

## Research Article

### Livelihood Coping and Recovery from Disaster: The Case of Coastal Bangladesh

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**Abstract:** Bangladesh has a long history of coping with and recovery from disasters. Although climate extremes are increasingly taking huge tolls especially in the southwestern part of the country, households are resisting the negative outcomes of these events eventually. This research explores the livelihood coping and recovery strategies of the people of a coastal village in the wake of a cyclone, Aila. The vulnerability approach to disaster is adopted as theoretical framework of the research, in which disaster is considered as hazards affecting vulnerable people. Using semi-structured interviews and observations, the coping strategies of a cyclone affected village community are examined. The study finds that people's livelihood coping and recovery largely depend on the indigenous knowledge. Results show that households followed diverse strategies such as livelihood diversification, informal risk sharing within the community and migration in response to the cyclone Aila. The study also addresses the role of local government, civil society organizations and communities and finds that these actors hardly addressed the root causes of vulnerability.

**Keywords:** Adaptive capacity, community, cyclone Aila, resilience, Sundarbans, vulnerability

## INTRODUCTION

Historically the country faced different calamities in the form of cyclones, floods and droughts and the frequency and intensity of these events have increased over the past decades (Government of Bangladesh, 2010). The inhabitants of coastal areas are more exposed to specific hazards such as coastal flooding, cyclones and tsunami, among which cyclone and induced surges are the most recurrent natural hazard (Wisner *et al.*, 2004). The people of this area lose their lives and livelihoods disproportionately due to the tropical cyclones. However, they strive to return their normal life following any extreme climatic event. The study attempts to explore how the people of coastal areas of Bangladesh coped with and recovered their livelihood in response to a tropical cyclone, Aila. Here, coping refers to a process through which households attempt to smooth the consequences of the disaster and recovery includes the restoration and improvements where appropriate, of facilities, livelihood and living conditions of disaster-affected communities, including efforts to reduce risk factors (UNISDR, 2009; Pantoja, 2002). The research will provide household and community level analysis of the strategies the people follow in sustaining their livelihoods. Households are taken as the unit of analysis because the decision of choosing livelihood strategies is taken primarily at household level. The pattern of coping strategies that households adopt depends on specific characteristics of households and the nature of the shock that the households experience (Rashid *et al.*, 2006). This study

explores the human dimension of disasters because without people there is no disaster (Hewitt, 1997; Cannon, 2000; Wisner *et al.*, 2004). Cyclones and other extreme weather-events that strike in the coastal regions of Bangladesh often become disastrous for the large number of poor people who are mainly dependent on climate related livelihoods such as agriculture and fisheries.

**Causes and nature of the problem:** Disaster is a recurrent phenomenon in Bangladesh and the climate change will enhance such occurrence. Climate change effects take the form of calamities such as cyclones, floods and droughts. The Intergovernmental Panel on Climate Change (IPCC) has underscored that developing countries are disproportionately vulnerable to climate change (IPCC, 2007). The 2011 Climate Change Vulnerability Index put Bangladesh at top in the list of 170 vulnerable countries to the impacts of climate change (Maplecroft, 2011). This is owing to its geographical location coupled with socio-economic conditions.

The country is located on the Bay of Bengal in the delta of the Ganges, Brahmaputra and Meghna rivers. The impacts of climate change are visible in the form of erratic rainfalls, increased number of intensified floods, cyclones, droughts and prevalence of rough weather in the Bay (Government of Bangladesh, 2010). The southern region of the country along the Bay of Bengal is prone to severe tropical storms known as cyclone, which develop over warm tropical oceans and are characterized by sustained winds of 64 knots (32.92

m/sec) or more (MoEF, 2008). The cyclones tend to surge higher than in neighboring countries because the Bay narrows towards the north, where Bangladesh is located (ibid). Tropical cyclones and storm have devastating impacts on the life and livelihood of the coastal habitants. From 1990 to 2007, Bangladesh faced several deadly cyclones, causing death of 150,000 people and displacing millions (Climate Change Cell, 2007). Although there is hitherto no rigorous scientific evidence that tropical storms in the Bay of Bengal are increasing in frequency or intensity, the coastal people perceive an increased number of cyclones over the past few years. For instance, Super Cyclone Sidr hit on 15 November 2007, Cyclone Nargis on 2 May 2008 hit Myanmar but had less impact on Bangladesh, Cyclone Rashmi occurred on 27 October 2008 and Cyclone Aila hit on 26 May 2009. On average, a severe cyclone hit Bangladesh every three years (MoEF, 2008). The global distribution of cyclones shows that on average only 1% of cyclone strikes Bangladesh per year, but the fatalities they cause are 53% of the whole world total (Ali, 1996). Although the death toll from cyclone event has been decreased in recent years by constructing cyclone shelters and improving early warning systems, cyclones continue to put heavy burdens on the socio-economic life of Bangladesh. According to Global Climate Risk Index 2010 extreme weather conditions of Bangladesh cause damage amounting to over US\$ 2 billion a year and a Gross Domestic Product (GDP) loss of 1.81 percent between 1990 and 2008 (Harmeling, 2009).

Bangladesh has a population of about 142 million (Bangladesh Bureau of Statistics, 2011a) with a total territory of 147,570 sq/km, which makes it the most densely populated in the world after some city states. The per capita GDP equals US\$ 621 per annum (Bangladesh Bureau of Statistics, 2009). Over the last two decades, Bangladesh has experienced positive economic and social changes. The economic performance of the country has been relatively strong since 1990, with an annual 5% average growth rate. The country also has achieved substantial improvements in some social indicators like, a decrease in the infant and maternal mortality rate as well as in the illiteracy rate and an increase in the life expectancy. Bangladesh remains, however, as one of the most poverty-ridden countries in the world. Approximately 31.5% of the total populations continue to live below the poverty line (Bangladesh Bureau of Statistics, 2011b). The Gini co-efficient of consumption expenditure is estimated at 0.321 (ibid). Even though agricultural share in GDP is only 19%, nearly half of the economically active population of the country is engaged in this sector, with rice as the single-most important product (Bangladesh Bureau of Statistics, 2009).

The coastal people of Bangladesh suffer from extreme poverty, inequality and marginalization in

income compared to the other areas. A comparative analysis on poverty status between Sundarbans<sup>1</sup> Impact Zone<sup>2</sup> (SIZ) and non-SIZ areas shows that SIZ upazilas (sub-districts) have a much higher extreme poverty rates (0.42) compared to non-SIZ upazilas (0.26) of the country (Islam, 2010). In addition, land distribution is more skewed in the region and the poor are more socially and politically marginalized than those living in other parts of the country (Datta *et al.*, 2003). This makes the coastal communities particularly vulnerable to any extreme climatic events.

**Cyclone Aila and coastal area of Bangladesh:** Within two years of the devastating cyclone Sidr, when the coastal people of Bangladesh were struggling for the recovery of damages, another outrageous cyclone, Aila, struck the southern part of the country. The cyclone hit the southwestern coast of the country with incessant rainfall accompanied by strong winds and tidal surges. About 320 people were left dead (Kumar *et al.*, 2010). The waves damaged the river and flood control embankments and dykes causing widespread inland flooding and submerged many villages in 15 coastal districts. About 2.3 million people in the region were affected, many of whom were left stranded in the flooded villages as they had no alternatives of saving themselves (ibid). The tidal surge washed away a huge number of houses, livestock, crops and other livelihood resources of the affected region. The affected communities were struggling to cope with this devastated situation and sustain their livelihoods. Since the livelihoods of affected areas are mainly dependent on agriculture and natural resources, the inhabitants of these areas are extremely vulnerable to weather-induced shocks and stresses. With the help of informal and formal institutions the affected communities were trying to recover from the previous cyclone and adapt their livelihood in different ways. This study attempts to explore the livelihood strategies of the affected people in the wake of cyclone Aila.

## THEORETICAL FRAMEWORK

Vulnerability approach to disaster is adopted as theoretical framework that considers a broad range of social, economic and political factors shape disasters. The concept of vulnerability is therefore crucial in understanding why a hazard becomes a disaster and for whom. However, the concept of vulnerability has mostly been treated in a simplistic way focusing on the hazards and this disconnects the disasters from the social, economic and political context. Using the concept of vulnerability as a characteristic of exposure to hazards has allowed researchers to evade the problems of what causes vulnerability (Cannon, 2000). In recent years, the human dimension of vulnerability to natural disaster has received significant attention in

social science. The analysis of vulnerability perceives disaster as the interaction between hazards and people's vulnerability, while traditional disaster response considers those separately. Cannon (2000) argues that an extreme climatic event is not a disaster until a vulnerable group of people is exposed. Vulnerability is understood in this research as "the characteristics of a person or group and their situation that negatively influence their capacity to anticipate, cope with, resist and recover from the impacts of a hazard" (Wisner *et al.*, 2004). It is clear from this definition that a person's vulnerability is determined by the interaction of natural events and social, economic and political factors. Similarly, Adger (1999) argues that vulnerability should be seen as the exposure of a group or individual to stress due to social and environmental change. This definition contrasts with the dominant views of vulnerability to disaster, which concentrates on environmental determinism. Extreme natural events are not equally distributed in a given locality; instead, societal factors determine which groups are more vulnerable to these events (*ibid*: 12). The socio-economic factors therefore play a very important role in determining which groups are more vulnerable to hazards than others. This does not mean that this approach denies the significance of natural hazards as trigger events, but puts the main emphasis on the various ways in which social systems operate to generate disasters by making people vulnerable (*ibid*:10). The causes of vulnerability are associated with the environmental hazards and fundamentally with the formal institutional arrangements which organize warning, planning and other services and also with the institutions of the wider political economy (Adger, 1999). Vulnerability therefore depends upon how society treats its members or groups in terms of access to resources.

Resilience is considered as the opposite of vulnerability and indicates the capacity to cope with future shocks. Adaptive capacity is an important aspect of resilience indicating to what extent people are capable to withstand the natural extremes. Chapin (2009) contend that adaptive capacity is "the capacity of actors, both individuals and groups, to respond to, create and shape variability and change in the state of a system". It depends on the wider governance regimes and different kinds of assets/capitals (White *et al.*, 2004). Adaptive capability is also a central concept in the 'Sustainable Livelihood Framework' developed by Chambers and Conway (1991). Livelihood is defined in this study as "the command an individual, family and other social group has over an income and/or bundles of resources that can be used or exchanged to satisfied its needs" (Wisner *et al.*, 2004). In this definition resources indicate information, social networks and legal rights as well as land and other physical assets. Here, resources refer to different types of capital, namely: physical

capital such as infrastructure and equipment; financial capital such as cash and savings; natural capital such as soil and water; human capital such as knowledge and skills; social capital such as networks and affiliations (DFID, 2000). The access to these livelihood resources, according to vulnerability approach, is always based on social and economic relations such as social relations of production, gender, ethnicity, status and age (Wisner *et al.*, 2004). People's use of and access to resources determines the ability of individuals or households to cope with and adapt to stress (Adger, 2000). The concept of access therefore is central to the explanation of vulnerability and adaptation (Wisner *et al.*, 2004). Access refers to the ability of an individual, group or community to use resources to secure livelihood (*ibid*). The people those who have better access to means of production, information, tools and social capital are less vulnerable and are able to cope more quickly.

## METHODOLOGIES

The study design is qualitative and used both primary and secondary data in order to obtain the research objectives. Semi-structured interviews and direct observations were employed for collecting primary data. As choosing a methodology broadly depends on the research problem, qualitative interviewing and observation have a specific relevance to the study because it underlines to understand and explain complex phenomena more comprehensively. Furthermore, secondary literature is reviewed which mostly includes situation assessment reports, Government and NGOs' documentations, scholarly articles and books.

Semi-structured interview method is selected as it enables covering the research area and provides opportunity to the interviewees to bring up their own ideas and thoughts (Willis, 2006). The purposive sampling is employed in selecting the interviewees from the Dumuria village community, which allowed me to identify the informants who were more likely to provide data that were in-depth and relevant to the research questions (Jupp, 2006). The study village lies in Gabura union (subdivision of sub-district) under Shyamnagar upazila of Satkhira district, located in the mouth of Bay of Bengal. A total of 21 residents consisting of 12 male and 9 female were interviewed between February 28 and March 24, 2011. Responses of the interviews were included in the analysis under anonymity in order to protect the identities of the informants.

## RESULTS AND DISCUSSION

**Cyclone Aila and livelihood of the people of Dumuria village:** As a cyclone prone area, the people of Dumuria village have faced numerous cyclones over

their lifetime. However, cyclone Aila was different for the people of Dumuria because this cyclone breached the embankment in three different places. As a result, the whole village was washed away unexpectedly.

Although Aila did not kill anyone, they lost all their livelihood resources. As the 6<sup>th</sup> interviewee described:

“I somehow managed to save myself and family members with the help of the neighbours, but lost everything including household utensils and this happened to almost all households of the village”

Dumuria village has strong group cohesiveness and so when a cyclone strikes, they not only think about personal safety but also try to protect family and extend supports to community members. Although the village is located in the cyclone zone, the nearest cyclone shelter is about two-kilometer away from the village centre. The people of the village took shelter on the roof-top of the primary school, the mosque and on concrete-built houses of their neighbors and even on the embankments of the river. The whole village community moved in makeshifts on the embankments within three to four days and had to stay there for about two years as the Government failed to repair the damaged embankments especially because of high tides in the adjacent river. This inability of repairing the embankments following the cyclone contributed to delay the period of recovery. During the field work, as observed, people were just returning to their homesteads from the embankments and striving to reconstruct their houses from scratch.

Before the cyclone, as the local Union Parishad, lowest administrative unit of Bangladesh, official estimates reflected, the majority (around 70%) of the households in Dumuria village depended on fishing (especially shrimp fry collection), shrimp cultivation and collection of Sundarbans forest resources i.e. honey collection, *golpata* (mangrove palm) collection, shell/crab collection. The rest of the households (about 30%) relied on petty-businesses and services. People usually fished from the nearby rivers adjacent to Sundarbans, but they also cultivated fish, especially shrimp, in *Ghers* (shrimp ponds) instead of cultivating crops. While Aila hit, shrimp cultivators were preparing for harvesting and therefore the loss of the cultivators was enormous. The fish cultivation remained paralyzed for about two years as the embankment remained unrepaired. The other livelihood options were also obstructed because of the destruction of means of livelihood such as boats, nets etc. and due to long-term inundation of homesteads and farmlands. Besides, regular collection of resources from Sundarbans was impeded due to high tide in its adjacent rivers. Thus the livelihood options of the Dumuria village community became extremely limited following the cyclone. The

households of Dumuria village however resorted to different livelihood strategies to cope with the dire situation. The following sections discuss the livelihood coping and recovery strategies of the households in response to the cyclone.

**Humanitarian relief and livelihood coping:** In the immediate aftermath of the cyclone a widespread relief interventions was initiated by the Government, NGOs and national and international humanitarian agencies. Relief materials (foods, household goods, tools, clothes, etc.) had been distributed for about two years in order to reduce the sufferings of the Aila affected people. All the interviewed households had received relief for at least a year to meet their basic needs, but the amount was very limited. Furthermore, the relief operations were not well-coordinated at community level which led to overlaps and gaps.

Most of the respondents received relief from the NGOs and the local Union Parishad, which was helpful in maintaining their livelihoods. However, all this played a minor role in restoring their livelihoods. The poor households were not therefore satisfied with such provision as they feel uncertainty of the sustainability of their livelihoods; instead, they want long-term employment opportunities. As 3<sup>rd</sup> informant noted:

“...both government and NGOs provided different types of relief but they did not create any long-term working opportunity for the community people, by whom we might sustain our livelihoods”

Although huge volumes of relief had been distributed in the village, the poor section was excluded from such interventions. In line with the prevailing law, the Union Parishad is responsible for implementing development plans and programmes at local level. However, informal village power structure mainly controlled by political parties influences the activities of the Union Parishad. In case of relief distribution, the politicians decide whether anyone will receive the relief or not. The politicians have a tendency to divert relief indiscriminately to their supporters, neglecting the most distressed people. In case of Dumuria, the recipients of reliefs were selected by the local Union Parishad and the selection was politically motivated as local leaders of the ruling party played an influential role in the process. The relief was distributed disproportionately as the 15<sup>th</sup> respondent pointed out:

“The selection of affected people was not fair because of the bias of the local governing body, so that some of the extremely poor people did not receive any relief. Those who have a close relationship with the local political leaders received relief time and again, even though they are not poor”

It is argued that relief and development processes lie in direct opposition. Relief is generally understood

as short-term provision of physical commodities to victims in an acute crisis; in contrast, development is perceived as a process that enables chronically marginalized people, individuals, households and communities to achieve self-reliance in meeting human needs (Buckland, 1998). Development is by definition is meant to enhance the capabilities of poor and vulnerable groups through the expansion of physical, human, social and political capital. The efforts of development generally therefore attempts to promote self-reliance. Relief, on the other hand, creates dependency on the providers through the physical provision of goods and services. Using the case of Nicobar Island in the aftermath of the 2004 tsunami, Singh (2009) shows that:

“Aid programmes of the government and international aid organizations in the Nicobar Islands have changed the traditional social and power relations, leading to an erosion of traditional institutions, values and rules of resources use. Aid money has accelerated the transition from a formerly hunting-and-gathering subsistence based economy towards an economy linked more to the global market and dependency on aid money and goods”

Traditional disaster thinking considers disaster as disruption of linear development process and relief intervention can patch things up so that the process of development can start up again (Twigg, 2004). Emergency relief measures are critical following the disasters, but there is a debate to what extent relief intervention is developmental. Macrae (2002) cited in Christoplos *et al.* (2004) argues that loading relief with development objectives is unrealistic. Relief has also been criticized because of the failure of addressing underlying causes of vulnerability. Christoplos *et al.* (2004) have observed that humanitarian relief has little impact in helping people to reestablish their lives and livelihoods in situations of chronic conflicts. Moreover, relief and rehabilitation interventions are widely criticized as they reinstate prevailing systems and thus risk the rebuilding context which continues to be vulnerable as many people utilize the opportunities of relief to lead a care-free and long life being dependent on it. This argument is also supported by the case of Dumuria village. Many people did not look for work, rather depended on relief. Even some families who had migrated to work in city centers returned quickly as to get enlisted as beneficiaries of NGO rehabilitation projects. This dependency relationship reinforces long-term structural constraints to development and weakens self-reliance of households (Buckland, 1998). As the 1<sup>st</sup> respondent put it:

“...long-term relief distribution and aid make the community people greedy and lazy and ferocious and even shameless”.

**Livelihood rehabilitation:** Rehabilitation is often regarded as the process that links relief and development of which the implicit aim is to return to former, supposedly stable and desirable states of affairs (Longley, 2006). After the phase of emergency assistance, initiatives were taken to rehabilitate the livelihoods of the Aila affected communities. The impact of disaster was greater on the poor of Dumuria village as they had fewer resources to recover their livelihood. In response, the Government, NGOs and international development agencies were working to rehabilitate and recover the livelihoods of vulnerable communities affected by the cyclone through livelihood support and restoration of the damages. Bangladesh has a long history of operation of public works through cash and food-for-work programmes in response to the disaster. *Ex-post* public works was useful to restore infrastructure and to provide employment to those households that had lost access to labor opportunities. These responses, however, mainly focus on physical reconstruction of the damaged household and community infrastructures; while relatively little attention was paid to the rehabilitation of livelihood. For livelihood recovery, NGOs provided supports such as equipments, tools and work opportunities. People who were employed in the infrastructure restoration programmes were paid only Taka 150 (US\$ 1.85) per day, not enough to rebuild livelihoods that have long-term sustainability. As a consequence, the beneficiaries of such livelihood support projects were unable to pursue their own recovery.

Rehabilitation of livelihoods requires looking beyond a return to the status quo and instead addressing the root causes of the vulnerability of the coastal people and communities. As Pomeroy *et al.* (2006) argues that the “rehabilitation of coastal livelihoods after a natural disaster should be seen as an opportunity to strengthen and revitalize coastal communities. The focus of rehabilitation efforts should be on building the economic basis of livelihoods rather than on physical reconstruction and on giving the coastal people the skills and resources for self-recovery”. As such, rehabilitation programmes need to address the factors that have led to vulnerability such as social and economic inequality, limited asset ownership and lack of participation in decision-making. However, the rehabilitation measures taken in response to Aila hardly addressed these issues.

The repair study of Aila affected embankments and rural roads created massive employment opportunities for the people of Dumuria village and many collectors of Sundarbans Reserve Forest (SRF) resources had been chosen to be employed there rather than earning from SRF extraction amidst the risk of pirates and tigers. The SRF collectors would be unwilling to travel Sundarbans if they had alternative opportunities for employment and income. Many temporary migrants also returned to the village with the expectation of

working in rehabilitation programmes. However, interviews suggest that rehabilitation programmes did not enable them to become self-reliant. Instead the local people still felt vulnerable with these rehabilitation programmes since they worried about what they would do after phasing out the programmes. The 7<sup>th</sup> interviewee said:

“Temporary work opportunity in rural rehabilitation programmes has been helping me a lot in maintaining my livelihood. But I am worried about what will happen when the study opportunity disappears”

Besides, the access to employment opportunities was unfair. In many cases, the most vulnerable people failed to enjoy work opportunities as the selection process was captured by the local power brokers. Rehabilitation programmes also provided little consideration on ‘social feasibility’ such as compatibility with local needs and aspiration, existing livelihood strategies, economic and social structure, gender differences and the culture of affected communities and households. Therefore, instead of relying on rehabilitation initiatives, the households depended on individual resources and social networks for rehabilitating their livelihoods.

**Informal support mechanisms and coping and recovery process:** Informal credit contributed to the coping process of cyclone-exposed households of Dumuria village. Households who had fewer alternative options depended on various types of informal social mechanisms to recover (Mozumder *et al.*, 2008). According to the interview findings, households took loans from *mahajans* (money-lenders), who are mainly better-off households in the community, neighbors and kin. They use the loans especially for purchasing food items, but in part they borrowed also for repairing houses and for business. In the context of Dumuria village, borrowing from *mahajans* played a crucial role in the recovery process. As the 11<sup>th</sup> respondent said:

“I ran a cloth business that got washed away because of Aila, but now I have resumed my business by purchasing cloth on credit from the *mahajans*. Though they charge comparatively high price for the products, they give me flexible time to payback. I have a good relationship with *mahajans* and so I buy the cloth on credit and return the dues after selling these”

Well-off neighbors also extended help to the poor households of Dumuria during the disaster. The 6<sup>th</sup> respondent recounted:

“I had to borrow for my living from the neighbors. Neighbors were very helpful as they came forward in my need”

Many households mentioned loans from relatives were important coping mechanism of Dumuria village. Societies of Bangladesh are based on a strong kinship system (Quisumbing and Maluccio, 2003; Mozumder *et al.*, 2008) and the kinship networks tend to offer support to the relatives in crisis. Another very common coping strategy was purchasing food on credit. People purchased basic necessities such as rice, pulses, oil and other products from local shops on credit, though shoppers charged higher prices for these essentials. According to the interviews, informal credit had important implications in rehabilitating the livelihood of cyclone Aila victims.

**Livelihood diversification as coping and recovery strategy:** Diversification of livelihood strategies is commonly employed to cope with temporary crisis. Livelihood diversification is a process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standard of living (Ellis, 1998). People attempt to diversify their income portfolios into both on- and off-farm activities in response to a risk, when primary activities fail to satisfy their subsistence needs (Hussein and Nelson, 1999). Datta *et al.* (2003) expand this notion in the context of Bangladesh:

“The main disaster-coping strategy of almost all groups in the coastal zone is diversification of income sources. Instead of households depending on one or two activities, they now spread their working-age adults over different activities and if possible, localities, thereby ensuring that problems in one area of their livelihoods has a lesser impact on them”

Livelihood diversification strategies of a household are determined by a wide range of factors such as ability of households to access credit (Dercon and Krishnan, 1996 cited in Hussein and Nelson, 1999). As such, researchers suggest that formal and informal institutions, social networks and NGOs also shape some aspects of livelihood diversification.

Diversification of income-earning activities appeared as a key factor because intensification of primary activities is not possible in the SIZ. Livelihood of the region has unique characteristics as it tremendously depends on SRF about 18 percent of households in the area depend on the forest, although agriculture is still the mainstay of the economy in the region (Islam, 2010). Almost all the male respondents predominantly depended on the forest for maintaining livelihoods, although they really wanted to reduce their dependency on the Sundarbans. The 3<sup>rd</sup> respondent opined that:

“I do not want to go to Sundarbans because it involves several hazards including risks to life from tigers and other ferocious animals and from pirates in Sundarbans, but so far I do not have any other option for feeding my family”

Following the cyclone, agriculture activities were suspended as the village was submerged and thus people became heavily dependent on Sundarbans. As the 5<sup>th</sup> interviewee put it:

“I depend on the Sundarbans for my livelihood because there are no employment opportunities like there used to be. I go to Sundarbans for *golpatha* collection, honey collection etc. But this profession is not profitable as I have to borrow money from a local *mahajan* on condition of selling my products to him at lower prices”

The livelihood pattern of this village drastically changed especially after the 1990s following the advent of shrimp culture. Shrimp culture was popular due to the demand in international markets. Moreover, crop cultivation was no longer financially viable because polders had become water-logged due to poor drainage (Karim, 1986). As a result, massive amounts of crop land were turned to shrimp farms within a few years along the entire area of the southwest region of the country. Owing to the demand for land for shrimp cultivation, local small farmers leased out their land to shrimp business, though it had negative impacts on them and their land (Datta *et al.*, 2003). The interviews also confirm that the small farm holders had no option but to lease out their land because neither cultivation of rice was possible due to salinity intrusion, nor cultivation of shrimps because of the small size of farms and lack of capital. Therefore, marginalized people became even more marginalized. The 4<sup>th</sup> interviewee recalled:

“Today, nothing is grown in our land. In the past, people from other districts would come to assist us, especially during rice harvest. Now we have to study for others during harvest of cereals. We want to return to farming, which is urgent both for our survival and the protection of the Sundarbans. In the absence of agriculture, everyone has become dependent upon the Sundarbans”

At present, agriculture is no longer the mainstay of the economy of the coastal zone and many wage laborers have diversified their livelihoods by moving into non-farming activities as well as self-employment opportunities. The subsequent disasters have accelerated this process. After the cyclone Aila, many people of Dumuria further diversified their livelihoods, for instance, working in small-scale enterprises in the

nearby bazaars. In addition, several households also migrated to the urban centers in order to diversify their livelihoods.

**Migration as a coping strategy:** Migration is generally considered an important livelihood strategy. As Hussein and Nelson (1999) argue, migration forms a central component of rural people’s risk mitigation strategies. They further suggest that migration is a significant part of livelihood diversification. In analyzing the case of Ethiopia, Mali and Bangladesh, McDowell and de Haan (1997) suggest seeing migration as livelihood strategies of households, rather than as isolated migration events. In other words, migration has direct linkages to income generating activities. In the context of Bangladesh, natural disasters play a significant role in forcing people to migrate to large urban centers and cope with shocks (Rayhan and Grote, 2007).

Frankenberger (1992) argues that households take three sequential series of activities as stress becomes more prolonged: first, reduce their food consumption at minimal level; second, employ divestment or the gradual disposal of assets and finally, embark upon migration. As such, households decide to migrate when they fail to cope with the crisis. Many households of Dumuria moved into urban centers in search of employment. The 9<sup>th</sup> interviewee said:

“I did not get any work as boat technician since the whole village was under water. In response, I migrated with my family to Jessore for working in a rice mill. I had no other option. At the time, I lived in small room in a slum and earned only Tk 5,000 to maintain my four member family. Although I was satisfied with such a living, I had to go back to the village otherwise I would have lost the ownership of my homestead”

The cause of migration of the 9<sup>th</sup> respondent was similar to a majority of households of Dumuria village. The majority of households depend on fishing; shrimp fry collection and SRF collection. Poor households in the area mainly depend on the wage work in the farms and in the Sundarbans. Due to Aila, the demand for wage labor decreased significantly and people became jobless for long periods. At that people partially depended on food and cash credit from their kin and community networks. The rehabilitation process was prolonged and so it became impossible to depend on informal loans. Many household migrated either temporarily or permanently due to the disruption of their livelihoods. Some decided to migrate to repay the loans and to save some amount. The 6<sup>th</sup> respondents recounted:

“After six months of the cyclone, I migrated temporarily to another district for working in *Chatal* (rice mill). I migrated because I could not feed my

family...I had to buy food on credit from a *Mahajan*'s shop and borrow from neighbors. At that moment... there was no work available in the village"

In many cases the head of households migrated to large urban centers and sent remittances back home. In some cases entire households also migrated to make their living and returned later. The interviewed households who migrated for recovering their livelihoods also chose their 'place of destination' using their social networks. In other words, social capital contributed to manage household's livelihood through migration.

### CONCLUSION

The study is intended to know the livelihood coping and recovery strategies of a coastal community of Bangladesh in response to the cyclone Aila. The households of Dumuria village had low resource bases to cope with the cyclone hazard. The findings suggest that the poor section predominantly relied on 'common property resources' such as water and forests for their livelihood. The dominant coping strategies included fishing and collecting fish fry and SRF resources and thus the means of coping were very much dependent on access to 'natural capital'. In addition, informal support mechanisms such as kin and community networks, credit from *mahajans* helped them to cope with the devastating situation. Thus 'social capital' was crucial and contributed to access to other resources including loans and day labor opportunities. Livelihood diversification was also important strategies for coping and recovery livelihoods and in this case the social and human capitals shape the means of diversification. The people of the village diversified their livelihood by engaging in different on- and off-farm activities in response to risks.

The Government and NGOs took initiatives with the support of the international development partners in order to increase the coping and recovery capacity of the community but it only partially satisfied their consumption, so that the long-term impacts of such responses were not enough to recover livelihoods. This research identifies a set of socio-political factors and unequal access to the necessary capitals impeded the process of coping and recovery of the households. The interviews suggest that there were no initiatives to address these root causes of the households' vulnerability.

Most of the respondents cast doubt on the initiatives of disaster recovery as they did not lead to long-term recovery. Moreover, long-term relief and rehabilitation programmes hindered the local recovery process. Local coping and recovery strategies, such as informal credits, livelihood diversification and migration proved to be the main livelihood alternatives

for recovery. The most important component of coping and recovery of the poor households was access to natural resources such as forest, land and water. The Government and NGOs' rehabilitation projects hardly considered the access to resources in order to reduce disaster risks. Despite of the setbacks, households' efforts were successful in recovering the livelihoods of the village community.

Coping and recovery strategies based on indigenous strategies have been far more significant than external assistance. Following many generations of experience, people of the study village have learned to cope with disasters in their own ways. Although they have limited options, people are increasingly searching for alternative livelihood strategies to adapt to the reality of severe disruption of their livelihoods. Due to lack of financial and physical capital, households increasingly rely on natural, human, social capitals, but these capitals are not enough for making them resilient. Risk reduction strategies therefore need to capitalize on the inherent social and cultural capacities of the communities.

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- End notes:**
- 1 The largest mangrove forest in the world (140,000 ha), lies two-thirds of it in Bangladesh and rest one-third in West Bengal, India.
  - 2 A 20 km surrounding of Sundarbans is called Sundarbans Impact Zone (SIZ).