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Livelihood Sustainability Status and Challenges of South-western Coastal Area of Bangladesh

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Abstract

The exposure of disaster varies based on its surroundings and resilience of the people. Apparently, the south-western coastal area of Bangladesh is confronting at great risk for its geophysical settings. Notwithstanding, Bangladesh has a long history of coping with disasters and recovery form damages. This study attempted to measure the livelihood sustainability status that had taken by the rural people of *Sutarkhali* after the severe cyclonic storm *Aila* occurred in 2009. This was a cross-sectional descriptive study conducted in *Sutarkhali* union of Dacope Upazila under Khulna District, Bangladesh. Data were collected from different occupational groups living in a coastal community through survey methods using a structured questionnaire. A total of 260 household heads were participated in this study. The study findings reveal that the respondents have changed their livelihood activities after *Aila* but the livelihood is not sustainable and satisfactory. The overall sustainability score (39.85) identified in this study based on the DFID indicators means, sustainability of the diversified livelihood is unsustainable and less satisfactory. This study also found various constraints towards livelihood sustainability. Based on the weighted average index this study found the major constraints of livelihood sustainability are natural disasters, lack of education and lack of government initiatives etc.

Keywords: Livelihood, Sustainability, Challenges, Coastal Areas, Bangladesh

1. Introduction

Bangladesh is a least developed country in the world with a population of above 158.9 million living in an area of 147,570 square kilometres (Bangladesh Population Census, 2011). It is a country representing as one of the top-ranked highest population densities, with 1077 living per square kilometre as of the 2011 census estimate. Per capita GDP in Bangladesh is US$ 1610 (Bangladesh Economic Review-BER, 2017). About 13 percent of its population lives below the poverty line and 41 percent are engaged in the agriculture sector (HIES-2016). The agriculture sector in all over Bangladesh is vulnerable to the multiplicity of climatic disasters so as the livelihood of the dependent communities (Sarwar, 2005). Both agriculture and allied natural resource-based livelihood are more vulnerable in environmentally stressed areas such as flood plain, haor region/wetland system, and coastal areas of Bangladesh (Miller, 2004). The common sources of vulnerability are recurrent floods mostly riverine floods and sometimes flash floods and inundation of water. Alongside the floods, other climatic extreme events such as cyclonic surges, salinity intrusion, raising sea level have been complicating the already vulnerable socio-ecological systems in the coastal areas. People living in these areas of Bangladesh are at greater risk of being exposed by these climatic events that make them more vulnerable than any other environmentally stressed area. It is partly because of the unique natural settings of the coast. Especially the southwest coast is only about one-meter from the mean sea level (Haque, 2006). With the raising of sea level, the entire south-west coast is likely to experience severe high surges leading to coastal flooding for prolong period. To cope with the adverse impacts people have been adopting multiple livelihood strategies for their survival and living (Huq et al., 2015). However, all the strategies may not always ascertain to provide adequate income and employment for the households, which they need. Moreover, due to the presence of prevalent various structural barriers such as landlessness, geographical isolation/remoteness, lack of access to technology and finance, and higher incidence of poverty, the livelihood of the rural household has been always severely impacted (Saroar & Routray, 2010). Therefore, the climate changed induced various events have appeared as problem multiplier. In presence of structural barriers, climatic events have been causing more vulnerability of natural resource-dependent coastal communities for numerous reasons (Saroar & Routray, 2010). For instance, due to extreme landlessness and poverty people are forced to live in more hazard-prone areas that increase the possibility of danger/harm. Similarly, due to poverty (poor), people get less protection against disasters' impacts which is jeopardized by low coping capacity during and after the hazardous event that turns them into a highly vulnerable situation. Again, as they often have a very limited set of occupational skills, job diversification as coping and adaptation strategy usually do not works well especially where there is policy negligence to support and promote occupational diversification through planned skill enhancement program (Saroar et al., 2015). Some cases even initiatives of various agencies and stakeholders' mismatch and often create a hurdle to diversify household livelihood activities as well as the potentiality of livelihood sustainability (UN International Strategy for Disaster Reduction, 2002 cited in (Gwimbi, 2009).

The linkage between disaster exposures, degradation of resource-base, vulnerability and coping/adaptation through occupational diversification has been well documented in disaster literature (Abdellati et al., 2003; Adger, 2000; Brooks, 2000; Berkes, 1989, Haque, 2006; Huq et al., 2015; Paul, 2013; Saroar & Routray, 2010; Saroar et al., 2015; Sarwar, 2005). Many of them have compared the pre-disaster situation of livelihood with the post-disaster livelihood situation. However, the common limitations of these studies are- a) they are heavily drawing on qualitative nature of inquiry which is very hard to generalize; b) most studies have done in macro-context, leaving the local community unaddressed; c) none of these studies has done in the *Sutarkhali* Union of Dacope Upazila in south-west Khulna. Only notable exceptions are Paul (2013) and Saroar et al. (2015) who did in Dacope Upazila or sites close to Dacope Upazila but only have focused on the impact of cyclonic surges and salinity on livelihood from a broader sense. This study fills these research gaps in three ways. First, it has assessed the sustainability of livelihood of *Sutarkhali* residents using a quantitative index which could be generalized and replicated elsewhere; second, it has established the connection between the livelihood diversification and the sustainability of livelihood of natural resource-dependent community in the local context; third, it has identified a host of factors that affect livelihood diversification. Finally, the study findings come up with a set of policy suggestion to enhance the sustainability of livelihood by enhancing livelihood diversification in the post-Aila situation. The motivation behind the study is as follows. A multiplicity of disasters including cyclonic surges, salinity intrusion seriously affects the

diversification of livelihood strategies among rural households in *Sutarkhali* union. In recent years, the proportions of income from fishing and forest resources collection have fallen, while the contribution of self-employed income-generating activities increased. Although, the diversified engagement in multifaced activities has increased their income level, however, so many people are still struggling to earn their required income. *Sutarkhali* union is situated beside the mighty *Sundarbans* mangrove forest in the South-western coastal belt. Comparatively, this coasal belt is more vulnerable to natural disasters than most of the other areas of Bangladesh. Numbers of natural disasters had already occurred in these areas causing a great loss of lives and properties. The study revealed that the people of *Sutarkhali* union have developed some mechanisms of living, but still, these ways are yet to achive the satisfactory sustainability level. Thus, this study was undertaken to assess these barriers of achieving post-*Aila* livelihood sustainability in the coastal community of *Sutarkhali* union.

2. Methods

2.1 Design

This was a cross-sectional descriptive study conducted in *Sutarkhali* union of Dacope Upazila under Khulna District, Bangladesh. Data were collected from different occupational groups living in a coastal community through survey methods using a structured questionnaire.

2.2 Population and Sampling

A multi-stage cluster sampling technique was applied to select study participants from thecoastal community of Bangladesh. In the first stage, we purposively selected Khulna district of Bangladesh as it was affected by *Aila* in 2009. Secondly, from the 9 Upazilas of Khulna District, Dacope Upazila was selected purposively as it was one of the worst affected coastal Upazilas. Thirdly, out of 10 unions of Dacope Upazila, *Sutarkhali* union was chosen considering the fact that it was the most devastedareaaffectd by cyclone *Aila*. *Sutarkhali* union covers the same geographical area of DacopeUpazila adjacent to the *Sundarbans*. Fourthly, five wards out of ten (from this union) were selected randomly. According to the Population Census (BBS, 2011), *Sutarkhali* union contains 48.93 sq.km area with a total population of 30,060 in 7,463 households.The sampling frame includes the household heads.Out of 7463 household heads, 260 household heads were determined as the sample size using an assumed 95% confidence level and 5% error margin. Then 52 participants from each sampled five wards were chosen following the systematic random sampling technique.The data were collected during 1-25 April in 2018.

2.3 Statistics and Data Analysis

This study followed the (DFID, 1999) framework by incorporating five livelihood capitals along with appropriate indicators for each capital. The lists of indicators as well as the calculations made in this research to produce micro-indices for each indicator based on the livelihood pattern of every respondent of this study are adopted from livelihood studies (Kamaruddin & Samsudin, 2014; Khadija, 2014; Prajapati, 2014; and Paul, 2015). The exactly same formulas were applied for calculating human, natural, physical and social capital index (Box 1) whereas, a slightly different formula (Box 1) was adopted to calculate financial capital index. Finally, the average mean scores of the livelihood capitals were summed up to acquire the sustainability value of the study area and compared with DFID standards (Khodijah, 2014; Prajapati, 2014) in Table 1.

Table 1. Livelihood capitals and relative indicators

Livelihood Capital	Indicators	
	1.	Disaster related training
	2.	Solving own problems
Human Capital (HC)	3.	Exposing idea in group meeting
	4.	Training for farming
	5.	Training for livestock rearing
	1.	Access to forest
	2.	Access to fishing into river
Natural Capital (NC)	3.	Access to Natural Grazing land

	4.	Sufficiency of water for irrigation
	5.	Available safe drinking water
Physical Capital (PC)	1.	Possession of Boat
	2.	Possession of fishing net
	3.	Possession of agricultural tools
	4.	Possession of phone
	5.	Possession of engine-boat for rent
Social Capital (SC)	1.	Access to Community Health Center
	2.	Access to Union Parishad
	3.	Access to NGOs
	4.	Membership in community groups
	5.	Membership in political parties
Financial Capital (FC)	1.	Saving money in bank
	2.	Monetary value of all livestock
	3.	Price of all crops
	4.	Price of all domestic birds
	5.	Access to Bank/NGOs for loan

Steps of sustainable livelihood assets calculation developed by (Cahyat et al., 2007) was followed found in Khodijah (2014; p.4). The data were normalized through the following steps.

$$(\bar{x}A)\text{Attributes} = \Sigma \frac{\text{Score Obtain}}{\text{Respondents}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{Step 1}$$

$$(\bar{x}A)\text{Dimensions} = \Sigma \frac{(\bar{x}A)}{\text{attributes}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{Step 2}$$

$$\text{Sustainability Index} = \sum \frac{(\bar{x}A) - \text{score minimum}}{\text{score maximun} - \text{score minimum}} \ldots\ldots\ldots\text{Step 3}$$

Table 2. Value of measuring sustainable livelihood

Index Value	Index Category	Sustainability Status
00.00 - 25.00	Bad	Unsustainable
25.01-50.00	Less than satisfactory	Less sustainable
50.01-75.00	Satisfactory	Sustainable enough
75.01-100.00	Good	Highly sustainable

Source: Khodijah (2014) and Prajapati (2014)

The third and final part of this study deals with the measurements of the major constraints achieving sustainable livelihoods of the study area. Garrett (Garrett, 1952) ranking analytical technique was used to find out the most possible barriers to livelihood sustainability (Dhanavandan, 2016; Sedaghat, 2011). A total of eleven constraints or barriers to sustainable livelihood were taken into consideration in consultation with the people of the study area during field observations. These hypothesized barriers are lack of education, poor asset, lack of credit facilities, lack of awareness and training, fear of taking the risk, natural disasters, lack of opportunities, bad road transportation/communications, lack of electricity, lack of government initiatives and NGOs initiatives.

Box 1. Formulas for calculating livelihood assets

$HCI = (\sum HCI_1/N + \sum HCI_2/N \ldots \ldots \ldots \ldots \sum HCI_5/N)/5$

$NCI = (\sum NCI_1/N + \sum NCI_2/N \ldots \ldots \ldots \ldots \sum NCI_5/N)/5$

$PCI = (\sum PCI_1/N + \sum PCI_2/N \ldots \ldots \ldots \ldots \sum PCI_5/N)/5$

$SCI = (\sum SCI_1/N + \sum SCI_2/N \ldots \ldots \ldots \ldots \sum SCI_5/N)/5$

$FCI = Av/Av_h$

$FCI = (\sum FCI_1/N + \sum FCI_2/N \ldots \ldots \ldots \ldots \sum FCI_5/N)/2$

Here,

HCI = Human Capital Index

      HCI_1, HCI_2 …… = Human Capital Indicators

NCI = Natural Capital Index,

      NCI_1, NCI_2 …..... = Natural Capital Indicators,

PCI = Physical Capital Index

      PCI_1, PCI_2 …… = Physical Capital Indicators

SCI= Social capital index

      SCI_1, SCI_2 …….. = Social Capital indicators

FCI = Financial Capital Index,

Av = Average or available monetary value of liquid assets of each household,

Av_h = Highest value

      FCI_1, FCI_2 …….. = Financial Capital indicators

N=Total Sampled Respondents

Note: Formula adopted from (Paul, 2013)

As per this method, respondents were asked to assign the rank for all barriers and the outcomes of such ranking were converted into score value with the help of the following formula (Radhakrishnan, et al., 2017; Dhanavandan, 2016). Then the constraints were arranged in descending order to find out respondent's perspective about major constraints towards sustainable livelihood (Christy, 2014; Dhanavandan, 2016; Garrett & Woodworth, 1969). The factors having highest mean value is considered the most important barriers towards livelihood sustainability (Dhanavandan, 2016).

$$\text{Percent Position} = \frac{100(R_{ij} - 0.5)}{N_j}$$

Where,

R_{ij}= Rank given for the ith variable by j^{th} respondents

N_j= number of variables ranked by j^{th} respondents

3. Result

3.1 General Characteristics of the Respondents

Answers given by 260 respondents were analyzed for the purpose of the study. The mean (±SD) age of the respondents was 46.15 (±5.10) years. The highest percentage of respondents was from age group (46-50) years (57/21.09%). Almost all respondents were currently married (257/98.8%). Majority (228/87.7%) families were headed by a male member, while only a very small number (12.3%/32) families were headed by the female member. Almost two-thirds of the family have had minimum one working person who helped to generate income while (69/26.5%) family had two income-generating persons. Most of the families (70.4%/183) had one or two school-going children. The obtained data represent that respondents had completed the lower secondary level (class six-eight) (39.6%/103) and primary level of education (26.9%/70), followed by (23.2%/61) who had

no formal education and the rest had completed higher secondary and graduate level. A considerable number of respondents (136/52%) drink pond water through various filtration and many of drink directly whereas (124/48%) family reserve rainwater for further drinking.

Table 3. General characteristics of study participants

Variables	Category	Frequency	Percentage
Sex	Male	228	87.7%
	Female	32	12.3%
Age	Lowest 30	12	4.6%
	31-35	17	6.5%
	36-40	51	19.6%
	41-45	51	19.6%
	46-50	57	21.9%
	51-55	39	15.0%
	Highest 56	33	12.7%
Level of Education	No formal education	61	23.5%
	Primary level (Class One-Five)	70	26.9%
	Lower Secondary (Class Six-Eight)	103	39.6%
	Upper Secondary (SSC-HSC)	22	8.5%
	Above Honors	4	1.5%
Types of House	*Pacca*	14	5.4%
	Katcha	186	71.5%
	Semi-*Pacca*	60	23.1%
Sources of Drinking Water	Pond Water	196	76.3%
	Rain Water	184	71.6%
Latrine Use	Traditional Pit Latrine	242	93%
	Hanging	18	7%
Major Livelihood Activities	Micro-Business	12	4.6
	Catching Fish and Crab	86	33.1
	Cutting wood into forest	21	8.1
	Raring Livestock	17	6.5
	Cultivation	40	15.4
	Poultry-Chicken Farming	15	5.8
	Job NGOs/Govt.	6	2.3
	Shrimp Cultivation	4	1.5
	Day Labor	35	13.5
	Driving Boat/Van	8	3.1
	Fish Trade	16	6.2
Monthly income of the Respondents	Lowest 2500	20	7.7
	2501-3500	89	34.2
	3501-4500	57	21.9
	4501-5000	16	6.2
	5001-6000	24	9.2
	6001-7000	15	5.8
	Highest 7001	39	15.0

Source: Author's own calculation, 2018

Survey results show that sustainable livelihood status of the respondents varies according to five dimensions which further encompass various indicators. The calculated average mean score indicates the extent and availability of livelihood indicators and assets possession. Among the five dimensions' financial capital acquired the lowest score (0.81), followed by human capital assets (1.52). It is evident from the data presented in the

above table (4), natural capital index (1.76), physical capital index (1.56) and social capital index (1.55) have attained poor mean scores. The remaining sub-indicators like possession of fishing net, agricultural tools, cell-phone, engine-boat for rent, access to the community health center, Union Parishad, NGOs, and membership in community groups, or political parties were appeared with too much less average mean score, which is indicating that these sub indicators had not changed their status for sustainable livelihood, among the respondents. After summing-up all the scores the study obtained (35.91) a cumulative score which indicates the respondents were having medium extent of sustainable livelihood status. Thus, it leads to draw a conclusion that the indicators of SL in the study area are poor; and people possess fewer assets. The feasible reasons for such type of results might be due to geophysical causes and disasters.

Table 4.Respondents assets possession

SL. no	Indicators	Av. Mean Score	Rank
Human Capital Indicators			
1.	Disaster related training	1.63	I
2.	Solving own problems	1.41	IV
3.	Exposing idea in group meeting	1.40	V
4.	Training for farming	1.54	III
5.	Training for livestock rearing	1.62	II
	Human Capital Index	1.82	
Natural Capital Indicators			
1.	Access to forest	1.61	IV
2.	Access to fishing into river	1.57	V
3.	Access to Natural Gazing land	1.80	III
4.	Sufficiency of water for irrigation	1.93	I
5.	Available safe drinking water	1.87	II
	Natural Capital Index	1.76	
Physical Capital Indicators			
1.	Possession of Boat	1.63	III
2.	Possession of fishing net	1.56	IV
3.	Possession of agricultural tools	1.75	I
4.	Possession of phone	1.08	V
5.	Possession of engine-boat for rent	1.73	II
	Physical Capital Index	1.56	
Social Capital Indicators			
1.	Access to go to CHW	1.52	II
2.	Access to Union Parishad	1.24	V
3.	Access to NGOs	1.48	I
4.	Membership in community groups	1.71	III
5.	Membership in political parties	1.78	IV
	Social Capital Index	1.55	
Financial Capital Indicators			
1.	Deposit money in bank	0.87	II
2.	Monetary value of all livestock	0.02	V
3.	Price of all crops	0.14	III
4.	Price of all domestic birds	0.13	IV
5.	Access to Bank/NGOs for loan	2.89	I
	Financial Capital Index	0.81	

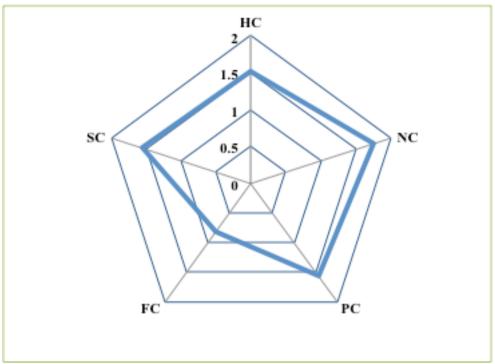**Source:** Author's own calculation, 2018

Figure 1. Sustainable assets pentagon

The radar diagram (Figure 1) above demonstrates the calculated scores of five livelihood capital, which indices to present in livelihood asset pentagon. The shape of the pentagon narrates the variations of livelihood capitals and accessibility. In terms of access to assets and possession of assets, the center of the pentagon represents the zero value. While deviations from the middle-point of the pentagon to outer sides illustrate higher values of livelihood capitals occupy by the people of the study area.

Table 5.Sustainability status of different livelihood in the study area

Serial No.	Income Sources (A)	Score Obtains	Av. Mean Score	Rank	Individual S I
1	Micro-Business	508	1.95	IV	46.20
2	Catching Fish and Crab	435	1.67	XI	39.55
3	Cutting wood into the forest	499	1.92	VIII	45.40
4	Raring Livestock	503	1.94	VI	45.73
5	Agri. Cultivation	474.4	1.82	X	43.13
6	Poultry-Chicken Farming	502.6	1.93	VII	45.70
7	Job NGOs/Govt.	511.6	1.97	II	46.51
8	Shrimp Cultivation	513.6	1.98	I	46.70
9	Day Labor	484.4	1.86	IX	44.04
10	Driving Boat/Van	510.2	1.96	III	46.40
11	Fish Trade	502.2	1.93	V	45.65
	Total				314.73/11
*Remark: Less Sustainable and Less than satisfactory					

Source: Author's Own Compilation, 2018

Overall Sustainability status of the livelihood in the area: $\frac{29.61-39.55}{46.70-39.55}$
$=41.51$

Findings of the Table 5 show that most of the performing livelihoods are unsustainable because the obtained value lies between 39.55 and 46.70. However, shrimp cultivation obtained the highest individual sustainability

score. Obtained score is 39.85 lies between 25.01 and 50.00 which indicate the sustainability status is less sustainable.

3.2. Challenges to Livelihood Sustainability

For this study participants were asked to rank the eleven predetermined factors those affects the sustainability of the livelihood status of the study area. Several barriers experienced by the people of *Sutarkhali* union were identified during this step. The study revealed that, the major challenges or barriers experienced by respondents are the natural disasters (81.92) i.e. (river bank erosion, inundation, high salinity intrusion, and cyclone), while the other frequently barrier faced by the respondents is lack of education (77.19). Here, lack of government initiatives (75.15) obtained the third possible barriers of livelihood sustainability. Consequently, the other constraints have obtained the position based on the rankings of the respondents.

Table 6. Rankings of constrains to livelihood sustaianbility

SL.no	Constraints	Total Calculated Value	Weighted Average	Rank
C1.	Lack of Education	20070	77.19	II
C2.	Poor Asset	19337	74.37	IV
C3.	Lack of Credit Facilities	19237	73.99	V
C4.	Lack of Awareness and Training	16060	61.77	VII
C5.	Fear of Taking the Risk	15595	59.98	X
C6.	Natural Disasters	21300	81.92	I
C7.	Lack of Opportunities	15783	60.70	XI
C8.	Bad Road Transportation/Communications	15656	60.22	VIII
C9.	Lack of Electricity	16269	62.57	VI
C10.	Lack of Government Initiatives	19538	75.15	III
C11.	Lack of NGOs Initiative	10485	40.33	IX

4. Discussion

Sustainable livelihood approach is one of the effective pathways of eradicating poverty and enhancing food security (Krantz, 2001). Sustainable livelihood characterizes activities, capacities and assets that can help coping with and recover from stresses and shocks without undermining the natural resources ensuring equal livelihood opportunities for future generations (Chamber & Conway, 1992). In this study area we found-catching fish and crab in river, cutting wood in the nearby forest, agriculture, shrimp cultivation, rearing livestock, poultry farming, micro-business, jobs in GO/NGO offices, day labor and driving boat are the most performing livelihoods. But majority of these livelihoods are less sustainable due to high dependency on natural resources while there exists a nexus between livelihood sustainability and environmental variability.

The coastal area of Bangladesh has an exceptional natural setting but more likely of being affected by frequent natural disasters resulted in loosing lives, assets and livelihoods. So, the coastal community cannot maintain their livelihood in a sustainable way for factors associated with natural disasters which need to be addressed timely.
Despite having good human capitals in this community in terms of disaster related training, lack of financial paucity makes the sustainability status of the livelihoods are less sustainable. Besides, regarding the asset endowment coastal people owned less financial capital to recover or diversify their livelihood through reinvestment that hinders their livelihood resiliency. Previous study of Huq et al. 2015, in the south-west coastal area of Bangladesh pointed out that fewer livelihood resources withstand the recovery process and lead to persistent and prolonged impact in many cases. Majority of the coastal households have single livelihood activity that also increasing the risk of livelihood insecurity during natural hazards such as river bank erosion, salinity intrusion, flooding, and storm surges etc.

Moreover, their livelihood activities are seasonal based which keep them about half of the year unemployed that also create unsustainable livelihood status which is worst for the day laborers (PDO-ICZM, 2002). The financial capital context in this area is in the worst position due to various reasons. One of the dominant factors is salinity intrusion that hampers agricultural production and even raring domestic animals become very complicated. Due to high salinity finding grazing land and arranging cattle food for domestic animals become tough. Further, lack of employment and limited accessibility in credit facilities makes their financial capital status poor comparing to other parts of the country. In terms of livelihood sustainability shrimp cultivation is somewhat in good position but catching fish and crab is unsustainable due to recent imposing of different terms and conditions on the changing legislation, of the concerned department of Bangladesh government.

This finding agrees with Townsley (2004) who argued that the livelihoods which are dependent on natural resources impacted more with the change of legislature and regulation of utilizing such resources. Though some sorts of initiatives are undertaken and many are undergoing by Govt. of Bangladesh in order to improve the livelihood status through integrated coastal zone management but the existing barriers and constraints questioned the aptness of these initiatives.

A study of Khatun (2012) in West-Bengal India, documented at least ten possible constraints which may obstruct the sustainability of the livelihood where natural disaster is documented as the prime cause of livelihood unsustainability. Another study of Fakhruddin & Rahman (2015) documented that disasters are the dominant threat to coastal lives and livelihoods. Our finding is in line with these findings and identified frequent natural disaster in this coastal community as the principal cause of unsustainable livelihood.

Among the other constraints poor transportation or communication infrastructure is also notable.Due to remote and lack of affordable and available transport the producer of agricultural products does not get fair price that also make this livelihood vulnerable and insecure. This situation can be improved if community level enterprise is operated in coastal area along with the opportunity to get market information available at grassroots level. Further, proper training and initiatives should be taken into consideration to make the livelihood in sustainable manner. Wider development initiatives must be put in place to cope with the frequent natural disasters, minimize the loss of lives, wealth and livelihood. No doubt many initiatives have been taken with the cooperation of national and international organizations, unfortunately, that hardly fulfill the local demand. Most importantly, the indigenous knowledge should be promoted here to make the initiatives sustainable and fruitful.

The key facts this study put emphasis is that we need to characterize the impact of the adaption measurement before we propose them for the coastal people. The potential steps which this study indicated herein that can be a driving force towards improving the capability of rural people. This might ameliorate their potentiality, adaptive capacities, and resiliency to extinguish the impact of any kinds of disasters that will promote the sustainability of livelihood. Further research work in a broad scale needs to be taken for identifying the community demands for sustainable livelihood activities to achieve SDG 14 in the context of Bangladesh.

5. Conclusion

Livelihood activities in the coastal areas of Bangladesh are not environmentally and economically sustainable due to multiplicity of factors ranging from personal, social, natural and policy affairs. However,natural hazards surpass all other factors that adversely affects their lives and livelihoods. So, disaster management programs targeting sustainable livelihood options should be implemented in those coastal areas. Financial sustainability of coastal region needs to be ensured through creating institutions that will provide collateral free credit access to vulnerable people. Communication infrastructure requires improvements through construction or reconstruction workwhich is necessary to avail easy access to market or other places that provide public services. Moreover, policy support is required to provided more employment opportunities addressing the vulnerability context of the coastal belt. Hence, people can switch between multiple livelihood options or can adapt various livelihoods at a time which can help them to diversify their income sources and in turn would aid them to be more capable of tackling all sorts of stresses and shocks resulted from natural hazards.

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