Assessment of the Sustainable Livelihoods of Loktak Lake Islanders in Bishnupur District of Manipur

T. Sunanda[1], M. K. Singh[2], Daya Ram[3] and K.P. Chaudhary[4]

1. P.G. Student, 2. Assoc. Prof., 3. Asstt. Prof., (Ext. Edu.) College of Agriculture, CAU, Imphal,
4. Dy. Director of Instruction, Directorate of Instruction, CAU, Imphal (Manipur)
Corresponding author e-mail:d.dram@rediffmail.com

ABSTRACT

Sustainable livelihoods are dynamic in nature and also are influenced by external and internal conditions making the interdependent influencing factors more complex in nature. Inequitable access to livelihoods opportunities leads to social unrest and violence and political instability. Bishnupur district was purposively selected for the present study. Multi- stage sampling procedure was followed for the selection of respondents. A sample size of 150 respondents was selected separately from each village based on stratified random sampling with proportional allocation method. The study concluded that majority of the Islanders had medium level of livelihood on different aspects of sustainability factors. Age, family size, land holdings, annual income, animal enterprise intensity, nutrition, farm size, yield, technology utilization and economic motivation were the important factors which have contributed to the sustainable livelihoods gained by the Loktak Islanders. On regression analysis, the variables age, annual income, nutrition and yield were found to contribute significantly to prediction of sustainable livelihood and therefore are good predictors for the sustainable livelihood of Loktak Islanders.

Key words: *Sustainable livelihoods; Human; Physical; Natural; Social and Financial capitals;*

Agriculture and allied activities support livelihoods of nearly 70 per cent of India's rural population. In the recent years, land based livelihoods of small and marginal farmers are increasingly becoming unsustainable, since their land has not been able to support the family's food requirements and fodder for their cattle. As a result, rural households are forced to look at alternative means for supplementing their livelihoods. The rapid changes at the macro level that India witnessed since the early nineties has contributed to the instability of the livelihood systems of the poorer section of both rural and urban households. While the benefits of the globalization process have largely accrued to the urban sector growth, the rural sector has been left behind. Slowdown in agricultural growth and productivity, changing cropping patterns, increase in distress migration, changing consumption patterns, government policies favoring industrial houses among others have seriously undermined the food and livelihood security of the poor households. An integrated, multidimensional and holistic approach to poverty eradication efforts is crucial to preserve and enhance the livelihoods of the poor. A livelihood comprises the capabilities, assets and activities required for a means of living. It is deemed sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities, assets and activities both now and in the future, while not undermining the natural resource base. The concept of sustainable rural livelihoods is increasingly central to the debate about rural development, poverty reduction and environmental management. Its idea was first introduced by the Brandt land Commission on Environment and Development in 1987 as a way of linking socioeconomic and ecological considerations in a cohesive, policy-relevant structure. A sustainable livelihood approach is essentially a way of organizing data and analysis, or a "lens" through which to view development interventions. It has conceptual roots in various traditions, including applied social science, agro-eco systems/farming systems analysis and especially participatory approaches to rural development. Taking a holistic view of a project (need,

focus and objectives), it provides a coherent framework and structure for analysis, identifies gaps and ensures that links are made between different issues and activities. The aim is to help stakeholders engage in debate about the many factors that affect livelihoods, their relative importance, the ways in which they interact and the most effective means of promoting more sustainable ivelihoods. The strategy of sustainable livelihood is the way in which poor people deploy their assets and capabilities to improve their livelihoods i.e., consumption, production, processing, exchange and income- generating activities. The present study was aimed to find assess to sustainable livelihoods of Loktak Lake Islanders in Bishnupur District of Manipur.

METHODOLOGY

In Manipur, there are nine districts. Bishnupur district was purposively selected for the present study. In Bishnupur district, three sub-divisions are there, i.e., Nambol, Bishnupur and Moirang. The Island Thanga, under Moirang sub-division of Bishnupur district was selected purposively for the present study since the Islanders are considered to be the direct dependents and managers of the lake. Thanga Island consisted of 2- Gram Panchayat, i.e., Thanga Part-I and Thanga Part-II. 2-villages from Thanga Part-I Gram Panchayat having 5-villages and 3-villages from Thanga Part-II Gram Panchayats having 9-villages were selected purposively based on more households among the villages. Multi- stage sampling procedure was followed for the selection of respondents. A sample size of 150 respondents was selected separately from each villages based on stratified random sampling with proportional allocation method.

RESULTS AND DISCUSSION

Access to the sustainable rural livelihoods of Loktak Lake Islanders: The concept of sustainable livelihoods is increasingly important in the developmental debate. In the present study, the outlines of framework for sustainable livelihoods defined in relation to five key capitals which could be achieved through livelihood resources (i.e., human, physical, natural, social and financial capitals) which are combined in the pursuit of different livelihood strategies.

The Table 1 shows that three fourth of the farmers had poor access to health facilities (74.67%) followed by average (15.33%) and good (10.00%) health facilities. Majority of the Loktak Islanders were functionally literate (26.67%) followed by primary school (23.33%), middle school (16.67%), high school (12.00%), college (8.67%), illiterate (7.33%) and graduation (5.33%). Majority (87.33%) of the Loktak Islanders had undergone only one training programme followed by two trainings (6.67%), three trainings (3.33%) and each of 1.33 per cent Islanders had six and eight trainings respectively. It was found from the Table 1 that an average labour availability (64.67%) was observed followed by good (18.00%) and poor (17.33%) labour availability. Overall human capital shows that 52.67 per cent of the farmers had low human capital followed by medium (26.67%) and high (20.67%) human capital respectively.

Table 1. Distribution of respondents according to their Human Capital

Items	Classification	No.	%
Health facilities	Poor	112	74.67
	Average	23	15.33
	Good	15	10.00
Education	Illiterate	11	7.33
	Literate	40	26.67
	Primary school	35	23.33
	Middle school	25	16.67
	High school	18	12.00
	College	13	8.67
	Graduation	8	5.33
Training(s) undergone	One	131	87.33
	Two	10	6.67
	Three	5	3.33
	Six	2	1.33
	Eight	2	1.33
Labour availability	Poor	26	17.33
	Average	97	64.67
	Good	27	18.00
Overall human capital	Low (< 28)	79	52.67
	Medium (28 - 40)	40	26.67
	High (> 40)	31	20.67
	$\overline{X}$ =34		S.D. =6

Majority of the Loktak Lake Islanders (56.67%) had private transport for their local transport followed by public transport (42.00%) and bullock cart (1.33%) Findings in Table 2 also indicates that majority (76.67%) of the respondents were living in katcha house followed by dwelling in pucca house (12.67%) and tiled house

Table 2. Distribution of respondents according to their Physical Capital (N=150)

Items	Classification	No.	%
Affordable transport	Bullock cart	2	1.33
	Public transport	85	56.67
	Jeep/Autos	63	42.00
Type of house	Katcha	115	76.67
	Pucca	19	12.67
	Tiled	16	10.67
Adequate water supply	Poor (1-4)	82	54.67
	Average (5-8)	52	34.67
	Good (9-12)	16	10.67
Source of energy	Firewood	114	76.00
	Kerosene	28	18.67
	LPG	08	5.33
Information sources	Neighbours	38	25.33
	Local leaders	30	20.00
	Panchayat/officials	8	5.33
	Newspapers	29	19.33
	Radio	24	16.00
	Television	21	14.00
Farm animals / material possession	None	42	28.00
	One animal or material	79	52.67
	Two farm animals or materials	24	16.00
	More than ten farm animals or materials	5	3.33
Overall physical capital	Low	87	58.00
	Medium	29	19.33
	High	34	22.67

$\bar{X}$ =41 S.D. =9

(10.67%). Majority (54.67%) of the Loktak Islanders had poor water supply and sanitation followed by average (34.67%) and good (10.67%) drinking water supply and sanitation. The result in Table 2 shows that majority (76.00%) of the Loktak Islanders were using firewood as principal source of energy for household or domestic purpose followed by kerosene (18.67%) and LPG (5.33%). It was found that neighbours (25.33%) were found to be the main source of information source followed by local leaders (20.00%), newspapers (19.33%), radio (16.00%), television (14.00%) and Panchayat or society officials (5.33%).Table 2 reveals that slightly more than half (52.67%) of the Islanders had low material possession (possession of one material or animal) followed by no material possession (28.00%), only (16.00%) two farm animals (bullock cart or radio)

Table 3. Distribution of respondents according to their Natural Capital (N=150)

Items	Classification	No.	%
Type of land	Wet	126	84.00
	Dry	24	16.00
Type of soil	Black	84	56.00
	Red	35	23.33
	Sandy	15	10.00
	Chalky	16	10.67
Irrigation facilities (n=34)	Canals	14	58.33
	Wells	7	12.50
	Tanks	13	29.16
Farming systems	Crop-crop	15	10.00
	Fishery	135	90.00
Overall natural capital	Low	69	46.00
	Medium	53	35.33
	High	28	18.67

$\bar{X}$ =27 S.D. =8

and more material possession (3.33%) by Loktak Islanders. It was found that overall physical capital (58.00%) of the Loktak Lake Islanders was low physical capital followed by high (22.67%) and medium (19.33%) physical capital.

It is evident from the Table 3 that majority of the Loktak Islanders (84.00%) were cultivating under wet land, whereas only 16.00 per cent were endowed with dry lands. It was found that majority (56.00%) of the Islanders cultivating under black soils type followed by red soils (23.33%), chalka (10.00%) and sandy soils (10.00%). The type of soils generally limits the type of crops to be cultivated, which may limit profit and better livelihood options. The data presented in table reveals that majority (58.33%) of the Loktak Islanders were mainly depending on the canals for irrigation followed by tanks (29.16%) and wells (12.50%). Majority (90.00%) were adopting fishery system and crop-crop farming systems being adopted by 10.00 per cent of the farmers. Table 3 indicates that the Loktak Lake Islanders (46.00%) had low natural capital followed by medium (35.33%) and high (18.67%).

It was found that a vast majority (92.00%) of the Islanders had no socio-economic participation followed by 4.67 per cent with official position in self help groups (SHGs) and 2.00 per cent of the farmers involved in official positions in one or more formal organizations and 1.33 per cent involvement in the community work.

Table 4. Distribution of respondents according to their Social Capital (N=150)

Items	Classification	No.	%
Socio-political participation	Without any position in socio-political organization	138	92.00
	Official position in one or more formal organizations	3	2.00
	Official position in SHGs	7	4.67
	Involvement in community work	2	1.33
Extent of trust	Low (10-15)	40	26.66
	Medium (16-21)	69	46.00
	High (22-29)	41	27.00
Overall social capital	Low	29	19.33
	Medium	45	30.00
	High	76	50.67

$\overline{X}$ =58 S.D. =16

Majority of the Islanders (46.00%) had medium trust followed by high (27.33%) and low (26.66%) trust. As regards to overall social capital majority of the Islanders (50.67%) had high social capital followed by medium (30.00%) and low (19.33%).

The data presented in Table 5 revealed that majority (52.67%) of the Loktak Islanders were fallen in indebt category of Rs.500-3,600 followed by Rs.3,601-6,700 (24.67%), Rs.9,801-16,000 (5.33%), Rs.6,701-9,800 (4.00%) and Rs.12,901-16,000 (2.66%). In case of savings, less number of Islanders (6.00%) had savings Rs.240-2,972 and only 1.33 per cent Islanders had savings of more than Rs.1, 192-13,924. It was found that the Islanders had low financial capital (52.67%) followed by medium (27.33%) and high (20.00%) financial capital. The findings were in conformity with *Rao, et al, (2007)*

It may be observed from Table 6 reveals that the variables viz. age, family size, land holdings, annual income, animal enterprise intensity, nutrition, farm size, yield, expenditure pattern, technology utilization and economic motivation were to be positively and significantly correlated to the sustainable livelihoods of Loktak Lake Islanders at 0.05 level of probability, but education, farming experience, urban contact, extension contact and achievement motivation were negatives and not significantly correlated to the sustainable livelihoods

Table 5. Distribution of respondents according to their financial capital (N=150)

Items	Classification	No.	%
***I**ndebtedness* (Rs)	500-3,600	79	52.67
	3,601-6,700	37	24.67
	6,701-9,800	06	4.00
	9,801-12,900	08	5.33
	12,901-16,000	04	2.66
Savings (Rs)	240-2,972	09	6.00
	2,973-5,725	02	1.33
	5,726-8,458	02	1.33
	8,459-11,191	01	0.66
	11,192-13,924	02	1.33
Overall financial capital	Low (< -22)	79	52.67
	Medium (-22 to 20)	41	27.33
	High (> 20)	30	20.00

$\overline{X}$ = -1 S.D. = 21

Table 6. Correlation Co-efficient of Sustainable Livelihoods with independent variables

Variables	'r' values
Age	0.162*
Education	0.023^{NS}
Family size	0.161*
Land holdings	0.161*
Annual income	0.160*
Farming experience	0.070^{NS}
Animal enterprise intensity	0.167*
Nutrition	0.161*
Farm size	0.163*
Yield	0.161*
Expenditure pattern	-0.179*
Technology utilization	0.167*
Urban contact	-0.075^{NS}
Extension contact	-0.023^{NS}
Economic motivation	0.163*
Achievement motivation	0.067^{NS}

*Significant at 0.05 level

of Loktak Lake Islanders at 0.05 level of probability. Similar results were also reported by *De Haan A, (2002)* and *Chen H, et al (2013).*

All the 16 independent variables were taken for regression analysis. The findings of the analysis are presented in Table 7. Of the 16 independent variables fitted in regression analysis, 2 variables namely Annual income (X_5) and Yield (X_{10}) were found to have significant effect on the sustainable livelihood of Loktak Lake Islanders, the regression co-efficient being,

Table 7. Regression co-efficient ('r') for sustainable livelihood of Loktak Lake Islanders

Characteristics	Beta	'r'	SE	t-value
X_1 Age	0.141	0.336	0.189	1.780
X_2 Education	-0.014	-0.244	1.537	0.159
X_3 Family size	0.108	1.694	1.264	1.340
X_4 Land holdings	0.118	1.271	0.906	1.403
X_5 Annual income	0.169	0.169	0.078	2.157*
X_6 Farming experience	0.034	0.115	0.277	0.416
X_7 Animal enterprise	0.119	1.224	0.844	1.451
X_8 Nutrition	0.148	0.406	0.234	1.733
X_9 Farm size	0.096	0.100	0.086	1.163
X_{10} Yield	0.210	0.888	0.353	2.517*
X_{11} Expenditure pattern	-0.020	-0.761	3.439	0.221
X_{12} Tech. utilization	0.110	1.317	0.962	1.369
X_{13} Urban contact	-0.041	-0.408	0.794	0.514
X_{14} Extension contact	-0.070	-1.056	1.229	0.859
X_{15} Economic motivation	0.127	2.459	1.614	1.523
X_{16} Achievement motiv.	0.022	0.044	0.161	0.275

*Significant at 0.05 level R^2=0.230 F=2.487

b=0.169, 0.888 respectively. It was also inferred that with unit change in annual income (X_5) added to 0.169 unit changes in the value of sustainable livelihood, similarly a unit change in yield (X_{10}) has reflected 0.210 unit changes in the sustainable livelihood of Loktak Lake Islanders. It was observed that yield (X_{10}) emerged as the most significant characteristics (b=0.888) in predicting the sustainable livelihood of Islanders followed by annual income (X_5) with significant characteristics (b=0.169). The R^2 value (0.230) suggested that all the 16 independent variables jointly contributed 23.00 per cent towards the variation in sustainable livelihood of Loktak Lake Islanders. The significant F value (2.487) at 0.01 level of probability indicated the significant effectiveness of the sixteen characteristics in determining the sustainable livelihood of Loktak Lake Islanders. This finding was found very similar to the finding of *Reddy, et al (2001)* and *Biradar, (2008).*

CONCLUSION

The study concluded that majority of the Islanders had medium level of livelihood on different aspects of sustainability factors. Age, family size, land holdings, annual income, animal enterprise intensity, nutrition, farm size, yield, technology utilization and economic motivation were the important factors which have contributed to the sustainable livelihoods gained by the Loktak Islanders. On regression analysis, the variables age, annual income, nutrition and yield were contributed significantly to prediction of sustainable livelihood and therefore are good predictors for the sustainable livelihood of Loktak Islanders. Further, the Islanders were found to have benefitted fully or partially by the utilization of the naturally available flora and fauna of the Loktak Lake

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