

## **Fisherwomen of Loktak Lake, Manipur : A Social and Economic Analysis**

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### **Abstract :**

An assessment of the socioeconomic status of fisherwomen of 3 villages (Thanga, Ithing, Phubala) and one island (Karang) in the Bishnupur district of Manipur was made during 2019-20. The information was collected from primary sources of information from 350 fisherwomen with a 95 percent confidence level and a 5 percent margin of error. The data was analysed using Engel's coefficient to determine the infrastructure. The study found that the majority of fisher women are between 15 and 65 years of age. Of the sampled women 80 percent of them are highly literate, 84.75 percent belong to the Meitei religion, 70.25 percent live in mud houses with bamboo fencing, tin roofs, and 100 percent utilize lake water directly to drink and for domestic purposes. In fact, 90 percent of the sampled respondents are involved in the fishing industry with 53 percent having more than 10 years of experience but in Engel's coefficients, 59.34 percent of household spending is attributed to everyday expenditures. Thus, their contribution to the fishing industry is necessary for their financial survival. Their nearest hospital is not in proper condition, and their sewage facilities have not been installed yet. A major obstacle to their livelihood is the construction of the 'Ithai' Barrage Dam, the removal of floating mats (*Phumdis*), and encroachment of the lake. This has resulted in a reduction in fish production, which makes it difficult for them. So, workshops and schemes are also needed for their awareness and socio-economic development along with problems regarding hospitality, roads, and transportation etc.

**Keywords:** *Social, Economic, 'Loktak Lake', Livelihood and Fisherwomen.*

### **Introduction**

'Loktak Lake' is India's largest freshwater lake and a Ramsar site of international importance, covering 287 sq. km. Located on the southern side of Manipur central valley, it

is about 38 km away from Imphal, the state capital. Fisheries play a significant role in socio-economic development, primarily by providing employment to low-income families. As a freshwater lake, this lake is a rich fishing resource and provides nourishment for millions of people who live nearby, making it a vital resource. The majority of their income comes from fishing and fish supplies around 'Loktak Lake'.

Economic prosperity would not be possible in Manipur without the constructive efforts of its women. The agricultural industry is also highly influential, as are food security, horticulture, agriculture, food processing, nutrition, sericulture, fisheries, and other related industries. Agriculture represents the majority of Manipur's economy. Women's role extends beyond childcare and child education to looking after the animals. They also work in the fields and harvest the produce. As women receive higher wages than men, many traditionally male tasks within agriculture are being handled by them (Devi, S., & Singh, L. K., 2016).

Thus, many women are entirely dependent on fishing as one of their primary sources of food and income. But because of lack of resources, such as improper tools, insufficient transportation, poor roads, insufficient health facilities, etc. makes it more difficult for them to achieve their goals.

### **Objectives**

The purpose of the study is to find out the socio-economic status of fishing women in 3 villages (Phubala, Ithing and Thanga) and one island (Karang) in Bishnupur, Manipur.

### **Data Base and Methodology**

A field investigation and direct interviews with female fisherwomen at the 'Loktak' Lake community were conducted in 2019-2020. Information has been collected from 3 villages Ithing, Thanga, Phubala and one island Karang of the Bishnupur district. With the aid of a carefully drafted questionnaire, a simple random sampling technique was adopted. Taking 350 female fisher respondents with a 95 percent confidence level and 5 percent margin of error.

To determine the infrastructure found in these sampled villages, Engel's coefficient was used with the given formula as -

$$\text{Engel's coefficient} = \frac{\text{total expenditure on infrastructure}}{\text{total annual income}} \times 100$$

Engel's coefficient (shown in Figure 5) is used to calculate the rate of change in demand by dividing the rate of change in consumers' disposable income. Many factors, including food, clothing, school, college, cooking gas, electricity, equipment, transportation, cooking fuel, etc., have a role in determining how much money fisherwomen have for their domestic needs.

Due to the fact that the focus of the research is on analyzing basic necessities for domestic use, double-check was done and domestic use was made the focus instead of infrastructure.

**Study Area**

The term ‘Loktak’ means a stream (‘Lok’) and an ending(‘tak’), referring to the end of a stream and this lake has an area of 287sq.km., situated between 93°46’E to 93°55’E and 24°25’ to 24°42’N (Fig.1) in the Bishnupur district of Manipur. It appears oval-shaped, measuring 26km long and 13km wide, with the natural catchment area being 1,040 sq. km. The indirect catchment area is 7,157 sq. km. Additionally, this lake is connected with 63 small lakes, and 2 important rivers, namely Nambol and Nambul, as well as a few smaller rivers and channels that flow into the lake (Moirangleima, Kh. and Devi, S. S., 2021).

Although, there are roughly 8 towns and 52 villages surrounding this lake, with a total population of about 2,20,017 people, or 9 percent of Manipur’s total population (Moirangleima, Kh. and Devi,S.S.,2021). Besides fishing and fisheries, the lake provides a wide range of functions in the form of water supply for drinking water, domestic uses, hydroelectric power generation, agriculture as well as for promoting tourism activity – making of homestay on ‘*phumdis*’, boating, rowing sports, habitat for ‘Sangai’ in ‘Keibul Lamjao’ National Park located in the south-eastern part of the lake, raw materials for handicrafts, food, fuel, fodder, thatching materials, medicinal plants etc. That’s why the lake is the ‘lifeline of the people of Manipur’.

So, Manipur, a state in north-eastern India is famed for its freshwater lake ‘Loktak Lake’ with its abundant resources with high biodiversity. This lake has also provided a lot of socio-economic values for the livelihood of people.

**Results and Discussions**

In the social-economic context, fisherwomen of Manipur have made a significant contribution to the upliftment of rural and urban economies.

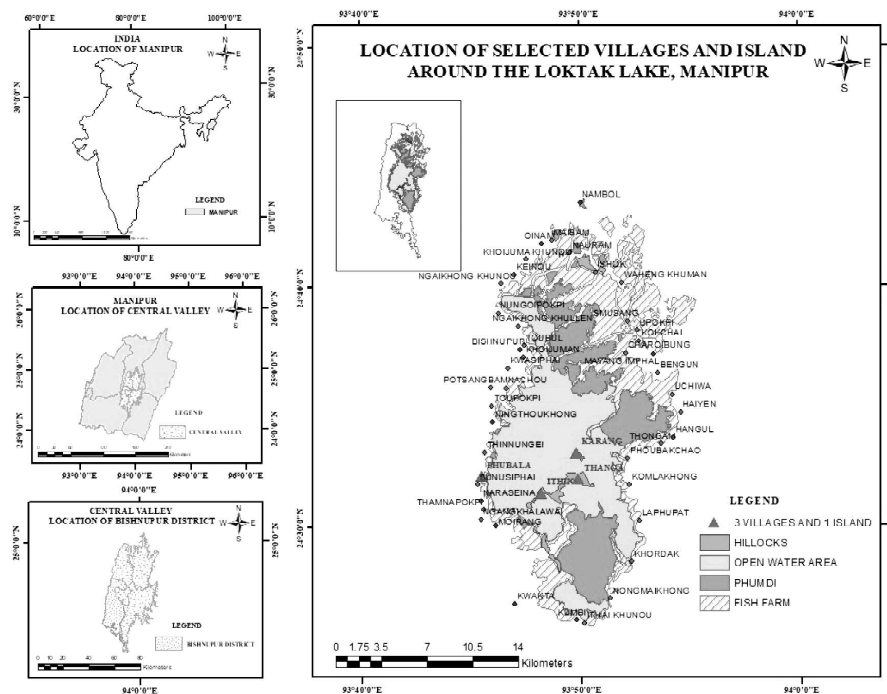
**Social Background of the Sampled Respondents**

According to the results of the field survey, the majority of the sampled respondents are between the ages of 15 and 65 years. Table 1 reveals that the majority of the sampled respondents are between the ages of 30 and 45 (i.e., 51 percent), 26.5 percent of respondents are over 45 years old and 22.5 percent are under 30 years old. A substantial number of sampled respondents are married, i.e., nearly 95 percent while the rest 5 percent are unmarried, from this data we can say that these women are taking responsibility for their families by engaging in fishing and allied activities.

Field Surveys revealed that most of the sampled respondents are literate i.e., 80 percent. Among these sampled villages, regarding the education, Thanga village is good as compared to others as we can see that about 16 percent are post-graduates followed by Karang (4 percent) and Ithing (3.7 percent) while phubala is the lowest with only nearly 3 percent graduates. There was no illiteracy, which is notable in these sampled villages (Table 1).

Maximum sampled respondents followed Meitei religion (‘*Sanamahism*’) i.e., 84.75 percent (90 percent in Thanga; 89 percent in Karang; 81 percent in Ithing; 79 percent in Phubala, etc.) and 15.25 percent in Hindu (21 percent in Phubala; 10 percent in Thanga; 19 percent in Ithing; 11 percent in Karang, etc.) (Table 1).

Nearly 60 percent belong to a family size of 4 - 8 members, 31 percent in less than 4 and 10.25 percent have more than 8 members. Maximum sampled respondents i.e., nearly 94 percent live in nuclear families (Table 1).



**Figure 1: Location of sampled villages in and around Loktak Lake, Manipur**

**SOURCE: 1. CENSUS OF INDIA, 2011; 2. GOOGLE EARTH, 2019; 3. GOOGLE MAP, 2019; 4. SENTINATAL 2A MSSLIC, ESA 2018.**

**Table 1: Social Condition of the Sampled Respondents in the Study Area.**

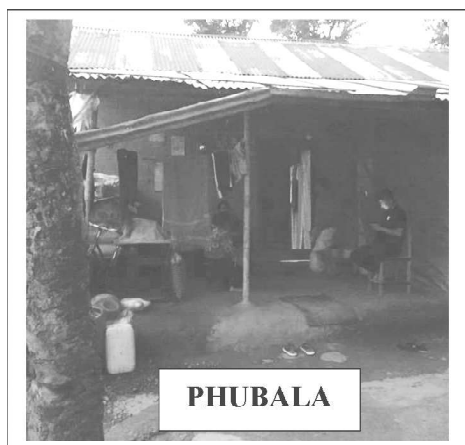
SL. NO.	FEATURES	TYPE	SAMPLE RESPONDENTS (%)				AVERAGES (%)	
			PHUBALA [HUT DWELLERS]	THANGA	ITHING	KARANG [ISLAND]		
1.	Age group	15-30	15.00	10.00	30.00	35.00	22.5	
		30-45	60.00	54.00	40.00	50.00	51.00	
		>45	25.00	36.00	30.00	15.00	26.5	
		<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	
2.	Married Status	Married	96.00	95.00	98.00	90.00	94.75	
		Unmarried	4.00	5.00	2.00	10.00	5.25	
		<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	
3.	Education	Illiterate	27.00	7.00	19.00	30.00	20.75	
		Literate	73.00	93.00	81.00	70.00	79.25	
		<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	
		Levels of Education	Primary	43.84	17.20	37.03	7.14	26.30
			Secondary	53.42	53.76	50.62	60.00	54.45
			Graduate	2.74	12.90	8.64	28.57	13.21
			Post-Graduate	-	16.13	3.70	4.29	6.03
		<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	

4.	Religion	Hindu	21.00	10.00	19.00	11.00	15.25
		Meitei	79.00	90.00	81.00	89.00	84.75
		<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
5.	Family sizes	0-4	30.00	35.00	32.00	27.00	31.00
		4-8	62.00	45.00	48.00	70.00	56.25
		>8	8.00	20.00	10.00	3.00	10.25
		<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
6.	Family Types	Nuclear	97.00	85.00	95.00	98.00	93.75
		Joint	3.00	15.00	5.00	2.00	6.25
		<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
7.	Houses	Pucca	-	5.00	-	-	1.25
		Semi-Pucca	-	85.00	4.00	25.00	28.5
		Kutchha	100.00	10.00	96.00	75.00	70.25
		<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
8.	Drinking water	Lake water	75.00	63.00	100.00	100.00	84.5
		Tape-water (Municipality)	-	-	-	-	-
		Pond	-	-	-	-	-
		Hand pump	-	30.00	-	-	7.5
		Loktak Lake & Water Tanker	25.00	7.00	-	-	8.00
		<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
9.	Drainage	No Drainage	100.00	100.00	100.00	100.00	100.00
		<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

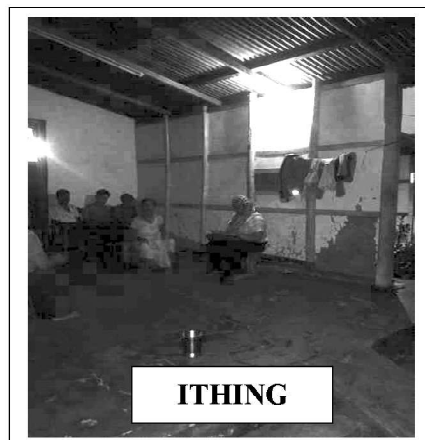
Source: Survey results based on field research, 2019-2020

Regarding the housing condition of the sampled villages, it was found that most of the villages sampled lived in ‘kutchahouses’ made of mud, bamboo fencing, tin roofs etc.i.e., about 70.25 percent followed by 28.5 percent semi-pucca houses and only 1.25 percent

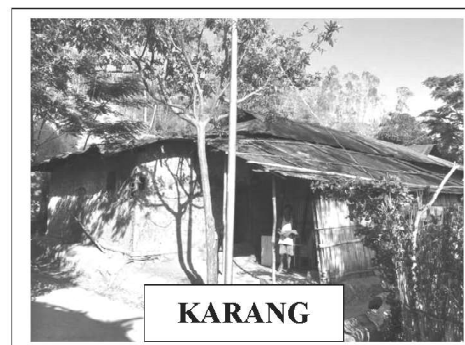
lived in ‘pucca houses’ (Table 1). If we compare these sampled villages, Thanga village has the most better condition than other villages i.e., 85 percent live in semi-pucca and 5 percent in ‘pucca houses’ but only 10 percent live in ‘kutchahouses’ while 100 percent of Phubala village live in Kutcha houses followed by Ithing (96 percent) and Karang (75 percent) (Photo Plate no. 1).



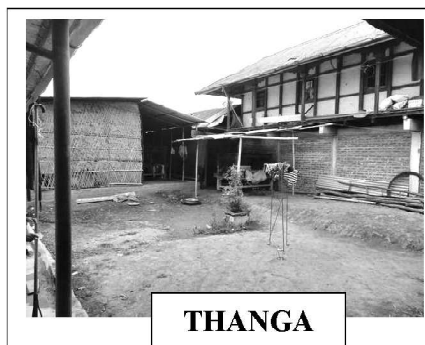
PHUBALA



ITHING



KARANG



THANGA

Source : Pictures taken by researcher

Photo plate no. 1: Types of Houses of the sampled Villages and Island.

According to field surveys, the majority of people living around the Loktak lake use the lake water for drinking and domestic purposes (almost 85 percent) i.e., 100 percent in Ithing and Karang, 75 percent in Phubala, and 63 percent in Thanga; roughly 25 percent comes from local water tankers, and 7.5 percent comes from hand pumps (only found in Thanga). Surprisingly, in these sampled villages, there is no water connection for tap water

and no drainage system, so 100 percent of all the domestic wastewater goes straight to ‘Loktak lake’ (Table 1).

A Perusal of Table No.2, figure 2 & 3 shows that, season wise average value of physio-chemical characteristics of ‘Loktak lake’, water, from ‘Manipur Pollution Control Board’, 2019-20. We can see from the graphs that the physio-chemical characteristics of the lake water are within the desirable limits of Bureau of Indian Standards (BIS) requirements, thus we can confirm that the drinking water quality of ‘Loktak lake’ meets BIS criteria for drinking and domestic use.

Based on the standard’s stipulation of acceptable ranges, the Bureau of Indian Standards (BIS) approved value for drinking water, if the parameters are within the acceptable range, the material is non-acidic and can be safely consumed; otherwise, it is too strong for human consumption. So, the criteria established by the Bureau of Indian Standards (BIS), a government organization founded in 1986 was used, to evaluate the usefulness of the lake water. BIS’s mandate is to “ensure the orderly evolution of the country’s standardization, labelling, and quality certification of goods and to deal with related issues” (BIS, 2012). However, this BIS claims that human contact with the water is safe.

Table 2: Average value of physio-chemical characteristics of water according to season-wise, 2019 -20)

SL. NO	PARAMETERS	MONSOON 2019-2020		DRY 2019-2020		Limits of BIS STANDARDS (10500:2012)*
1	pH	7.12	7.28	7.12	7.28	8.5
2	Electrical conductivity(μ/scm)	136	190.64	136	190.64	800
3	Turbidity	63.4	80.6	63.4	80.6	100
4	Total Dissolved Solid (mg/l)	83.6	95.8	83.6	95.8	500
5	Total Hardness (mg/l)	30.8	51.6	30.8	51.6	200
6	Ca <sup>2+</sup> (mg/l)	16.4	28.2	16.4	28.2	250
7	Mg <sup>2+</sup> (mg/l)	3.54	6.46	3.54	6.46	30
8	cl <sup>-1</sup> (mg/l)	9.12	8.47	9.12	8.47	250
10	Total Alkalinity (mg/l)	64	85.2	64	85.2	200
11	Dissolved Oxygen (mg/l)	7.06	7.14	7.06	7.14	8

Source: Manipur Pollution Control Board, 2019-2020

\*Bureau of Indian Standards (BIS) approved value for drinking water and 2012 is the year.

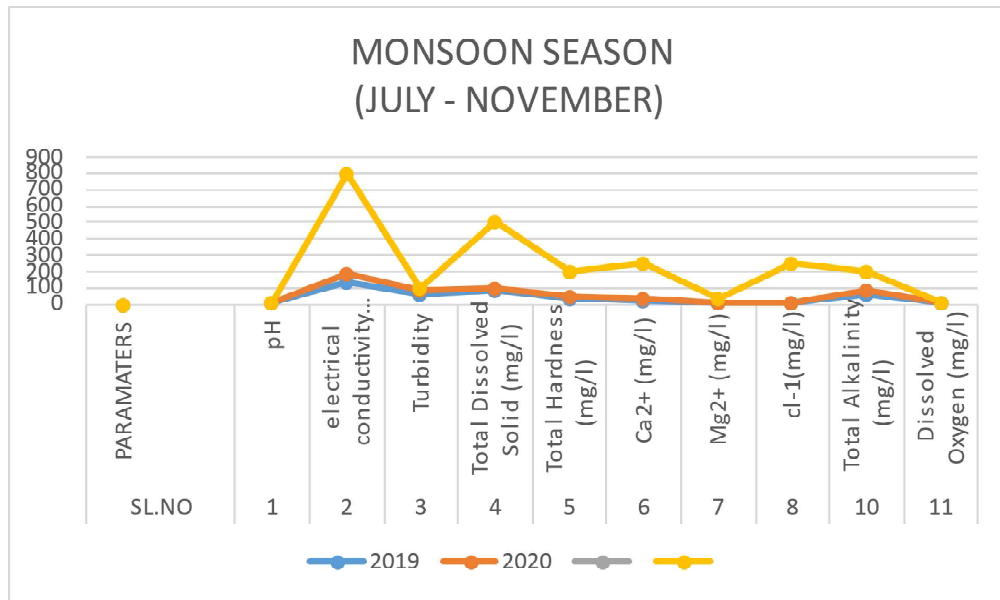


Figure 2: Manipur Pollution Control Board, 2019-2020

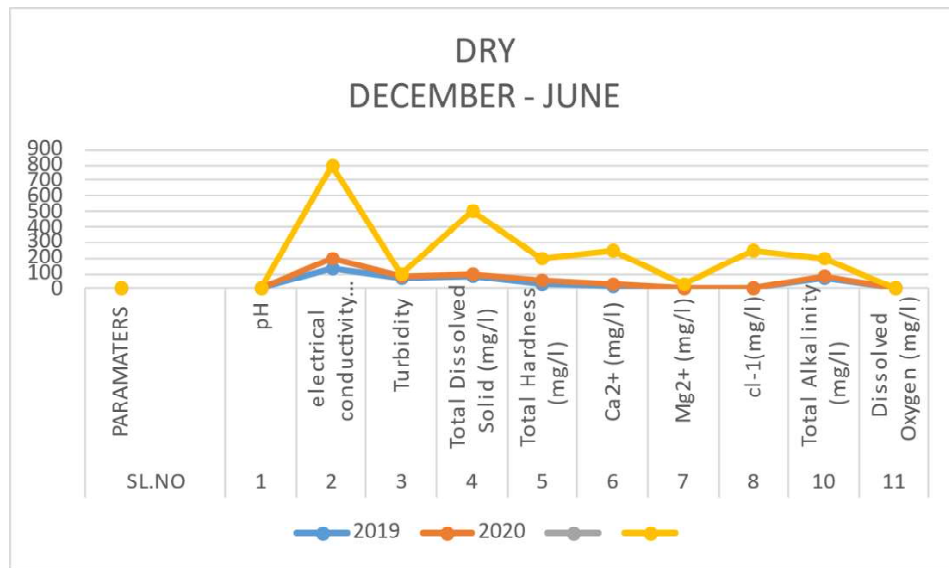


Figure no 3: Manipur Pollution Control Board, 2019-2020

2. **Economic background of the sampled respondents–**

Table 3 and figure 4 show the occupational structure of the sampled respondents. Maximum respondents are engaged in fishing (89.5 percent) and fish marketing (82.5 percent) while fewer percentages are involved in the business (6 percent), government jobs (nearly 5 percent) and private jobs (4 percent). Here, we can see in this table that most of the respondents are involved in fishing i.e., Phubala (100 percent), Karang (98 percent), Thanga (90 percent) and Ithing (70 percent) as well as Fish marketing i.e., Phubala & Karang (100 percent each), Thanga (70 percent) and Ithing (60 percent). Here we conclude that the sampled respondents have a total dependency on the lake for their livelihood.

Table 3: Occupational Structure of the Sampled Respondents.

	Phubala	Thanga	Ithing	Karang	Total
Fishing	100.00	90.00	70.00	98.00	89.5
Fish Marketing	100.00	70.00	60.00	100.00	82.5
Business	5.00	12.00	5.00	2.00	6
Private job	-	9.00	4.00	3.00	4
Govt. Job	2.00	9.00	2.00	6.00	4.75

Source: Based on Field survey, 2019-20.

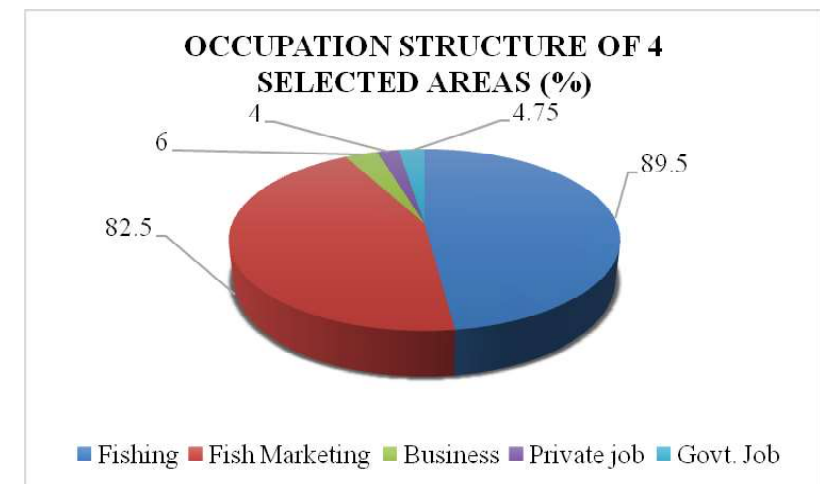


Figure 4 : Survey results based on field research, 2019-2020

Regarding the working experiences, more than 53 percent of the sampled respondents have a long experience of fishing of more than 10 years which is found in Karang (70 percent), Phubala (65 percent), Thanga (60 percent) & Ithing (20 percent) (Table 4).

**Table 4: Economic Condition of the Sampled Respondents in the Study Area.**

SL. NO.	FEATURES	TYPE	SAMPLE RESPONDENTS (%)				AVERAGES (%)
			PHUBALA [HUT DWELLERS]	THANGA	ITHING	KARANG [ISLAND]	
1.	Experience in Fishing (in years)	<5	10.00	3.00	45.00	2.00	15.00
		5-10	25.00	37.00	35.00	28.00	31.25
		>10	65.00	60.00	20.00	70.00	53.75
		<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
2.	Earning Members (per family)	1	87.00	90.00	75.00	92.00	86
		2-4	9.00	7.00	21.00	5.00	10.5
		>4	4.00	3.00	4.00	3.00	3.5
3.	Annual Incomes (in Rupees)	<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
		<50,000	5.00	8.00	7.00	-	5.00
		50,000 – 1 Lakh	25.00	30.00	73.00	-	32.00
		>1 Lakh	70.00	62.00	20.00	100.00	63.00
	<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	

Source: Based on Field survey, 2019-20.

Of the sampled respondents, 86 percent of fisherwomen with one earning member are more involved in fishery management than families with 2 - 4 members (10.5 percent) and above four members (3.5 percent) (Table 4).

Of the total sampled women 63 percent of fisherwomen earn more than one lakh rupees. Among the Ithing, Thanga, and Phubala communities, a minimum of 32 percent earn rupees 50,000 to 1 lakh which is considered normal. As shown in Table 4.

**Table 5 : A list of fish prices is shown below**

SL. NO.	IDENTIFICATION OF THE FISHES		AVAILABLE PRICES (Rs.)	
	SCIENTIFIC	LOCAL	DRY	FRESH
1.	<i>Amblypharyngodon mola</i>	<i>Muka Nga</i>	Big Size = 400 (Jalou) Small Size = 200 (Jalou)	600 (Kg)
2.	<i>Anabas testudineus</i>	<i>Ukabi</i>	20 (Per piece)	500 - 600 (Kg)
3.	<i>Channa orientalis</i>	<i>Meitei ngamu</i>	800 (Kg)	400 (Kg)
4.	<i>Glossogobius giuris</i>	<i>Nailon nga or ngamu</i>	300 (100 Piece)	300 (Kg)
5.	<i>Ctenopharyngodon Idella</i>	<i>Grass carp</i>	1 Kg = 450 – 500 (Cutting Pieces)	250 - 280 (Kg)
6.	<i>Cirrhinus mrigala</i>	<i>Mrigal</i>	400 (Kg)	250 - 280 (Kg)
7.	<i>Cyprinus carpio</i>	<i>Puklaobi (Common carp)</i>	400 (Kg)	Big = 200 – 250 Small = 160 (Kg)
8.	<i>Esomus danricus</i>	<i>Ngasang</i>	Big Size = 400 (Jalou) Small Size = 200 (Jalou)	600 (Kg)
9.	<i>Labeorohita</i>	<i>Rou</i>	400 (Kg)	Small = 170 (Kg) Big = 250 – 300 (Kg)

SL. NO.	IDENTIFICATION OF THE FISHES		AVAILABLE PRICES (Rs.)	
	SCIENTIFIC	LOCAL	DRY	FRESH
10.	<i>Notopterusnotopterus</i>	<i>Kandala</i>	1,200 (Kg)	30-35 (250 g)
11.	<i>Puntius semaphore</i>	<i>Phabou Nga</i>	Big Size of 100 Piece = 200 (Jalou) Medium Size of 100 Piece = 100 (Jalou) Small Size of 100 Piece = 50 (Jalou)	230 (Kg)
12.	<i>Pethia manipurensis</i>	<i>Ngakha Meinga ngbi</i>	150 (Jalou)	-
13.	<i>Trichogaster labiosa</i>	<i>Ngapema /15</i>	1,300 (Kg)	650 (Kg)
14.	<i>Prawn</i>	<i>Khajing</i>	1,500 (Kg)	750 (Kg)
15.	<i>Medium size of any fishes</i>	<i>Ngaphuk</i>	Weight of single piece fish of 1 kg = 250 Weight of single piece fish of 500 g = 150	80 - 130 (Kg)
16.	<i>Chanda nama</i>	<i>Ngamhai</i>	450 (Jalou)	-
17.	<i>Eel</i>	<i>Ngaprum</i>	800 (Kg)	300 (Kg)

Source: Based on Field survey, 2019-2020.

Consider:

- ‘Jalou’ (Made up of Iron) – a lot of fish come in it (the process of dry fish through firewood or coal).
- Cutting piece – slide of big fish

Table 4 indicates that the prices of fresh and dry fish are vastly different. As a result, the dried fish price shot up higher than the fresh fish price, making it more profitable.

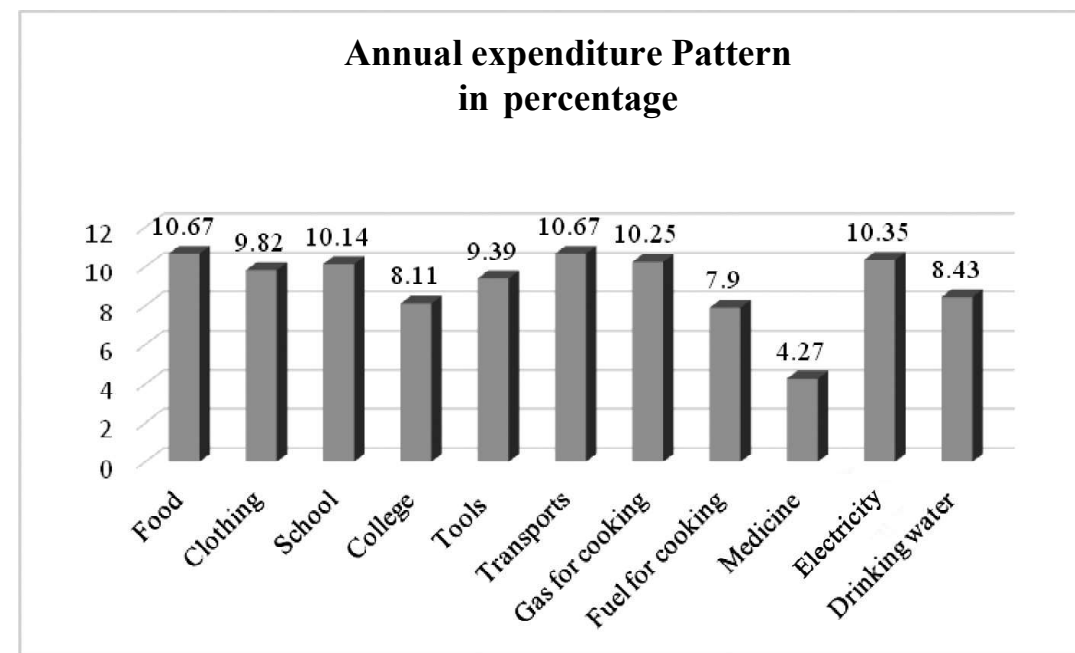


Figure no. 5: “Expenditure Pattern among Fisherwomen on an Annual Basis (according to Engel’s coefficient)”.

Source: Based on Field survey, 2019-2020.

As determined by Engel’s coefficients, the sampled respondents report that 59.34 percent of household expenditures relate to everyday activities (food, clothing, school, college, gas for cooking, electricity, etc.), while 27.96 percent is attributed to tools, transportation, and fuel for cooking (drying process). Based on Figure 5, 10.67 percent of these are used in food, 9.82 percent in clothing, 10.14 percent in schools, 8.11 percent in colleges, 9.39 percent in tools, 10.67 percent in transportation, 10.25 percent in cooking gas, 7.90 percent in fuel for cooking, 4.27 percent in medicine, 10.35 percent in electricity, and 8.43 percent in drinking water (20-liter mineral bottle supplier and 1,500-liter tanker of ‘Sintex’). So, these figures recommend that fisherwomen spend 59.34 percent of their income on infrastructure, and based on Engel’s coefficient, the standard of living is lower (Dahiya & Viswanathan, 2014).

## Conclusion

The consumption expenditures of the 4 selected areas are more affected by lack of income, as they are dependent on fishing, and it has a 95 per cent confidence level. Primary goods such as food are declining in demand as small-scale fisherwomen households focus on secondary needs (education, clothing, health, as well as fishing needs such as fuel and bait) (Rahim, A. et al., 2021).

Overall, most fishing women are literate nearly 80 percent but cannot obtain government jobs. So, their engagement to the fishing industry is essential for their financial survival. The health conditions of these people are not improving and their nearest hospital is not in good condition. Their sanitation facilities are poor. The problem is the construction of the 'Ithai' Barrage Dam, removing floating matelas 'Phumdis', and encroachment are significant obstacles to their livelihoods. Consequently, fish supplies have decreased, which makes it difficult for them. As a result, workshops and programs are necessary to make fishing a sustainable activity. Roads and transportation problem needs to be improved for socio-economic development.

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