in addition to the two major river systems viz. the Brahmaputra and the Barak with their tributaries [5]. The total fish production in Assam during the year 2016-17 is 3.07 lakh tonnes, while the state requires 3.36 lakh tonnes of fish, considering a per capita requirement of @ 11 kg [6].Kamrup district of Assam which is situated between latitudes 25°46´ and 26°49´ N and between longitudes 90°48´and 91°50´ E. The district has a total geographical area of 4345 $km^2$and is endowed with a good numbers of fisheries resources. The total fish production in the district stands at 22,150 tonnes during 2014-15 and is the third major fish producing district of the state. Besides the total fish seed production in the district is to the tune of 127.65 million numbers during 2014-15 [7]. Rivers, particularly the mighty Brahmaputra flowing through the heart of the district and *beels* form the major source of capture fisheries for the fishers of the district, whereas ponds and tanks are the major source of aquaculture. Though the exact contribution from capture and culture fisheries to the total fish production of the state and that of the district yet to segregated officially, nevertheless the present national scenario suggests that inland capture fish production has stagnated while the production from aquaculture has been on the rise over the last few decades, which has an indirect bearing on the economic profile of fishers and fish farmers. Information on economic as well as social profile of fishers and fish farmers is an essential requirement towards successful implementation of developmental programmes [8]. Though numerous economic surveys has been carried out in fisheries sector across the country [9], [10], [11], [12] and [13] such critical information is limited for fishers and fish farmers of Assam. In recent time many more research has been carried out in the field of fish culture [14], fish marketing strategy [15] and socio economic condition of fish farmers [16] and [17]. The present study was carried out to assess the economic profile particularly the income generated through fish farming and fish capture of fish farmers and fishers respectively of Kamrup district of Assam which will be help in comparative analysis of the two groups and provide basic information for formulation and implementation of developmental projects.

MATERIALS AND METHODS

Locale of the Study

Kamrup district is situated between $25^0$46´ - $26^0$49´ N latitude and $90^0$48´ - $91^0$50´ E longitude of the state of Assam, India. Kamrup district represents sizable presence inland water bodies with an average to represent the state. Two Development Blocks, namely, Hajo which comprises 94 villages and 16 Gaon Panchayats and Bezera with 57 villages and 7 Gaon Panchayats were selected for the present study. The two blocks were selected based upon fish production with Hajo having the highest fish production and Bezera with lowest fish production among all the Development Blocks of the district. Moreover the selected blocks had sizable number of fish farmers and fishers. Names of fish farmers and fishers from both the selected blocks were collected from officials of DoF. Thirty fish farmers and the same number for fishers were randomly selected from each block. Therefore, from both the blocks a sum total of 120 samples were chosen for the study. A structured interview schedule was developed to collect relevant data.

Selection of Respondent

In the study, a fish farmer is taken to be a person who possessed some land and was engaged in piscicultural activities on any part of that land throughout the last 365 days during the time of survey and a fish farmer household was defined as one which had at least one farmer as a member. Names of Fish farmers were collected from Matsha Mitra and Department of Fisheries (DOF) for both the selected blocks. Thirty respondents for culture fisheries and the same number for capture fisheries (river and *beel* fisheries) were randomly selected from each of the block. Therefore, a sum total of 120 sample size chosen for the study. Survey was conducted from the month of October to the month of December' 2011.

Methods of data collection

A structured interview schedule and questionnaire was developed incorporating relevant variables to accomplish the objectives set for the study. An attempt was made to prepare an unbiased, clear, concise, complete and comprehensive interview schedule. The selected farmers were interviewed personally at their home.

RESULTS

The block-wise breakup of Gaon Panchayat (GP) in Kamrup district is given in Table 1.

Table 1: Block wise Gaon Panchayat in Kamrup district

Block Name	No. of GP	Block Name	No. of GP
Bongaon Dev. Block	4	Kamalpur	12
Bezera Dev. Block	7	Rangia	20
Boko Dev. Block	11	Bihidia Jajikona	13
Chaygaon Dev. Block	7	Goewswar	12
Chayani Dev. Block	11	Rani Dev. Block	8
Chamaria Dev. Block	15	Rampur Dev.Block	10
Hajo Dev.Block	16	Goroimari Dev. Block	8
Sualkuchi Dev.Block	8		

The district is endowed with 167 ha of forest fisheries, 1418 ha of *beels*, 3043 ha of ponds and tanks and 322 ha of derelict water bodies (Table 2).

Table 2: Fisheries resources of Kamrup district

Types of Resources	Number	Area in ha
Forest Fisheries	2	167
Floodplain wetlands / *Beels*	59	1418
Ponds and Tanks	21709	3043
Swamp and Derelict water bodies	116	322

Income of fish farmers and fishers

A total of 120 respondents were interviewed in the present study. 60 respondents, 30 each from both the blocks associated with aquaculture (fish farmers) and another 60 respondents, 30 each from both the blocks associated with capture fisheries (fishers) were selected. Table 3 reveals that income of fishers purely from fisheries sector was much lower as compared to fish farmers in both the blocks. Overall income of fish farmers and fishers in Hajo block was higher than that of fish farmers and fishers of Bezera block (Fig. 1 and Fig. 2). Thus we can conclude that fish farmers have a better income as compared to fishers which has a direct bearing on their economic profile and from block wise point of view Hajo block is better positioned as compared to Bezera. The annual income of fishers of Hajo block is almost 1.5 times higher than fishers of Bezera block and fish farmers of the former is having an annual income about 2 times higher than fish farmers of the later. At the same time fish farmers of Hajo block is having an annual income approximately 4 times higher than the annual income of fishers of the same block, whereas fish farmers of Bezera block has an annual income approximately 3 times higher than fishers of the block.

Table 3: Income of fish farmers and fishers purely from fisheries in Hajo and Bezera block of Kamrup district, Assam

Category	Hajo (n=60)		Bezera (n=60)	
	Income per annum (Rs.)	Monthly income (Rs.)	Income per annum (Rs.)	Monthly income (Rs.)
Fishers (n= 60)	30706	2559	19750	1646
Fish farmers (n = 60)	117682	9807	59857	4988

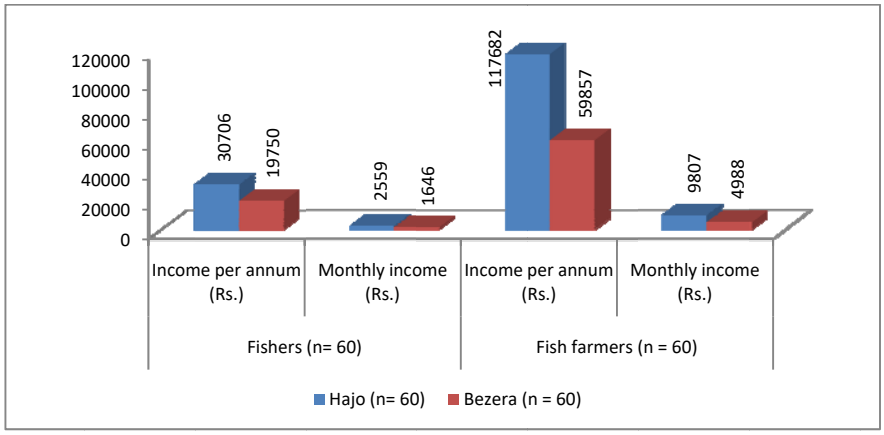

Fig 1.: Bar diagram showing the Fisheries Income of Hajo Dev. Block and Bazera Dev. Block

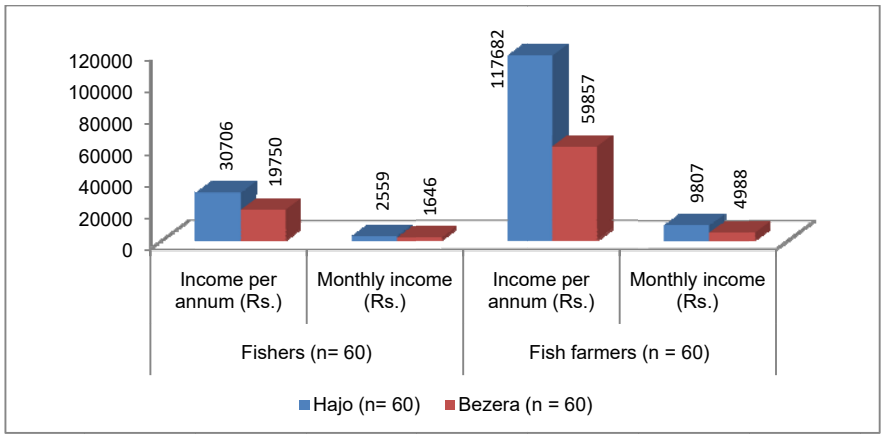

Fig 2.: Bar diagram showing the Fisheries Income of Hajo Dev. Block and Bazera Dev. Block

DISCUSSION

During the study it was seen that income of fishers in Hajo block was comparatively higher than Bezera block. This is due to the fact that almost all the open water fisheries resources (rivers and *beels*) in Bezera block are leased out to individuals so-called *leasee*. As per this system a definite percentage of fishers catch or income goes into the hands of the *leasee*. This significantly reduces the fisher's income. In the study area, it is observed that capture fisheries is a revenue earning source for the government and are managed by Assam Fisheries Development Corporation (AFDC) which manage these fisheries by leasing them to the private parties or to the cooperatives, assuring the local fishers 60 percent of the value of catch. However, actually the private party or the cooperatives only give 30 percent of the catch value to the local fishers and thereby making beel fisheries unattractive livelihood option for the younger fishers [18]. There are numbers of fisher cooperatives exist in Assam but have no

meaningful function. The members are often ignorant about their rights and roles. They work as wage labour for the lessee who is usually the leader of the cooperative [19].

In Hajo Dev. block only limited numbers of fishers are related to *leasee*. This directly has an effect on the income of fishers. Moreover, large numbers of fishers in Bazera Dev. Block are depended on river fisheries where as more number of fishers of Hazo Dev. Block are depended on beel fisheries. This also indicates the nature of comparative exploitation vis a vis status of fisheries resources in the river and the beels. As far as aquaculture is concerned fish production is higher in Hajo block as compared to Bezera block. This can be attributed to the fact that fish farmers of Hajo are more experienced in terms of fish farming as compared to that of Bezera block (Table 4). Almost all the schedule caste people inhabited in Hajo Dev. Block are associated with fisheries related activity from many generations. Table 5 shows the distribution of fish farmers and fishers of both the block with respect to their involvement in fisheries activity viz. 'culture fisheries' and 'capture fisheries'. Most 56.67% and 53.33% of the fish farmers associated in culture fisheries fall within the age bucket of 40-49 years and 30-39 years in Hajo and Bezera dev. Block respectively. This age bracket is a productive age which portends better future for catfish production also it is considered as economically active age [20]. The table also indicates that very few young and old people are involved in fish farming. This is because fish farming requires adequate attention and a lot of sense of responsibility.

Table 4. Distribution of fish farmers and fishers on the basis of age (n=120)

Age in years	Hajo				Bezera			
	Culture Fisheries (n=30)		Capture Fisheries (n=30)		Culture Fisheries (n=30)		Capture Fisheries (n=30)	
	f	%	f	%	f	%	f	%
0-29	1	3.33	2	6.67	2	6.67	0	0
30-39	6	20.77	6	20.00	16	53.33	6	20.00
40-49	17	56.67	9	30.00	9	30.00	5	16.67
50-59	6	20.00	10	33.33	3	10.00	7	33.33
> 60	-	-	3	10.00	3	10.00	12	40.77
Total	30	100	30	100	30	100	30	100

Table 5. Distribution of fish farmers and fishers on the basis of experience (n=120)

Duration in years	Hajo				Bezera			
	Culture Fisheries (n=30)		Capture Fisheries (n=30)		Culture Fisheries (n=30)		Capture Fisheries (n=30)	
	f	%	f	%	f	%	f	%
01 – 10	3	10.00	0	0	8	26.67	0	0
11 – 20	18	60.00	7	23.33	16	53.33	3	10.00
21 – 30	9	30.00	8	26.67	6	20.00	4	13.33
> 30	-	-	15	50.00	-	-	23	76.67
Total	30	100	30	100	30	100	30	100

Moreover during the survey it was seen that most of the farmers in Hajo adopts scientific fish farming, whereas in Bezera the prominence of scientific fish farming is quite limited. Increased fish production has resulted in increased income for farmers of Hajo block. Moreover the fish marketing channel in Hajo is more organized as compared to Bezera. This has resulted in an efficient fish marketing system with limited middle man and has helped in enhancing farmers' income. Again it was

seen during the survey that Department of Fisheries, Assam has played an efficient role in promoting scientific fish farming in Hajo block by training fish farmers through the Matsya Mitra scheme while such initiatives may be lacking in Bezera block.

As far as the disparity in income between fishers and fish farmers is concerned this can be attributed to the fact that aquaculture production has increases at a rapid speed over the years, both at the national and state level. On the contrary capture fisheries production has stagnated over the years. The contribution of aquaculture to the total inland fish production has improved from 34% in mid-1980s to about 80% in recent years [1]. At the same time production from inland capture fisheries sector is more or less to the tune of 1 million tonnes with a very slow growth rate over the years. Moreover production from inland capture fisheries sector cannot be increased beyond a certain level as it would render the whole resource unsustainable. This gap in production and the growth rate in terms of production has effect upon the farmers' income. Organized marketing channel in the aquaculture sector with limited middle man and absence of leasing system like policies are few other factors responsible for increased income of fish farmers.

Community mobilization may be initiated through the formation of Self Help Group (SHG) / Farmers Group that may help the community to run the smooth functioning of banking sector. The article 19 (Phasing - Covering blocks and districts in phased manner) the National Rural Livelihoods Mission(NRLM), Framework for Implementation, Ministry of Rural Development, Government of India, has suggested "Public-Private-Community-Partnerships for last mile service delivery of entitlements, public services and livelihoods support services [21].

CONCLUSION

Sustainability of the resource cannot be developed and imposed on a community, small or large scale. Success depends on the participation and implementation by the community. Community members need to be the driving force for sustainable quality of life for all members, now and for future generation. Because sustainability is a dynamic concept, decision makers need to be flexible and willing to modify their approaches. In this context economic status of fishers and farmers cannot be overlooked for preparation of state policy for resource management and upliftment of target communities. There is an urgent need to recognised that that open water (and open access) capture fisheries have declined substantially and have affected the livelihoods of rural people, especially the poor. The need to amend the state fisheries policies and create an enabling framework, to re-define and strengthen the Department of Fisheries, to establish an appropriate legal framework, to promote greater participation of a wide range of stakeholders in the policy and management process, and to develop and implement new methods of fisheries enhancement and aquaculture.

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