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STAKEHOLDER ISSUES AND PERCEPTION OF THE INLAND FISHERMAN IN ALAPPUZHA DISTRICT OF KERALA

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Abstract: The inland and marine fishery are important in the Alappuzha district of Kerala. However, the riverine and brackish water fishery is the prime source of livelihood of the fishers of this region. This ecosystem is the Centre place of Vembanad Wetland Ecosystem with considerably rich biodiversity and hence the area forms the hub of riverine fishing and therefore, faces severe overfishing and depletion. This might have annulled the life and livelihood of the dependent fishing community. The article uses primary survey data of fishermen from the fishing villages of three places of two panchayaths and one places of Alappuzha district viz. Aroor, Arookutty and Andhakaranazhy using multi-stage stratified random sampling method, with which all these panchayaths are adjacent to the Vembanad Ecosystem. The sample size for the study encompasses 250 each from the three inland fishing village. The study gives the inference that the issues are manifold, the major triggering factors are debt burden, dependence on money lenders, dwindling nature of earnings, tourism-based pollution and other unsustainable implications.

Keywords: Inland Fishery, Fishermen, Perception, Resource Depletion, Ecosystem, Livelihood

1. INTRODUCTION

Kerala is endowed with rivers, brackish water lakes, backwaters and estuaries which are home to inland resources. The inland water spread extending over 3.61 lakh hectares. Kerala thus possesses all the natural endowments required for a vibrant inland fish industry. But unfortunately, fisheries development in

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the state has been mostly confined to capture fisheries and related activities in the in-shore sector. Alappuzha, which is the district with highest number of fishermen has more than 50 percent of the total backwater in the state and is surrounded by the Vembanad Wetland Ecosystem with an area of 24,000 ha. The region provides livelihood and food security to the inhabitants. The major issue of the fisheries sector is relating to livelihood. Varying earnings makes it difficult for them to survive and they are entrapped in poverty, unemployment and debt burden. Resource depletion and reduction in the fishable area is yet another issue. These problems are well evaluated with the traditional fishing community of Alappuzha and will become a general feature of the traditional fishing groups of inland fisheries of Kerala. The fishers of the sample area of the Alleppey district belong to the very poor fishing community of Kerala. The traditional fisherfolks in the state face issues in multiple facets.

2. BRIEF REVIEW OF LITERATURE AND METHODOLOGY

The development focus of the fishing community in the state based on the Kerala Development Report (2008) endorses a positive development in income and livelihood levels of the fishing community and hence the initiatives of the government in these directions have generated a beneficial outcome. But these developments have a regional bias with respect to socio-economic indicators and livelihood indicators as some regions show better indicators in some urbanized centers in comparison to the others in the semi-urbanized and rural areas (Rajasenan and Rajeev, 2016; Rajeev and Rajasenan, 2015). In the South East Asian region inland capture fisheries is having high diversity in gear usage, environment in which they are used and this leads to greater number of complexities. Which in turn leads to endemic problems in generating inland fisheries data. To overcome this issue and also to review of the inland fisheries statistics a committee was set up in the name of Asia-Pacific Fishery Commission in 2001 for the South East Asia region. This is well narrated by Coates (2002). The SLA approach looks forward to achieving development in sustainable dimension with due consideration for ecologically, socially, economically with profound livelihood outcomes (Ashley and Hussein, 2000). SLA in this sense warrants the need for cross-scale consultations with a view to attaining intervention process with different types of stakeholders (Scoones, 1998).

The article is based on primary survey of fishermen from the fishing villages of three places of two panchayaths of Alappuzha district viz. Aroor

and Arookutty and one place in Andhakaranazhy using multi-stage stratified random sampling method. Two fishing villages from each places were selected and 125 respondents from each village are surveyed totaling to 750. Descriptive statistics and factor analysis are the major tools used for analysis.

Theoretical Framework

Theoretically, the study can be connected to the frameworks of Open Access Resources and Sustainable Livelihood Approach (SLA). The SLA helps in addressing the multiple issues by stressing on livelihood options. The emphasis is given on creation of livelihood assets as well as improvement in education, health and living standards so as to earn income to the households. The inland waters of this area are connected with the Vembanad ecosystem has been used by tourism sector, fishery based sub-sector industries, the fishing community and all those using unsustainable fishing methods etc. are resulting in a decline in the fish species and overall earnings of the fishermen in the area. Though others using the common resources can move to other sectors in a situation of uneconomic condition and situations of lower returns, the one and only livelihood option for the fishing community in the area is these resources and any depletion of species or destruction of the nature will lead to loss of their livelihood asset.

3. RESULTS AND DISCUSSIONS

3.1. Problems faced by the Traditional Fishermen

The traditional fisherfolks face manifold issues like health problems, lack of drinking water, sewage, issues with landing centers, housing and natural calamities etc. Figure 1 depict the major problems faced by the fishermen in the three regions. There are region-wise differences in the issues faced by the fishermen community. The lack of potable drinking water has come up as a major issue across all the three regions and hence the overall rank for the issue is 1. In Aroor, the lack of drinking water is a major issue, followed by issues relating to fishing and landing centers. The fishermen in Arookutty have cited harbor landing issues, sewage issues, lack of drinking water and health issues as the major problems. Overcrowding is a major problem cited by the fishermen in the Andhakaranazhy. Other issues of the fisherfolks in the regions include problems due to natural calamities and lack of drinking water. The problems that the fisherfolk faced are ranked according to its priority on the

basis of action as in the case which needs immediate action for the issues like water supply shortage, non-availability of proper fish landing centers, sewage problems, over-crowding of coastal areas, poor health conditions, high risk of natural disasters. The major issue of the fishing villages is with regard to the high density of population which has made them vulnerable to the sea and backwater level rise as majority of the fishing villages are located in close proximity to the inland fishing shores.

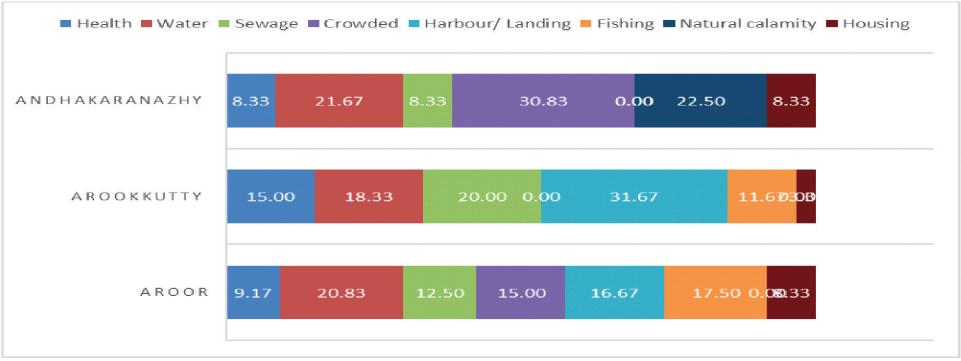

Figure 1: Major Problems Encountered by the Fishermen Community

Source: Survey data

Overall, water issues, overcrowding and landing issues have been ranked as 1, 2 and 3, respectively. While the health problem has attained fifth rank, this is one of the major problems experienced by the households of inland fishing villages. This is the outcome of both their occupational pattern and unhygienic and poor living conditions (drinking water issues, lack of proper latrine facilities, sewage problems etc.) of the households in most of the fishing villages. Issues of contagious diseases in the fishing villages and its spread rapidly in the unhygienic situations lead to poor health conditions of the fishing communities. Problems of skin infections, diarrhea disorders are prominent issues in these traditional fishing villages.

3.2. Debt burden and Savings

The uncertainty in earnings among the fisherfolks is a major reason for their debt burden. Like the farmers, it is believed that a fisher folk lives and dies in debt. Figure 2 gives an overview of the debt burden and debt issues faced by the fisherfolks in the three regions. It is evident from the results that more than 80 percent of the fisherfolks surveyed are entrapped in severe debt burden. About

85.28 percent of the fisherfolks are entrapped in severe debt burden as per the results. Debt burden is the highest among the fisherfolks in Andhakaranazhy with 89.58 percent. Though there is difference in the percentage of fisherfolks in debt burden in the three regions, it is clear that the difference is meager.

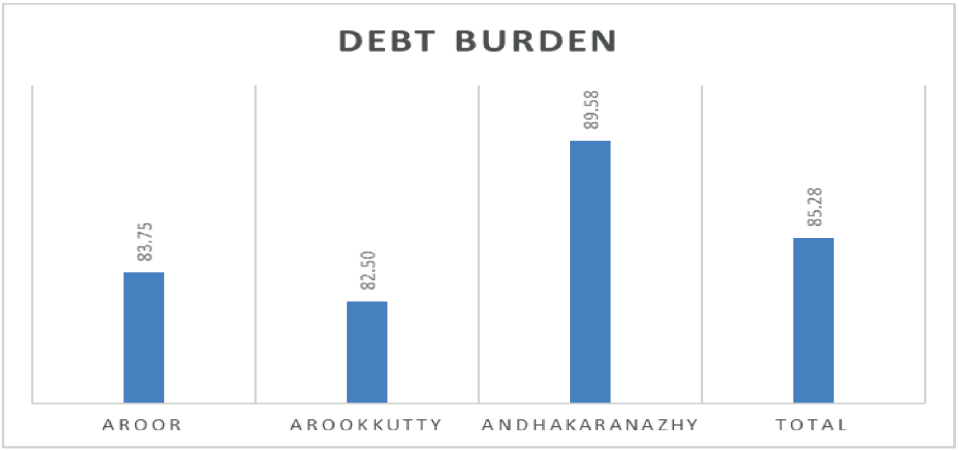

Figure 2: Indebtedness among the Fisherfolks

Source: Survey data

The mean value of debt amount is evaluated for the three regions and is shown in Figure 3. The overall average debt is Rs. 62,690/-. The highest debt value is in Arookutty (Rs. 73,213/-), followed by Andhakaranazhy and Aroor (Rs. 60,210/- and Rs. 54,648/-).

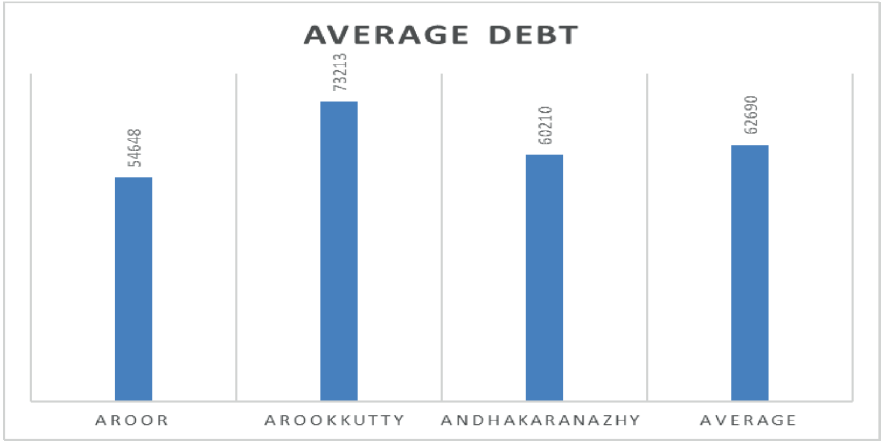

Figure 3: Average Debt Amount

Source: Survey data

The outcome of issues among the fisherfolks along with the dwindling nature of earnings is increased level of borrowings. Due to the lack of collateral and difficulty in getting loan, the fishermen often depend on the unorganized sector like the private money lenders for immediate finance. Though there is speedy release of funds by such money lenders, they often charge exorbitant interest rate compared to the formal sources resulting in the outflow of their hard-earned money for debt repayment. Because of the fact that the issues of fisherfolks are different, the purpose of borrowings also differs even though it shows some similarities. This ranges from borrowings to buy or repair the fishing inputs in meeting the day-to-day expenditures. The major purpose of borrowings among the fisherfolks in the three regions are evaluated, ranked and presented in Figure 4.

Purchase of fishing inputs is the major purpose of borrowing among the fisherfolks in Aroor as 55.7 percent and this is recorded as a major purpose. The second major purpose of borrowing among the fisherfolks in Aroor is for meeting household expenditure (22.4 percent). Marriage and construction of house (10.9 percent and 10 percent) are the other two major reasons. The fishermen in Arookkutty borrow mainly for meeting household needs and for purchasing fishing inputs (36.4 percent and 34.3 percent). House construction is yet another major requirement for which the fishermen in the region borrow (7.9 percent). The results of purpose of borrowing for the fisherfolks in Andhakaranazhy is also similar with input and household expenditure being the major purposes (36.3 percent and 35.8 percent). Marriage (11.1 percent) and house construction (10.4 percent) feature as the second and third major reasons for borrowings for the fisherfolks in the Andhakaranazhy region. Based on overall rank, fishing input and household expenditure feature as the two major reasons for borrowings among the fisherfolks in the three regions. The third rank is for marriage and fourth for the construction of house. The results show that the fishing as an occupation even fails to cater to the subsistence needs of the fisherfolks in the three regions. Another major problem is the damage of fishing inputs both due to the natural calamities as well as due to the inter-sectoral and intra-sectoral conflicts as discussed in the earlier case studies.

While the amount borrowed and purpose of borrowing differs based on regions, it is a fact that interest burden per annum is high due to their high dependence on the private money lenders. The results of the same are evaluated by computing the percentage share of average amount of interest burden to the overall borrowing amount and is shown in Figure 5 and Figure 6. The overall

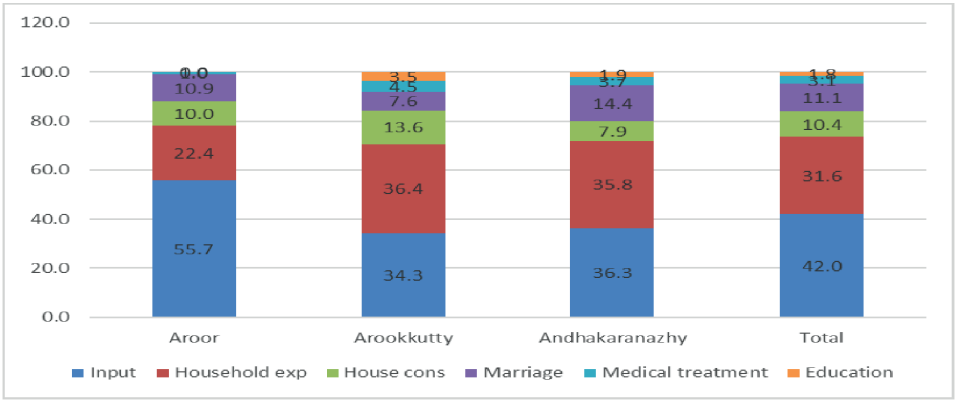

Figure 4: Purpose of Debt among the Fishermen Community

Source: Survey data

share of interest in the total debt is 20 percent. In terms of value as well as in terms of percentage, the burden of interest on total debt is the highest in Andhakaranazhy and the lowest in Aroor. These indicate towards high level of borrowings from the private money lenders among the fisherfolks in the Andhakaranazhy and Arookutty regions.

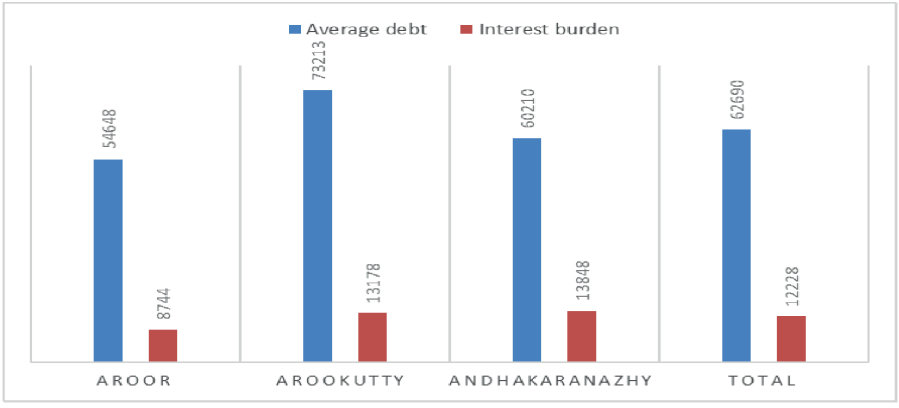

Figure 5: Average Borrowing and Average Interest Burden of the Fishermen Community

Source: Survey data

As the burden of debt and high interest burden mean that the pressure of repayment is high among the fisherfolks, the only way they can repay is through their earnings. This imparts high pressure on their occupation through more fishing efforts without taking into consideration of the resource sustainability, adverse weather conditions and their health situation etc. However, an

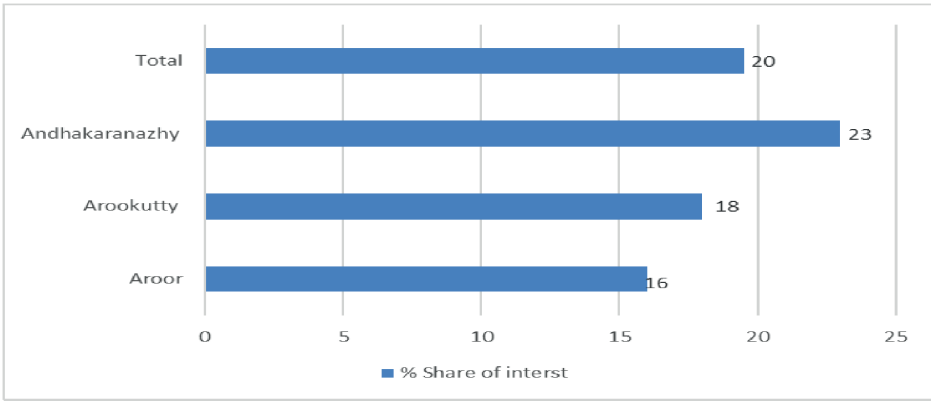

Figure 6: Percentage share of Interest in the total Debt of the Fishermen Community

Source: Survey data

important inference from the field is that those who have co-operative linkages have lesser burden of interest and debt burden compared to the fisherfolks who depend on the private money lenders. Though access to credit is pivotal in the socio-economic upliftment of the marginalized communities like the fisherfolks, the emergence of SHG-linked co-operatives have resulted in reduction of debt burden among them to a certain extent. However, during emergencies the fisherfolks depend on easier and faster credit sources like the money lenders who charge high interest. The outcome in terms of financial empowerment of fisherfolks through the emergence of co-operatives and other formal credit sources is evident with a lesser debt burden. But the spread of these institutional linkages is important so as to further lessen the debt burden and save the fisherfolks from the clutches of private money lenders. Another pertinent issue is with regard to the repayment capacity of the fisherfolks which is limited due to the sticky labour and dwindling nature of their earnings.

The important solution to reduce the debt burden is by promoting formal credit, another way is to promote saving habits among the fishers. It is true that the earnings of the fisherfolks during the lean season are less or even nil. But during peak period, they earn more than their average earnings. Though households' expenses and debt repayment form the major way by which these extra earnings are used, consumption of alcohol and other unwanted expenses also form a major part of these expenses. In fact, the alcohol consumption is a major issue among the fishermen in these regions. A lion's share of their earnings is spent for the same. One possible way out is to set apart their excess earnings as savings which they can use during the lean seasons or during

emergencies. The details regarding the savings of the fisherfolks in the three regions are discussed.

On percentage-wise, i.e., 33 percent of the sample households regularly save. Out of those who regularly save, majority have monthly savings, followed by those who have annual savings. Region-wise, 64 percent in Aroor and 65 percent in Arookkutty have monthly savings. The proportion of those who save yearly are 33.3 percent and 20 percent in the two regions. In Andhakaranazhy, 46.5 percent have monthly savings and 44.2 percent mainly save annually. Figure 7 show the results regarding the frequency of savings.

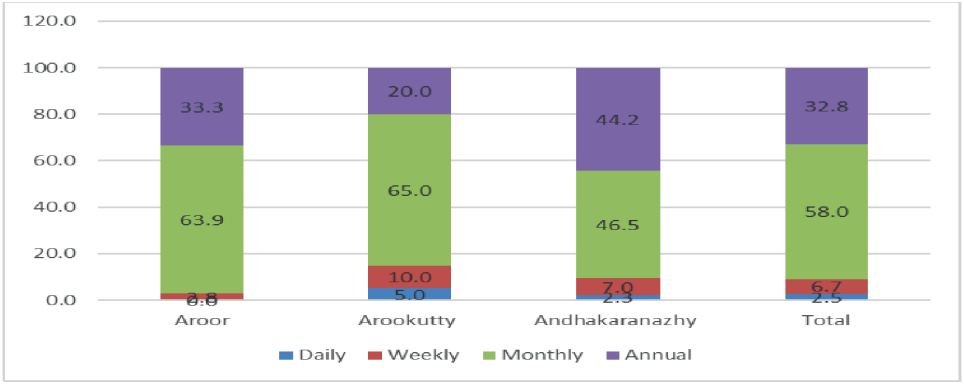

Figure 7: Frequency of Savings of the Fishermen Community

Source: Survey data

Post office savings schemes like the recurring deposits or savings account are the major instruments in which they save. Region-wise, the results are same

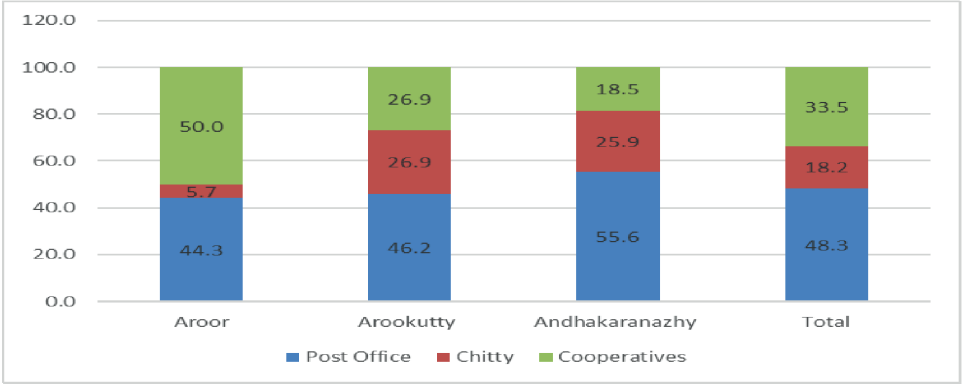

Figure 8: Type of Saving of the Fishermen Community

Source: Survey data

for the fishers in Arookkutty and Andhakaranazhy. Even though savings in co-operative societies is in all the three regions, the proportion of savings in co-operatives is higher in Aroor compared to the other two regions. Savings in the form of Chit funds is also popular among the fishermen of Arookkutty and Andhakaranazhy. Figure 8 depicts the results on type of savings.

The main purpose for which savings are for buying inputs, education as well as in conducting marriage of female members is shown in Figure 9.

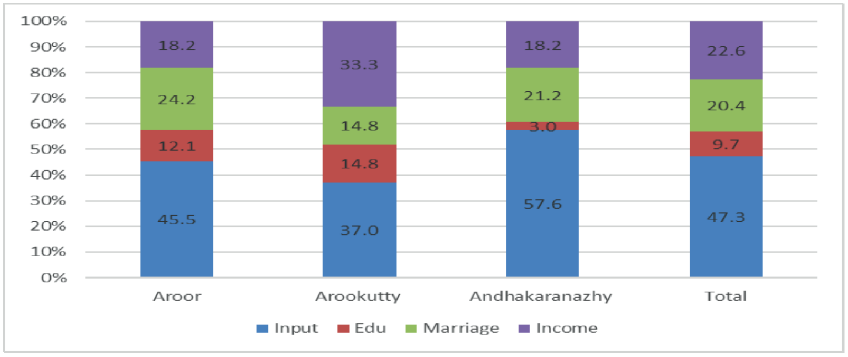

Figure 9: Purpose of Saving of the Fishermen Community

Source: Survey data

3.3. Income, Expenditure and Livelihood

The annual household income and expenditure of the sample fisherfolks collected based on the primary survey is categorized into three viz. low, medium and high and the results are depicted in Figure 10. Majority of the households have medium levels of income and expenditure. However, those in the high annual expenditure category are comparatively less at 5.2 percent.

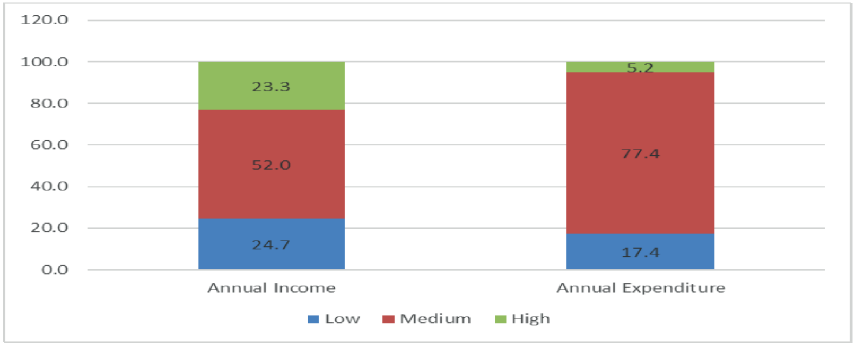

Figure 10: Annual Household Income and Expenditure category of the Fisherfolks

Source: Survey data

3.3.1. Lack of alternate livelihood: Case of the sample Fishing villages surveyed

Though people in the study panchayaths also engage in non-fishing activities, the major occupation of those in the fishing villages surveyed is related to fishing and allied activities. It is clear from the survey data that all the employed members have recorded fishing as their main occupation. Also, more than 70 percent of the employed members are only employed in fishing. A regional difference, if any, in terms of livelihood options is evaluated in the section with the aid of results of employment status of the household members of the surveyed fishermen. Table 1 shows the region-wise results and it is seen that Aroor has the highest percentage in terms of those dependent on fishing and Arookkutty has the lowest percentage in this regard. Hence, it is concluded that the livelihood pattern of the household members of the fishermen surveyed in the three regions are similar. This is of great importance especially during the off-seasons as most of the households will be in the clinches of poverty. Regional difference in this regard is negligible as it becomes the basic characteristics of the fishing community irrespective of regions or places owing the alternate livelihood issues and sticky labour characteristics.

Table 1: Household Members who are only Dependent on Fishing

Name of the Village	*Dependent only on Fishing*	
	Yes	*No*
Aroor	80.4	19.6
Arookutty	68.0	32.0
Andhakaranazhy	72.1	27.9
Total	73.6	26.4

Source: Survey data

3.3.2. Dependency Ratio and Employment Details of the Fisherfolk Households

It was identified that the adult-children ratio is high at 31 percent. Here, an attempt is made to identify the dependency by looking at the percentage of employed members out of the total household members and labour stickiness of the fishermen households by assessing those employed in the fishing and allied sectors out of the total household members in the three regions. Figure 11 shows the detailed results regarding these aspects.

The data on the percentage of dependents show a higher dependency among the fishermen households in the three sample regions. It is clear from the results that, though the overall dependency is 70.9 percent, the dependency is the highest in Aroor at 77.9 percent, whereas in Arookkutty

and Andhakaranazhy, the values are 66.3 percent and 63.8 percent respectively. Though the percentage of dependents include both the working age and children, the employment percentage shows the proportion of employed members who are in the working age category. Overall, 42.4 percent out of the total members in the working age are employed. The percentage of employed is the lowest in Aroor at 36.6 percent. It also shows that 45.1 percent in Arookkutty and 47.6 percent in Andhakaranazhy are employed, which is comparatively higher than the rate of employed members in Aroor. Though the results of employment data show higher dependency ratio, yet another aspect is with regard to the major source of employment. The main occupation of the majority of the household members in the three regions is related to fishing and allied activities. Out of the total employed, 73.6 percent of the household members surveyed work in fisheries and allied sectors. Those employed in fisheries sector are 80.4 percent in Aroor. About 72 percent of the employed members in the households of Andhakaranazhy are employed in fisheries. Those employed in fisheries sector are the lowest in Arookkutty with 68 percent.

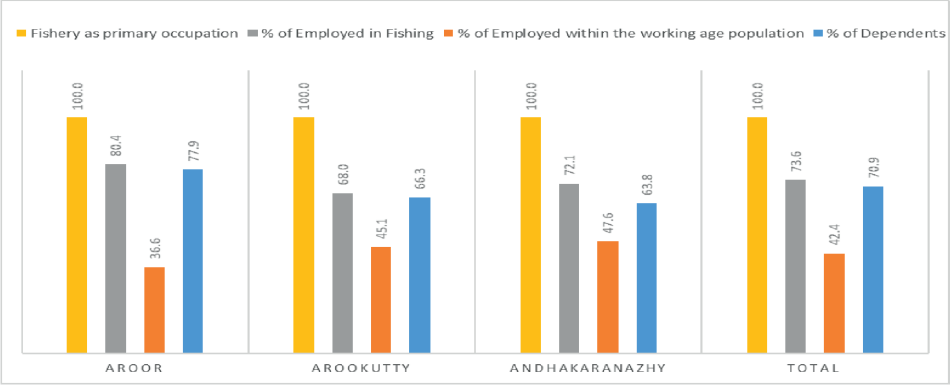

Figure 11: Dependency Ratio and issues of Sticky Labour among the Fishermen Households

Source: Survey data

Most of the members in the fishermen household work in several sub-sectors relating to the fishing and other activities. Some also engage in non-fishing activities like working as wage labourers etc. However, in all the cases their main avocation is connected with fishing for all the employed members. A majority works in most of the fishery sub-sectors. Lack of education and lack of alternate skills to take up other employment activities is the major reason for

the same. Being a seasonal activity and due to erratic nature of earnings from fishing, this will have a significant effect on their earning pattern. However, a detailed evaluation of earning based on sub-sectors and other sectors in which the household members work has not been done mainly due to the paucity of data. Often, the fisherfolks are unable to distinguish clearly between the earnings they get from different fishery sub-sectors and also from other activities. Hence, only data on the total average household earnings has been gathered. However, considering that the major occupation is still fishing, it is pertinent to conclude in this regard that majority of the earnings of these households are from fishing and allied activities. Field inference also shows that those in regular employment, government jobs etc. form meagre part of the total household members. Lack of education, skills, motivating/supporting factor to switch to a regular job or to other sectors with stable income are major reasons. The results are a clear espousal of the labour stickiness prevailing in the fisheries sector of Kerala which is true for the three inland fishing villages surveyed.

3.3.3. Perception of the Fishermen regarding their Occupation

The issues with regard to the labour stickiness of the fishermen is clear from the inferences shown in Figure 12. Nearly 80 percent feel that the prospects of fishing and allied works as occupations are bleak in the future. However, only 40 percent of the fisherfolks have opined that they are willing to change to other avenues of employment. Another interesting fact is that, even though 40 percent have expressed willingness to change to other jobs, only half of those who are willing have actually attempted to change their work. The major reason for sticking on to fishing and allied work is simply due to the fact that they do not possess skill or ability to do any kind of work other than to work as a fishing labourer. Apart from that the senior members working in the sector consider this as their family or traditional occupation which they do not wish to part with and hence continue to work in the sector despite the lack of earnings to provide their household with a decent life. It is because of the fear or feeling that the prospects of fisheries will worsen in the future that 86 percent of the fishermen do not want their next generation to work in the sector. They, rather wish their children or their next generation to attain better education and look for stable job which will enable them to earn better income and a respectable position in the society. The reality in the fishing villages is non-availability of alterative employment opportunities and even if it exists,

they do not have the requisite skill to take up those jobs. Hence, diversification of activities for getting more employment is still a dream in the fishing villages. Together with these problems their affinity towards regional concentration and low inducement for mobility and low mobility has created a vicious circle of forces both direct and indirect in generating more pressure to the available and limited fishery resources and even competition for resources and employment opportunities.

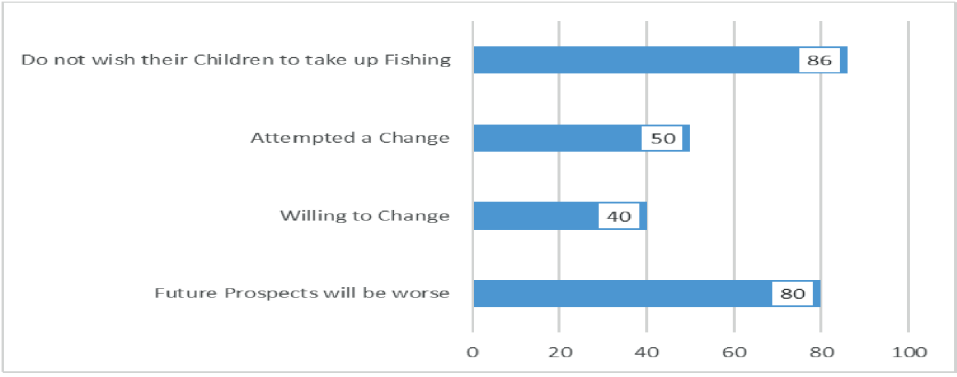

Figure 12: Perception of the Fishermen regarding their Occupation

Source: Survey data

3.4. Issues relating to Resource Depletion: A Perception Analysis

An assessment of the depletion status of the fishery resources in the inland waters has clearly pointed out towards severe depletion of fishery resources. Even though the situation has improved recently, present status is also not so promising. During the pilot survey and discussions with the fishermen in the area, majority of the fishermen have also opined that there has been decline in some of the fish species. Out of the several reasons cited, the main reasons include: over-utilization, impact of tourism activities, use of fertilizers and climate change etc.

The reasons for resource depletion had been identified in the sample regions were included in the interview schedule and the respondents were asked to rank each of these reasons so as to identify the main reason. The result is shown in Figure 13, it is evident based on the ranking that the non-fishing activities have been ranked as the first three major issues. Industrial and tourism activities have appeared in the first three ranks. The fishermen seem to be well aware of the climate change issues and destruction of ecosystem due to mangrove depletion. Human activities like encroachment, resource exploitation

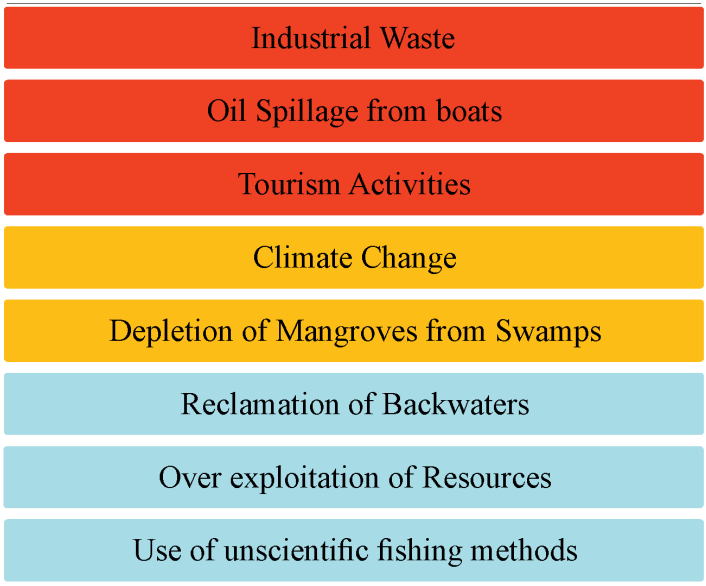

Figure 13: Ranking of main reasons for Resource Depletion

Source: Worked out from the Survey data

and unscientific fishing methods feature in last three ranks. Though, region-wise difference in perception was not so visible, a factor analysis is performed to identify the major reasons of depletion among the 8 reasons cited by the fishermen in the three regions. The KMO score of above 0.5 is considered to be good for estimating FA. The test value in Table 2 is 0.622 which is more than the generally accepted minimum score. Bartlett's Test of Sphericity is also significant.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.622
Bartlett's Test of Sphericity	Approx. Chi-Square	2955.788
	Df	28
	Sig.	.000

The total Variance Explained in Table 3 shows that three factors have been extracted which have an eigen value of more than 1. These factors together explain 70.99 percent of the total variance (40.372 percent by the first, 15.829 percent by the second and 14.791 by the third) in the level of factors. The total variance explained by the first, second and third factors in the rotated solution is 34.903 percent, 20.220 percent and 15.869 percent respectively.

Table 3: Total Variance Explained

Component	*Initial Eigenvalues*			*Extraction Sums of Squared Loadings*			*Rotation Sums of Squared Loadings*		
	Total	*% of Var*	*Cumulative %*	*Total*	*% of Var*	*Cumulative %*	*Total*	*% of Var*	*Cumulative %*
1	3.230	40.372	40.372	3.230	40.372	40.372	2.792	34.903	34.903
2	1.266	15.829	56.200	1.266	15.829	56.200	1.618	20.220	55.122
3	1.183	14.791	70.991	1.183	14.791	70.991	1.270	15.869	70.991
4	.869	10.867	81.859						
5	.841	10.513	92.372						
6	.366	4.570	96.941						
7	.145	1.818	98.760						
8	.099	1.240	100.000						
Extraction Method: Principal Component Analysis.									

The Rotated solution are shown in Table 4. The three statements relating to industrial waste, pollution from the boats and tourism activities are part of the first factor. The two issues regarding depletion of mangroves and climate change are cited as the second factor. The third factor highlights three statements relating to Reclamation of backwaters, over exploitation of resources and use of unscientific fishing methods.

Table 4 Rotated Component Matrix[a]

	Component		
	1	*2*	*3*
Reclamation of backwaters	.172	-.081	.678
Over exploitation of resources	.154	-.221	.656
Climate Change	-.016	.909	-.026
Depletion of Mangrove Swamps	-.264	.740	-.159
Use of unscientific fishing methods	-.341	.331	.568
Industrial Waste	.934	-.020	.074
Oil spillage from boats	.918	-.166	.148
Tourism Activities	.915	-.227	.062
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 5 iterations.			

The fishermen perceive that the industrial and tourism activities in the backwaters along with oil-spillage owing to the high use of motorised boats have resulted in excess pollution, which in turn has resulted in depletion of resources. The climate change issues and destruction of mangroves are other

factors which aggravate the issue. The backwaters are often encroached and reclaimed which also acts as a major reason. This, together with overexploitation of resources and unscientific fishing practices are the major reasons for depletion of fishery resources in the area as per the perception of the fishermen surveyed.

4. CONCLUSION

The article authenticates clearly the problems faced by the fisherfolks in the three regions of Alappuzha district. The major problems identified the lack of financial backup, organisational capacity etc. added to their woes. Though the issues are manifold, the major triggering factors are debt burden, dependence on money lenders, dwindling nature of earnings etc. and the major purpose of debt is to buy fishing gears, it is a fact that this is done mainly to replace or repair the existing gears damaged due to natural calamities or due to the conflicts as explained in some of the case studies. These processes work like a vicious circle and debt burden of the family is often transferred from one generation to another. One solution to this is availability of remunerative and stable employment avenues. Lack of education and alternate skills prevent them to use the available alternative employment opportunities in the nearby locations. The survivability and sustainability of the fishermen is totally based on fishery resources in the inland waters of the Alappuzha region, which is in threat owing to unsustainable fishing practices, damages incurred to the ecosystem, pollution and climate change issues.

Analysing the issues of species depletion in the area, it has been identified that the closure of the Thanneermukkam Bund, excess use of pesticides, mining, industrial waste, lack of sanitation, unscientific methods of fishing etc. were the major contributing factors in decline of fish species in the region. The first and foremost requirement was to monitor the system through community involvement and also to regulate the unsustainable fishing practices. The remedy has been to move forward by taking into confidence all the stakeholders in the system and formulating conservative policies without hampering local livelihood.

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