A study on adaptive capacities and resilience of the displaced communities due to Climate Change impacts in Southern Bangladesh

M.Phil thesis

By

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M.Phil Thesis

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Declaration

I hereby declare that I have written this M.phil thesis myself, it is an original work and that it has not been submitted to any other university for a degree. No part of it, in any form has been published in any book or journal.

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Certification

I do hereby certify that Priyanka Roy, my M.phil supervise has been written this M.phil thesis herself. It is an original work and that it has not been submitted to any other university for a degree. I recommend this thesis for final submission to the concerned authority.

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Abstract

Adaptation has become an important issue in international and domestic discussions on climate change. This research paper examines Community based adaptation which shows the resilience capacities of the communities affected by climate change. Natural disasters induced by climate change displace the community and force the people to move to another place.

The main objective of the research is to explore various modes of community adaptation among the displaced people due to climatic extremities and resource scarcities leading to conflict situation. The specific objectives of the research are:

1. To know the adaptive strategies of the displaced people.
2. To understand the changing livelihood patterns of the displaced people.
3. To explore the adaptive capacities and resilience of the displaced and vulnerable communities to climate change risks and impacts.

This research was accomplished through various research methods and tools such as the key informant interview (KII), FGD, unstructured interview, observation, case study, social mapping, seasonal calendar, household census, PRA tools. Secondary sources from literature reviews were also utilized.

The first two chapters show how climate change impacts on the community and how this community adapted to their situation. The field is in Syamnagar of Satkhira where burigoalini is a village. After AILA communities were displaced from various places, they came to this village and took shelter into the Barrack built by Naval wings of Government.

Chapter Three is a theoretical chapter where the consequence of Forced Displacement on the society was discussed. Using the basis of Pressure and Release Model, the response of the society displaced by climate change was explained indicating that when people are displaced from one place to another, this form of displacement will push them to vulnerability.

Chapter Four mainly discusses about the community people's livelihood earning. They have their own livelihood earning strategy. But after their displacement, they lost their livelihood. They changed their profession, their skill and their expertise. They shared the resource with other villagers. Because of this, they often face resource conflict. But after about five years, they realized earnings from their livelihood, fuel collection, and water arrangement and brought resilience to their livelihood.

Chapter Five mainly shows community people's adaptation pictures when they came to the new area of resettlement and their present situation. Basically the Chapter shows the comparison of their situation from 2011 to 2016. It presents the changes they brought to particular fields like playground, place and manner of worship, physical development like pavement of bricks, forest and mangrove development, direct contact with the forest officer and UNO, and political involvement among others. In all these developments, the NGOs played a major role.

Acknowledgments

Bangladesh is widely recognized as one of the most vulnerable countries in the world for the effect of climate change. Overall impacts of climate change on Bangladesh would be significant. It is estimated that climate change could affect more than 70 million people of Bangladesh due to its geographic location, low elevation, high population density, and poor infrastructure,high levels of poverty and high dependency on natural resources. It is found that the population living in the coastal area is more vulnerable than the population in other areas. Coastal resources upon which the most people depend are likely to be affected severally due to climate variability and change. This research work called "Climate change and community adaptation: a study on adaptive capacities and resilience of the displaced communities due to climate change impacts in Southern Bangladesh" is to understand the socio-economic condition of Aila affected people of Satkhira– a coastal district in terms of their devastating condition, misery andth spirit of adaptation. The researcher tried to depict the practical situation of the people under study through anthropological analysis.

However, to organize this research work, I have received constant encouragement, noble guidance and suggestions from my supervisor, my respected teachers, faithful respondents, and last, not the least, my husband.

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I gratefully acknowledge the financial assistance that I received from my husband for carrying out this research.

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GLOSSARY OF LOCAL TERMS

AMON	A type of rice
ATOL	A type of basket for catch fish
BORO	A type of rice
BOSOTVITA	Residence land
BADABAAN SAMVER	Sundarbans forest product
BIGHA	Equal one third of an acre
CHUNA	A river which is just beside the Barrack
GHER	Farmland of shrimp and crab cultivation
GOLPATTA	A tree leaf
JHONMOJUR	Daily laborer
KAKRA	Crab
MAHAJAN	Land lord
MUNDAS	A group of indigenous people
MAOALI	Honey collector
PARISHAD	Organization/Political institution

Few Key Words

Disaster: A disaster is an occurrence such as hurricane, tornado, storm, flood, high water, wind-driven water, tidal wave, earthquake, drought, blizzard or other situation that causes human suffering or creates human needs that the victims cannot alleviate without assistance.

Hazards: As a naturally occurring human induced process or event with potential to create loss or a general source of danger.

Displacement: A process through which people leave their original place and started living in a newer place due to some unavoidable reason.

Vulnerability: the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard.

LIST OF ACRONYMS:

ASB	Asiatic Society of Bangladesh
BBS	Bangladesh Bureau of Statistics
BSRDI	Bangladesh Soil Resource Development Institute
CCC	Climate Change Cell
EEZ	Exclusive Economic Zone
FGD	Focus Group Discussion
FFWP	Food for Works Program
GO	Government Organization
IPCC	Inter-governmental Panel on Climate Change
KII	Key Informants Interview
NAPA	National Adaptation Program of Action
NGO	Non Government Organization
PSF	Pond Sand Filtering
WB	World Bank
WARPO	Water Resources Planning Organization
UNDP	United Nation Development Program
UNCLOS	United Nation's Convention on the Law of the Sea

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CHAPTER ONE
INTRODUCTION

1.1Introduction

Climate change impacting into extreme natural calamities. These extreme natural calamities caused forced displacement. This displacement sequentially causes resource conflict. It is well recognized both in the scientific and negotiating community that Bangladesh would be one the most adversely affected country to climate change (NAPA, 2005). The population living in the coastal area is more vulnerable than the population of other area (NAPA 2005). Global warming induced changes in precipitation and temperature is already happening in different geographical regions, influencing patterns and intensities of the natural hazards. Changes in the climate are likely to take place more rapidly over the next few decades, as predicted by different climate model simulation (IPCC, 2007). In Bangladesh, the vulnerability to climate change increases manifolds since the country has low adaptive capacity to climate change because of the widespread poverty, with 34% of the people living below the national poverty line (World Bank, 2003 *cf* CCC 2009) and about 77% of the high density population living in the rural areas (BBS, 2003 *cf* CCC 2009). Massive population displacements are regularly forecast as one of the most dramatic possible consequences of climate change. In recent years, the concept of climate-induced migration has gained considerable currency, and 'climate refugees' are now a common feature in discourses on the human impact of climate change. It is now increasingly acknowledged that disasters result in both temporary and permanent displacement, as well as in both proactive and reactive displacement (Gemenne, 2010). Climate change is expected to have considerable impacts on the environment – first and foremost in developing countries. This, in turn, can trigger conflict and displacement of people (Kolmannskog, 2008). Natural disaster may become a major cause for longer-distance, longer-term migration in Bangladesh (Cred 2008 *cf* Kolmannskog 2008). Most of the affected are particularly vulnerable (typically poor) people in developing countries. Hence, they have little mobility and the majority returns as soon as possible to reconstruct their homes in the disaster zones (Piguet 2008 *cf* kolmannskog 2008). Climate change impacts are likely to impoverish and may reduce their mobility even further. The longer-term effects of sudden disasters, such as the loss of livelihood opportunities, can also trigger migration similar to that triggered by drought and slow-onset disasters.

Adaptation has become an important issue in international and domestic discussions on climate change. Numerous terms and concepts have come into common usage as a result of IPCC reports, discussions in the context of the UNFCCC and dialogs by the climate community at large.

This paper examines the key adaptation terms and concepts used by the climate change community and other institutions. Conflicts and contradictions are noted with the aim of sensitizing different bodies to the differences, but particularly the Parties to the Convention and experts participating in the IPCC. Given the need to promote a common understanding among various stakeholders and the potential financial implications of various definitions, it appears important

for the IPCC and the UNFCCC to work toward common definitions, at least for a core set of terms and concepts

Community-based adaptation (CBA) describes an approach to increasing the resilience of some of the world's poorest communities to the impacts of climate change. It should be a community-led process, based on local priorities, needs, knowledge and capacities, which can then empower people to cope with and plan for the impacts of climate change.

The proposed research project aims at systematically investigating the relationships between population displacement due to climatic extremities and resource scarcities leading to conflict a situation which is later on followed by Community Adaptation. Because of rising sea levels, cyclones and increased risks of flooding, climate change is expected to contribute to migration from coastal and riverin settlements (IPCC 2001: 36). Climate change has accelerated the frequency and intensity of extreme climatic events and Bangladesh became the most impacted country in the world.

Among the climatic hazards, the exposure of tropical cyclones and storm surge in the coastal region of Bangladesh causes severe life casualties and erosion of livelihoods. Such cyclones trigger conditions for forced population displacement in the coastal regions of Bangladesh. The settlement processes of the displaced population have became a central concern among development practitioners and academic researchers in recent days. Population issues are at heart of this concern. The research question is whether forced population displacements due to climate change really be a potential source of Community Adaptation in the destination areas? Resource scarcity is seen as a product of three different factors interacting: population growth, resource degradation, and the distribution of resources between individuals and groups. Homer-Dixon has called this *demand-induced*, *supply-induced* and *structural scarcity* respectively (Homer-Dixon and Blitt 1998; Homer-Dixon 1999). The distributional aspect is central in all the most influential frameworks of the resource scarcity tradition (Baechler 1999: Homer-Dixon 1999; Kahl 2006). The three sources of scarcity may exert different impacts from case to case, and frequently interact. Homer-Dixon (1999) argues that two types of interactions are particularly common. *Resource capture* occurs in a situation of resource degradation and population growth, providing incentives for powerful groups to take control over scarce resources on the expense of weaker and poorer groups. *Ecological marginalization* denotes a situation where great land inequality and population growth leads people to move into more ecologically fragile areas. Resource scarcity arguably also has the potential to aggravate social segmentation (Homer-Dixon 1999: 96). While demographic and environmental pressures may be seen as factors spurring local violent low-intensity disputes (Baechler 1999: Homer-Dixon 1999; Kahl 2006). Increasing and high population density pressure already represents the piercing scarcity of livelihood resources along the coast lines areas of Bangladesh. Cyclone exposures are expected to aggravate situations in areas already experiencing high population pressure and resource scarcity. Moreover cyclones, like AILA of 2009, accompanied with tidal surge and salinity intrusion, are forcing people to displace which leading to higher pressures on resources, resource depletion and increased risks of resource conflicts among people in destination areas. The

depletion and altered distribution of natural resources, in Southwest Bangladesh, likely to result from climate change could under certain circumstances increase the risk of some forms of violent conflict. The social consequences of population displacement may produce absolute deprivation, meaning that people do not get what they need in order to survive, as well as relative deprivation, a situation in which they do not get what they feel they are entitled to. Both forms of deprivation may produce grievances among people of destination areas. There were so many research conducted about climate induced incidents. But no research has been ever conducted on the Displacement and Community Adaptation in Bangladesh. Neither any focus was drawn on displacement due to climate change. In this study from micro level and anthropological perspective the researcher searched the impacts of displacements and the resource conflict directly or indirectly due to climate change. In this study; In this study; for conducting a study from anthropological perspective, the researcher adopted the methods such as key Informant Interview(KII), unstructured interview, FGD, case study, social mapping, time line analysis, trend analysis etc methods. Some of them were to find out some distinctive theme. KII was to acquire in-depth data, unstructured to get aspects both explicit and implicit, Case study to undertake as an empirical inquiry to investigate phenomena within its real life context and scale possible. FGD was to gather data from different groups, household survey to fetch demographic and area profile data, social mapping to identify geography and infrastructures, time line and trend analysis to find out time line and trends of natural resources use and its scarcity and trends of impacts. Thus, this research was to present resource conflict displacement and coping strategies, vulnerable group due to climate change.

1.2The Background

1.2.1The Geographic Background of Bangladesh

The country Bangladesh is geographically located in the South East Asia with an area of about 147570 sq km land coverage and it is boarded by India on the west, north and east and by Myanmar on the south east and by the bay of Bengal on the south. The country is situated between latitudes 20'34"and 26' 38"north and latitudes between 88' 1" and 92'41"east. This area is characterized by sub tropical monsoon climate, wide seasonal variation in rainfall, moderately warm temperature and highly humidity where normally maximum summer temperature range between 32' and 38', while 10' in the coldest month and 80% rainfall during rainfall. Although Bangladesh is an agricultural country, there are various types of occupational group. There also exists religious, cultural, social, political and ecological diversity. Ecosystems are divided into some area are north Bengal which is revering flood prone area, north and north east which known as flash flood prone area, central area which is revering flood area, south western area which known as hill tracks area and south- south west area which known as coastal area. Bangladesh, a flood plain delta is a land of river, is sloping gently from the north to south, meeting the Bay of Bengal at the southern end. The whole coast runs parallel to the Bay of Bengal, forming 712 km long coastline. 19 districts out of 64 districts are in the coastal zone covering a total of 147 Upozelas of the country. Out of these 19, only 12 districts meet the sea or lower estuary directly. The zone is divided into exposed and interior coast according to the position of land. The Upozelas that face the coast or river estuary are treated as exposed coastal

zone. Total number of upozelas that fall on exposed coastal zone is 48 in 12 districts. A total upozelas that are located behind the exposed are treated as interior coast. The exposed coast embraces the sea directly and is subject to be affected highly by the anticipated sea level rising. The coastal zone covers 47201sq km land area, which is 32 percent of total landmass of the country. Water area covers 200 nautical miles from the coastline estuaries and the internal river water (UNCLOS, 1982). The exclusive economic zone (EEZ) is also treated as a coastal zone of its own. The southern part of Bangladesh falls under coastal zone that receives discharge of numerous rivers, including Gongaa, Brahmaputra, and Megna river system, creating one of the most productive ecosystems of the world. Except Chittagong and Cox's Bazaar, all coastal zone parts are the plain land with extensive river networks and accreted land. Bangladesh is a third world developing country. Its development depends on its ecology and ecosystem, natural resources, population, economic growth, education, food security, water and sanitation systems, health security etc. Natural calamities are the hindrance of Bangladesh development. Bangladesh has to face natural disaster and calamities like floods, cyclones, tornados, sea level rising, droughts, fogs, tidal surges etc in every year that impact on development. That impact on Biodiversity, Agriculture, Livelihood, Water resources, Food security, Health, Sanitation, Infrastructure and settlement, Migration, social solidarity, Living condition, Culture etc.

1.2.2 Climate Change and the Southwestern Region of Bangladesh

Human-induced global warming is causing fundamental changes to our climate and turns out to be one of the greatest threats to mankind in the twenty first century. Climate change is a complex, multifaceted, multidimensional, long-term, slow onset phenomenon with enormous impacts that touches almost all spheres of human society including most of its production-consumption processes (Rahman *et al* 2007).

Climate change threatens settlements and the number of people displaced from their land due to riverbank erosion, permanent inundation and sea level rise is increasing rapidly every year. It is also likely to threaten many development investments and efforts. Besides, the risks of climate variability are likely to be accentuated manifolds by the ensuing and extended climate change. For example, food security, water security and energy security are key elements of development. The impacts of climate change are likely to impede the process of achieving those securities in many affected communities.

The Southwest Bangladesh is generally very low-lying, and crisscrossed by river systems. This area is historically more neglected and poor. Environmentally, it's also very vulnerable to frequent natural disasters. The people of Southwest Bangladesh face catastrophes like storms during summer, flash flood, floods and river-bank erosion in the rainy season, drought in summer, and cold wave in winter. The southwestern area is prone to cyclone and salinity (CCC, 2009). The most deadly cyclone that caused the highest causality figure in Bangladesh was that of November, 1970. Officially the death figure due to this cyclone was 5000,000 but in reality it could be more. Nearly 90% of the fisherman suffered heavy losses. Some 9000 fishing boats were destroyed; the damage to property and crops was colossal. Records show that from 1981 to

1985 174 severe cyclones were formed in the Bay of Bengal. The cyclone that crossed the Bangladesh coast during the night of 29 April 1991 was a super cyclone. The death figure was estimated to be 138,000. The cyclone of May 1997 which passed through Chittagong had strength similar to those of 1970 and 1991 cyclones (Nizamuddin, 2001).

The most recent severe cyclone which hit Bangladesh was on the night of 15-16 November 2007 with a wind speed of 223km/hour killing almost 5000 people and destroying hundred and thousands of hectares of croplands and homesteads (ASB 2003 *cf* Rasheed, 2008). The AILA of 2009 has affected the southwest area of Bangladesh more than the others cyclone. The southwest region has badly damaged for this devastating cyclone. The Khulna and Satkhira district are most affected. The approximate numbers of affected family are 76478. And the people are 3, 29,886 (UNDP, 2009). About 5.5% cyclonic storm forms in bay-of Bengal and 1% of the cyclonic storms of the global total hit Bangladesh (Ali, 1996, 1999a, 1999b *cf* CCC, 2009). When minimum death toll are considered it turns out that Bangladesh are worst sufferers of this and 53% death toll of global total occurs in Bangladesh (Ali, 1999a *cf* CCC, 2009). Salinity intrusion is one of the environmental problems of Bangladesh.

Climate change has got a salty taste along the coastal regions of southern part, and increasing penetration of salt water through the ground water and along rivers inland from the coast has become an emerging problem. In southwest Bangladesh, Salty water intrusion into river flows and run off is increased by low river flow in the dry season, sea level rise and land subsistence (NAPA, 2005). In some reports, it is predicted that for 45 cm of sea level rise about 10% of the country will be inundated. Further for a 1m sea level rise 21% of the country will go under salt water (IPCC, 2007).

Table 1 Salinity Intrusion in coastal areas

Area	In Year 2000	In Year 2009	Increase	Intensity dS/m	Land in Year 2000 (in hectare)	Year 2009 (in hectare)	Land more affected (In hectare)
Khulna	1,45,250 Hectare	1,48, 000 Hectare	2750 Hectre	2-4	2,89000	3,28,000	299100
Satkhira	1,25,000 Hectare	1,31,000 Hectare	6000 Hectare	8-12	2,74,000	3,07,000	33000
Bagherhat	1,47,000 Hectare	1,53,000 Hectare	6000 Hectare	12-16	1,89,000	1,92,000	3000
				16 and above	87,000	1,01,000	14000

Keys:

Salinity Rating	EC dS/M	effect
Slightly saline	1.5-2	Salinity effects usually minimal
Moderately saline	2-6	Yield of salt sensitive plants restricted
Highly saline	6-15	Only salt tolerant plants yield satisfactorily
Extremely saline	>15	Few salt tolerant plants yield satisfactorily
		Source: BSRDI, 2009.

1.2.3 The Geopolitical Background of Bangladesh

The Ganges- Brahmaputra- Meghna river (GBM) basin comprises intensively varied topography, meteorological and hydrological characteristics. The GBM basin is located between 22 degree 3.5 minutes and 31 degree 50 minutes north latitudes, and 73 degree 10.5 minutes and 97 degree 53 minutes east longitudes. Topographically it is extended in three characteristic areas: the Hindukush Himalaya, the Ganges Delta and the peninsular Basin of central India.

Ganges Basin

The Upper Ganges basin comprises a basin area of 965,000 sq. km considering the basin concentration point is located at Harding Bridge, Bangladesh. The bulk of the basin area is located in India and the rest in Nepal and China. The Lowest Ganges Basin comes under the jurisdiction of the greater districts of Kushtia, Jessore, Faridpur, Khulna, Barisal, and Patuakhali of Bangladesh. It comprises an area of approximately 40, 450 km^2, or 27 percent of Bangladesh's total area.

Brahmaputra Basin

The Brahmaputra is a major international river covering a drainage area of 580,000 sq. km. 50.5 percent of which lies in China, 33.6 percent in India, 8.1 percent in Bangladesh and 7.8 percent in Bhutan. The Brahmaputra flows through China (Tibet), India, and Bangladesh for a total distance of 2880 Km before emptying into the Bay of Bengal through a joint channel with the Ganga.

Meghna Basin

The Meghna basin comprises an area 75500 sq. km. out of which around 68% area lies within India. The Meghna is formed inside Bangladesh by the joining of different rivers originating from the hilly regions of eastern India.

Ganges and Brahmaputra basins are much bigger than Meghna basin. Flooding in Bangladesh highly depends on the magnitude of flow that comes from these rivers. Flooding is an annual recurring event during monsoon and 80% of annual rainfall occurs during monsoon. The total drainage area of GBM basin is 1.75 million sq. km and the average annual water flow is 1350 billion cubic meters, which is drained through Bangladesh but the GBM basin area within Bangladesh is only about 7-10% of the total area. If rainfall increases due to climate change in the GBM basin that will create huge water flow through the rivers of Bangladesh. So, the monsoon flood will be more devastating due to increase of precipitation and sea level rise (CCC, 2009).

1.2.4 The Impact Scenario of AILA in Southwest Bangladesh

The devastating cyclone AILA of 2009 has created enumerable damage to the southwest region of Bangladesh. Two districts Satkhira and Khulna have badly damaged. The impact of this cyclone to this locality was massive.

Among the affected districts, Satkhira receives the highest amount of impacts in its infrastructures including educational institutions, religious institutions, roads, bridges, embankments etc. The study

reveals that 734 institutions were damaged fully or partially. Koyra and Dacope upazila of Khulna district are also among the most severely affected areas from outrageous Aila. The study finds that in Koyra, 6 unions (Bagali, Maheswaripur, Maharajpur, Koyra Sadar, Uttar Bedkashi, Dakshin Bedkashi) were the most damaged ones. On the other hand, in Dacope 7 out of 9 unions were fatally affected.

In Koyra, more than 150 thousand people were affected directly. Among them, more than 123 thousand were highly affected and about 28 thousand people were partially affected. Dakshin Betkashi and Uttar Betkashi were the two most affected unions in the Upazila because of their geographic position of being very close to the coast and so, the entire area was inundated within a very short time during the molest. At Dakshin Betkashi about 33 people died which is the highest in number at the Koyra region.

Livelihood options (agriculture, livestock, fisheries etc.) were vehemently affected from Aila attack in Koyra. The highest number of cattle death was recorded at Maharajpur (500), whereas, that of poultry damage was recorded at Uttar Bedkashi (25000) and Dakshin Bedkashi (25000) unions of Koyra. Undoubtedly, most of the agricultural land was affected by Aila, where Koyra sadar (119-79 acres) and Maharajpur were the most victims due to their sheer dependence on agriculture. Damage of fishery resources portrays a devastating scenario where 1026 fish ponds and 20300 acres of shrimp farm were fully destroyed.

Dacope is another adversely affected upazila of Khulna District. 7 unions of it were inundated within a moment. The high tidal surge caused more devastation than Sidr. More than hundred thousand people at Dacope were the victim of Aila resulting into the highest number affected in the Tindanga union. Among the affected people fifty thousand were displaced immediately and all these displaced people are now living in the nearby cyclone shelter, roads, embankment. The highest and lowest number of displaced people were recorded as 10000 (Tildanga) and 4000 (Kamarkhola). Almost all the agricultural land was submerged with highly saline water. As a consequence, 2700 acres of crop land was initially damaged and all other agricultural land became unsuitable for further crop production (Kumar et al, 2010).

1.2.5 Impact on shyamnagar

The adverse impacts of Aila were observed in 7 Upazilas and 48 unions of Satkhira District. However, Shyamnagar and Ashasuni are the most affected Upazila as reported by the local source and available data. The study reveals that more than fifty thousand people have been adversely affected by Aila flooding. On the other hand, total damaged cropland is about 1250 ha. Moreover, 59 people died and 1509 injured during Aila. Aila's impact on infrastructure also presents devastating scenario. 734 educational institutions including the religious institutions, 329.25 km roads, 41 bridges or culverts, 292.42 km embankment and 26028 ha shrimp farm (gher) were fully or partially damaged. Besides these, more than thirty thousand people positioned themselves on the embankment at Gabura and Padmopukur, as they did not get any safe place for their immediate shelter during the disaster.

Table 2 Summary of Household's damage information of Shyamnagar Upazilla

Sl. No	Affected Union	Affected area (sq.km)	Affected People			People dead	People Injured	Damaged Household	
			Very high	High	Partial			Full	Partial
1	Bhurulia	11.15	65	85	125	0	4	26	80
2	Kashimari	26.72	7500	2075	2925	3	17	3000	2000
3	Shyamnagar	16.88	500	350	1900	0	12	200	900
4	Nurnagar	12.6	60	100	375	0	9	24	190
5	Koikhali	35.45	1815	1410	1955	3	20	726	1346
6	Ramjannagar	25.9	1615	1385	1610	0	34	646	1198
7	Munshiganj	49.12	15245	3120	9255	5	189	6098	4950
8	Ishwarpur	29.55	960	585	1280	5	48	384	746
9	Burigoalini	34.1	14785	5775	6395	5	194	5914	4868
10	Atulia	35.9	13135	6420	5430	0	187	5254	4020
11	Padmapukur	41.07	21663	320	180	10	249	12000	200
12	Gabura	41.11	26884	1240	1910	28	467	11450	630
Total		359.55	104227	22865	33340	59	1430	45722	21128

Source: Upazilla Nirbahi Office, Shyamnagar

1.2.6 Impact of Aila on agriculture and livestock

The vast majority of the population of Shyamnagar are engaged with agriculture and fisheries and it is evident from the BBS (2001) statistics which estimates that about 64.98% households in this upazila depend on agriculture including 38.16% on cropping, livestock, forestry and fishery, and 26.82% on selling agricultural labor. But after Aila attack, all the agricultural and associated ivelihood activities were disrupted through damaging all agricultural settings in the region. In Shyamnagar upazila total 194 ha of crop land was fully damaged by Aila which worth an estimated cost of 2.4 million BDT. Moreover, Aila incurred loss of about 550 million BDT in shrimp sector (Kumar et al, 2010).

Table 3 Summary of Affected Union information of Shyamnagar Upazilla

Sl. No	Affected Union	Damage description			
		Crops (ha)	Cattle(no)	Poultry(No)	Shrimp farm (Ha)
1	Bhurulia	18.7	0	0	0
2	Kashimari	42.7	21	1036	2456.66
3	Shyamnagar	21.1	4	0	660.6
4	Nurnagar	13.3	3	25	489.57
5	Koikhali	23	11	0	2185.95
6	Ramjannagar	18.5	19	45	2859.22
7	Munshiganj	16.6	28	5716	6095.09
8	Ishwarpur	18.5	19	3121	788.4
9	Burigoalini	10.2	129	2445	5504.14
10	Atulia	7.4	262	3366	1951.02
11	Padmapukur	3	57	4429	5346.08
12	Gabura	1	81	3095	4324.97
Total		194	634	23278	32661.7
Damage in BDT(Approx.)		2368000	2368000	3491000.25	552396000

Source: Upazilla Nirbahi Office, Shyamnagar

1.3 Theoretical Framework and Analytical Context

1.3.1Understanding Climate Change Impacts on Livelihood Dynamic

The livelihood of the coastal population primarily depends upon three major economic activities: agriculture, fishing and forestry. Crop suitability and crop rotation are influenced by different soil and salinity conditions. Rice can be grown without any reduction in yield with a salinity of 2000 mmhos/cm. The monsoon rice crop-Aman is the dominant rice crop occupying about 70% of the total rice cropped area, while Aus and Boro cover 16 and 14 percent respectively (Islam ed. 2004). The coastal zone has a major share in the national production of both capture and culture fisheries. Nearly 37% of inland capture fisheries and 40% of pond aquaculture of production of the country come from the coastal zone (Islam ed 2004). The fisheries resource in the coastal zone includes here components: (a) inland fresh water fisheries b) shrimp culture and (c) marine fisheries. Brackish water is common in the coastal zone where river water and tidal water intermix. Artificial fish pens enclosed by low earth mounds (locally called ghers) on the banks of tidal creeks provide the ideal shrimp farming ground. Brackish tidal water is normally allowed into the ghers 9 enclosure for shrimp production, while during the post harvest period monsoon rains flush out the salinity to restore the land to fresh water conditions for rice farming. Traditional skills of rice cultivation in the ghers have been transferred to the water ponds within polders in the coastal districts (Rasheed, 2008).The southwest part of the coastal zone is rich in forest resources. There is mangrove forest in the sundarbans accounting for almost half of the total forest area of the country. This massive sundarbans provide large amount of livelihood earning source to the people of coastal area.The biotic resource it covers an area of 577,000 ha in the districts of Satkhira, Khulna,Bagherhat and Patuakhali. An estimated 800,000 people depends on this forest for

theirlivelihood – mainly as wood cutters, fishers, honey collectors, palm leaf harvesters (locallyknown as Golpatta collectors). And shell collectors (khan and Mazumder 2002 cf Rasheed2008) besides providing timber and fuel wood, the sundarban is a rich source for fishproduction. Fishery sources in the sundarbans are considered as minor forest products, andtheir harvest and management is non-forestry product of the forest. In fact fish are the mostimportant non forestry product of the forest. Over 120 species of fish are caught routinely bycommercial fishers (Rahman 2000 cf Rasheed, 2008). The subsistence catch sold in the informalmarket is mostly not recorded. The official statistics from the department of fisheries indicatethat, in 2000-01, the total fish production was 1.78 million tons – 79% of which was frominland fresh water source and 21% was marine fisheries (BBS, 2006 cf Rasheed, 2008). Theaverage annual per capita fish consumption in Bangladesh is estimated as 13kg (WARPO,2000 cf Rasheed, 2008). The entire coastal belt of the country is vulnerable to cyclone and storm surge, especially the small islands along the coast is widely exposed to such events (Islam, 2005). Most of the people in the coastal belt are found living below the poverty line. Employment opportunities are very limited. There are two types of land based production systems- cultivation of Aman in Kharif season and salt cultivation on the same land in dry season. Due to close proximity to the sea, salinity ingress is a pressing concern in the coastal areas. Salinity has detrimental effect on land based production system (Karim et al. 199O). People cannot get high yield from Aman cultivation because of salinity. The only significant employment (almost 60 per cent) comes from salt cultivation during November to early May. About 10 percent of the population is self employed in marine fisheries. Some 15 per cent of employment is generated through project related activities such as the Food for Work Programme (FFWP) (Ahmed 2008). The credit services in these areas are generally governed by absentee rich landlords (locally called Mahajans). During peak monsoon, when people face difficult to find employment, they eventually suffer from hunger and mal nutrition. People go to the local money lenders just to survive during this lean season, hoping that they can repay the loan when they get back to employment in winter. If the employment opportunities in winter are disrupted by any reason, this loan takes heavy toll on them, perpetuating their poverty. Often they are forced to become cheap 'bonded labor' in Mahajans' salt-pans in the process of repaying outstanding loans. Thus the frequent natural disasters in the coastal belt almost regularly cause severe devastation to these areas and destroy the potentiality to bounce back from a crisis.

1.3.2 The Ecological Approach

The Third World Political Ecology taking the perception from the livelihood dynamics and conflict approach this research adapts a political ecological approach to understand the changing livelihood of the southwestern people. In the book Third World political Ecology the authors seeks to provide an introduction of the third world ecology and economy situation. An analytical approach of integrating environmental and political understanding in the context of environmental problems and in the third world was unveiled in this book (Bryant, 1992:12). Peet and Watts takes this ecology theory as an inquiry of research (Peet and Watts, 1993:239). Third World Political ecology is based on the idea of political economy (Bryant and Bailey, 1997). Political ecologist has sought to explain third world environment change and conflict in terms of environmental problems. As a result of rapid social and technological changes the role of politics

is to shape ecology is become much greater now days (McKibbens, 1989; Blaikie, 1995b). Political ecologists have emerged with two basic points in this research approach. First they agree that third worlds environmental problems are not only the reflections of the policy or market failures but also the broader political and economic forces. These forces are induced from capitalism. The political ecologists have mainly focused on the adverse consequences of social and environmental areas (Watts, 1983a; Chapman, 1989; Hurst, 1990; Moody, 1996). Attention is also drawn on the industrial pollution as first world unload toxic byproducts into third world. Secondly their argument comprises with the notion that political ecologist is need to bring changes to local, regional and global political-economic process (Pett and Watts, 1996a). This will not occur until the unequal power relation is transformed (Lewis, 1992).

1.3.2.1 Critical political ecology

Critical political ecology simply separates the science and politics. Political ecology is a critical science. The original movement to link politics and ecology was made by concerned scientists who sought a new methodology for dealing with humans as a community. Critical political ecology seeks to engage norms of professional science and influence by discussing possible alternative means to approach environmental explanation (Forsyth, 2003).

1.3.2.2 Human ecology

The term ecology was introduced by the biologist Haeckel in 1870. The meaning of ecology to him was a study of the economy, of the household of animal organism. This includes the relationships of animal both organic and non organic. Ecology is a general term and human ecology is a particular term now-a-days and it's a rapid growing approach in environmental science. Evolutionary theory is underlying ecology. Today evolutionary theory is in the heart of every researcher of biological and natural science. This evolutionary theory relates the emergence of new species and biodiversity. Now a day's three question arises from the perception of the natural scientist. One how does organism effects the environment, two how does environment effect the organism and how does the organism effect another organism within which its lives. Human ecology links the subject matter of anthropology, biology, geography, demography, economics and other disciplines and attempt to understand relationship between people and their environments. Contemporary human ecology emphasizes the role of decision making at the individual level as possible (Bates and Tucker, 2010).

1.3.2.4 Community and ecology

One type of environment is natural environment which includes those places which are untouched by human activities. Another type of environment is modified environment. The natural environment termed "primal nature" by Murphy (2002). The modified nature termed as "Recombinant nature". Modified environment exists where humans have resembled with natures materials. Final type of environment is built environment which is in a word infrastructure. Society forms community and community act in the environment. According to Leopold a community in the

broadest sense of word is ecological system. Members of this type of community include all plants and animals. Thus an ecological system is a community in which all humans are embedded and from which we may not escape (Clark and Cright, 2006).

1.3.2.5 Human ecology and economics

The economic system is seen as a subsystem of "The human ecology." Therefore economics or human ecology economics can be seen as a subfield of "Human ecology". Human ecology economics is a new framework to the global sustainability concern includes climate change, poverty and inequality, resource scarcity, social strife, effectiveness of global institution, financial crisis, and governance crisis (Allen, 2008).

1.4 Objectives

The objective of the proposed research is to explore community adaptation of the displaced people due to climatic extremities and resource scarcities leading to conflict situation and their adaptive capacities. To bring resilience in their life they are trying to adapt in every single part of their life where they are facing conflict for scarce resources. This community based initiatives followed by community based adaptation. They develop their adaptive strategies together. This study reveals a comparative scenario for the last five years. Five years ago what was the condition of this study population and how are they now after this five years. This whole process was explained with methodology, theoretical background and field observation. This broad objective may be divided into the following specific objectives:

1. To know the adaptive strategies of the displaced people.
2. To understand the changing livelihood patters of the displaced people.
3. To explore the adaptive capacities and resilience of the displaced and vulnerable communities to climate change risks and impacts.

1.4.1 Statement of the Problem

This study will signify the Community Adaptation under climatic condition in a village of southwest Bangladesh. There are so many literature shows how people adapt with a new situation due to climatic change, how they manage their resources, how they manage their hard livestock, how they reduce disaster risk under climatic change. However some literature described climate change induced problem stated below.

A lot has been discussed about climate change and how it affects Bangladesh. The country is expected to be among the worst affected climate change. Bangladesh is often exposed to severe natural disasters because of its very flat topography and low land above sea level. Therefore, almost every year, a huge portion of the population is displaced, both temporarily and permanently, due to these calamities (Akter, 2009). He defines environmental displacement as persons who are initially forced to migrate due to environmental effects. It is assumed that in Bangladesh a huge population movement may occur in future as it is one of countries most vulnerable to climate change. It is hard for Bangladesh to handle this momentous problem alone,

as developed countries are mostly responsible for this crisis. Climate change is a global phenomenon. Therefore, environmental displacement is not only a national problem but also an international one (David, 2004 *cf* Akter, 2009). He defines environmental displacement as persons who are initially forced to migrate due to environmental effects. It is assumed that in Bangladesh a huge population movement may occur in future as it is one of countries most vulnerable to climate change. It is hard for Bangladesh to handle this momentous problem alone, as developed countries are mostly responsible for this crisis. Climate change is a global phenomenon. Therefore, environmental displacement is not only a national problem but also an international one People there are mainly small farmers, agricultural laborers and fishermen whose livelihoods depend on natural resources. Moreover, a combination of poverty, lack of resources, population growth and institutional inaptitude make people more susceptible to natural disasters, resulting in population displacement. (BSS, 2003 *cf* Akter, 2009).

IPCC's fourth assessment report, 2007, depicts that a 1 m sea level rise will displace 14.8 million people by inundating a 29,846 sq. km. area. This is of course a climatic event. Francois gemenne noted that massive population displacements are now regularly presented as one of the most dramatic possible consequences of climate change. Current forecasts and projections show that regions that would be affected by such population movements are low-lying islands, coastal and deltaic regions. Massive population displacements are regularly forecast as one of the most dramatic possible consequences of climate change. (Francois Germenne, 2010). This paper shows how Climate change will affect societies through an extensive range of impacts.

The effects of climate change will touch every corner of the world's economies and societies; adaptation is inevitable. The remaining question is to what extent humans will anticipate and reduce undesired Consequences of climate change, or postpone response until after climate change impacts have altered ecological and socioeconomic systems significantly that opportunities for adaptation become limited (Brewer and Rapporteur, 2009). Anthony Giddens shows on his book POLITICS OF CLIMATE CHANGE how adaptation strategy is maintained under changed climate condition. Adaptation not only goes with habituating in a new environment, but also the infrastructural change. Change in the building structure, change n the road structure, change in the tourism, change in the agriculture. In Spain the farmers use their indigenous knowledge and come together with their local municipality to save the water through electronic management for irrigation. This is what is new for the farmer of the Spain. Because of climate change they have change their irrigation system. This is an adaptation due to climate changes. The coastal area has changed their market system (Giddens, 2009).

Climate change has an extreme impact on the supply of food production and water supply. It damage home and property, impact health and even takes lives. That's why development program should be projected with the integrated adaptation. That will reduce disaster. Poverty will also increase under climatic change (Neil Leary et all 2008). In this book they show how the pastoralist of Mongolia, Sudan and Botswana share some strategy for coping with draught. The long history of adapting to variations and extremes of climate includes construction of water reservoirs, irrigation, crop diversification, disaster management, insurance and even on a limited basis, recent measures to adapt to climate change (Adger et all 2007 *cf* Neil et al 2008).

This above literature did not show the impact of climate change on the Community Adaptation. This briefly discusses the consequences of climate change in other fields. And their study was not also anthropological. So through this study I will try to find out the Adaptation situation of the study area due to scarce resource and Displacement.

1.4.2 Rational of the Study

The coastal areas of Bangladesh always face the grave attack of extreme natural calamities due to climate change. The people of Shymnagar thana are the worst victim of climate change. They are stuck by the cyclone AILA at 25th may 2009 (UNDP, 2009). Before AILA, SIDR of 2007 snatched everything. They have lost everything of their livelihood along with their residences. Become shelter less they are migrates from one place to another place. Now they are adapting themselves with a newer environment with a newer livelihood strategy. This strategy sometimes brings them a sense of competition with the scarcity of resource. Many researchers have studied the different aspect of this displaced population. But they have a very little attention about the scarce resource that could be potential source of conflict. Apart from this no researcher linked climate change with this resource conflict in Bangladesh. This study will help us to unveil the conflict situation of the displaced people with the existing population of the study area and the consequences of displacement as well. As climate change is a part of ecology and Bangladesh is the worst victim of climate change so this study will help the policy makers and govt. of Bangladesh of making their policy fruitful and relevant. Moreover from this study we can stretch out who are the most vulnerable victims of climate change. This study will help future sustainable settlement process and find out coping strategy, adaptation, different group of vulnerability and climatic and non climatic factors those are directly or indirectly effect on natural resource and human livelihood.

1.5 Scope and limitation of the study

In this research the researcher tried to shows the impact of climate change on displacement and natural resource. The actual scenery has been placed to be drawn through the intensive fieldwork from the study area. The ecosystem of southwest part of Bangladesh is distinctive from the other parts of the area. It is the coastal area and the natural disasters like tidal surge, cyclone, water and soil salinity, sea level rising are threatened issue here. In recent years, cyclone, tidal surge and other climatic hazards recurrently attack this area and broke down the food security, health security, water security, economy and others aspects of human need. Moreover the poor and marginal people lost everything. Become looser they displaced from one place to another place. Livelihood earning is hard for this area. The natural resource has become the potential source of livelihood earning. And for earning livelihood the people of this area started conflicting with each other. This resource conflict is thus an ultimate outcome of climate change. This research will present the impact of climate change on displacement and natural resource insight of a village of southwest Bangladesh. Moreover it will focus on others impacts of climate change and non climatic

factors which directly and indirectly effect on resource conflict. There are some limitations in this study. Time is one of the most important factors for a researcher. Although the researcher finally gathered seasonal data from the natives, there was not enough time to observe participatory the variations seasonal resource conflict as well as the others consequences of displacement. If the researcher got enough time for research it would be better for him to observe deeply and collect more data of seasonal variations. In this study, there also may some printing mistakes. Above all the researcher tried the best to gather correct and valid data in this study.

Chapter Two
Profiling the study area and Demographic Aspects

Methodology

The methodology keeps up a major task to be validated any research and it guides researcher to follow the way of harvesting and analyzing data and to define and to predestine the findings. In anthropological research several enriched and distinguished qualitative methods such as key informant interview, unstructured interview, participant observation, rapport building, case study, social mapping, scoring and ranking, timeline analysis, trend analysis etc have developed over the decades these are effective to detain indigenous people's attitudes, beliefs, knowledge, perceptions, social stratifications, religion, socio economic structure and social mobility of the society. Anthropologists attempt to investigate any social phenomenon by employing qualitative methods somewhat quantitative methods. However this research was accomplished by some qualitative methods like key informant interview, unstructured interview, participant observation, rapport building, case study, social mapping, seasonal calendar, oral description, transect walk, FGD and some others PRA tools and also data congregated based on primary sources and secondary sources literature reviews.

2.1 Selection of study area

The village Burigoalini is placed in Burigoalini union of Shyamnagar Thana. The Shyamnagar Thana in Satkhira district is geographically positioned in the south west of the country and standing on the bank of Bay of Bengal. Owing to positioning nearest bay this land is being stricken by some recurrent natural calamities such as cyclone, tornado, tidal surge, and flood and salinity intrusion over the last some years such as near recently this area was affected by cyclone AILA. Kholpatua, Dumkoli, Maloncha and Chuna Rivers are streaming through this Thana that accelerating the rate of salinity in cultivated land, homestead and closed water sources and causing the death of existing trees and livestock, and damaging crops, that impacts on livelihood, and make people displaced from one area to another. And this displacement makes a potential source of community adaptation. One displaced group comes at this village and started living here. Prior to select this area secondary literature such as journal, study report, news paper, books were reviewed and a short vision voted for that assisted to select finally the study area.

CRITERIA FOR AREA SELECTION

The study area was adopted on the basis of some criteria. These considered criteria are

☐ A village, that is located in southwest coastal region of Bangladesh.

☐ This is the area where the people who are displaced from many places come.

☐ This area where the resource conflict can be shown between two groups of people,

the resident and the displaced.

☐ In this area, occupational diversity present and different ethnic groups live.

☐ In this area, adaption picture is clear

☐ This area is experienced climatic hazards such as salinity, cyclone, tidal surge etc.

2.2 Sources of data collection

Two sources of data collection methods are exercised for this research such as primary and secondary data collection.

2.2.1 Primary Sources of Data Collection

Primary sources data are needed to clarify social fact that had been developed by anthropologist Malinowski, Brown and Boas. In this research, the data will be collected from the village of Burigoalini through interviews, case studies; FGD and KEY INFORMANTS INTERVIEW were under this category.

2.2.2 Secondary Sources of Data Collection

Different books, newspapers, periodicals, research works, scientific and research journals, World Bank reports, Disaster Management Ministry reports, Environment and Forest Ministry reports, and a number of other reports of development agencies were taken as secondary sources. These were considered as indirect or secondary sources in the present research work

2.3 Methods of Data collection from the Primary Sources

2.3.1 Transact walk

Guided transact walk involves a tour through the wilderness by the interviewer and the interviewee. This method often brings to light things which do not normally emerge from the other methods. The researcher adopted fieldwork method in this research to investigate some important objects, such as settlement pattern, land use, river system, pond system, road and infrastructure, natural resources, attitudes and behavior of the people, education and religious organization.

2.3.2 Field Walk

Guided field walk involves a tour through the wilderness by the interviewer and the interviewee. This method often brings to light things which do not normally emerge from the other methods. The researcher adopted field walk method in this research to investigate some important objects, such as settlement pattern, land use, river system, pond system, road and infrastructure, natural resources, attitudes and behavior of the people, education and religious organization.

2.3.3 Key Informant Interview

As a main strategy for collection of data the key informant interview (KII) was taken due to following reasons:

☐ As an aid to be familiarized with people and the environment and also as a strategy

for deep observation.

☐ To understand local linguistic account, culture, relationships through emic perspective.

☐ To be familiar rapidly with the study area.

☐ To acquire in-depth information within relatively shorter time.

Two key informants were selected in the study. In doing so the following criteria were

considered:

☐ They were from that village that had good idea about the study area.

☐ They had good idea about the climate change.

☐ Among one was a climate change vulnerable.

☐ They saw the conflict very closely.

2.3.4 Unstructured Interview

Maximum data were collected through unstructured interview in this study. Unstructured interview is mostly accepted in anthropological research than structured interview, is considered as an informal interview. Because, unstructured interviews are base on a clear plan that a researcher keep constantly in mind, but they are also characterized by a minimum of control over the informant's responses. The idea is to get people to "open up" and let them express themselves in their own terms, and at their own pace. There are several disadvantages attached to this method, as it is time-consuming and tiring, especially for older people. There was a check list with this unstructured interview. By applying unstructured interview, there were gotten aspects both explicit and implicit of the people of the study area and impacts of climate change on health and others in this research.

2.3.5 Emic and ethic view

My understanding of the climate change and resource conflict has engaged both emic and ethic perspective.

2.3.6 Case study

Case study is one of the methods that undertake as an empirical inquiry to investigate phenomena within its real life context and scale down the study as brief as possible. It shows mixture of diachronic and synchronic information of an event in real context. Several real life histories of affected people were adopted as support to illustrate the nature of problem in very nutshell. Through some case studies were adopted on the health impacts of climate change and the local adaptive strategies.

2.3.7 FGD

Focus Group Discussion was used to collect data from the field with in relatively short time. Some data such as various types of conflict and displacement as a source of conflict climatic non-climatic and social context and climatic issues are collected by conducting FGD. Two FGD were conducted in this research with two groups of male and female. In every FGD, there were six respondents.

2.3.8 Social Mapping

Social mapping was made to know about the geography of study area, infrastructures, educational institutes, water sources ponds and PSF, river, housing patterns and land usages.

2.3.9 Hazard mapping

Hazards mapping was made to know about the hazards of the area, which side of the area is renowned for which disaster. The map was made to identify the hazards occurs in the study area usually.

2.3.10 Daily Activity Schedule

Daily activity schedule was adopted to enhance an understanding of who does what, when and for how long, in the community and to understand the leisure opportunity from gender view.

2.3.11 House hold Survey

Household survey was conducted for some specific objects such as for investigate drinking water and household sanitation systems, health risk, family size , age and sex of family member, family ,marriage and kinship structure, educational status and sources of household income of the study area people.

2.3.12 Some Other Associated Research Technologies

Field Jotting: A “Jot Book” was kept all the time and used to write when something was seen to be investigated later on. It was also used to take quick notes.

Taking Field Notes: It was to record the result of informal, intensive and productive unstructured and open-ended interviews. Mobile, Camera and Recorder: Mobile, Camera and recorder were used to record and taking pictures that helped to write the study report.

Diary: The day-to-day experiences and observational notes were presented in a personal diary. It chronicled how researcher felt his relations with the people in the field.

2.3.13 other associated tools

Census report, observation, unstructured interview, case study, focus group discussion, key informants interview, some other associated PRA tools.

2.4 Methods of analysis-

Analysis of interview, Analysis of observation, Analysis of case study.

2.4.1 Unit of Research and Data analysis

The unit of data collection from field was house hold. To understand local ecosystem and climate change impacts on resource, the researcher observed household that are affected by climate change directly or indirectly. Moreover, the researcher collected data from particular group or individuals to understand vulnerability. Individuals and groups were taken to cross case analysis to understand vulnerability and adaptation variation of different types of groups or individuals.

2.4.2 Analysis of Interviews

In the unstructured, semi-structured and open ended interviews some questions have been asked in terms of research and the answers from the different respondents have been grouped together. The statement of individual respondent has been analyzed to extract the variations in individual characteristics. Then to represent individual traits cross case analyses was done by showing variations in the answers to common questions.

2.4.3 Analysis of Observations

The analyses of implicit and explicit observations involve systematic process of seven consecutive steps. The unfolding of foremost issues observed on the ground, such as how did participants bring changes into their coping efforts, strategies and behavior and so on. The steps were-

Chronology: The chronological description of the observations over time to represent study from the beginning to the ending.

Key events: By presenting the data with the critical incidents or major events in order to importance.

Various setting: By describing various places, sites, settings or locations before doing cross setting pattern analysis.

People: By the case studies of people or group.

Process: By organizing the data to describe important process (e g. decision making, communication, segregation etc).

Climate: By the analysis of climate, temperature, different seasons and variations.

Issues: The observations were arranged together to illuminate key issues, such as how did respondents change in their behavior, group formation etc.

Analysis and Construction of Case Studies

There were three steps of analysis case data and construction case studies that are stated in below.

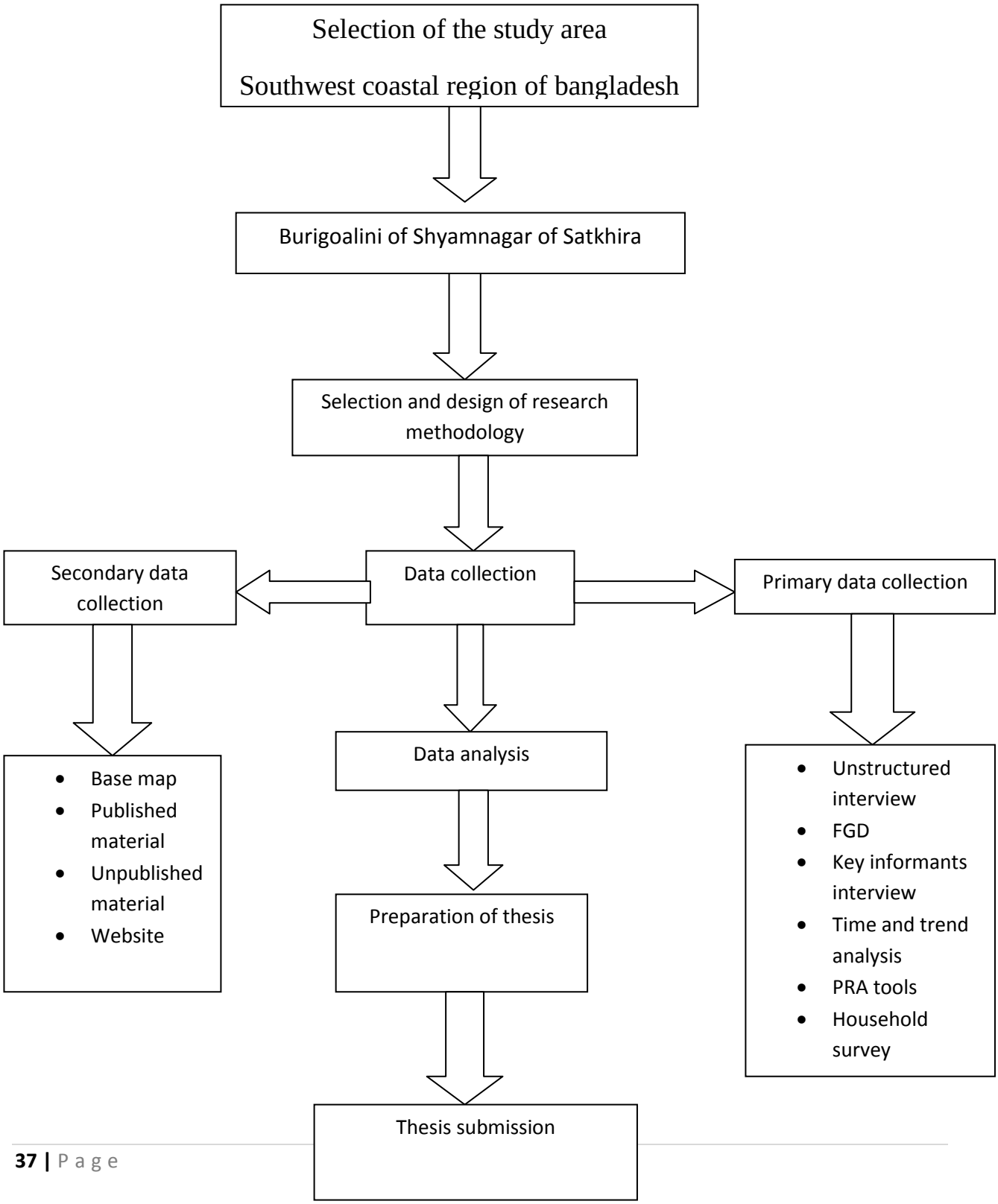
Step 1: Assembling the raw data: These data considered of all the pieces information collected about the person or issues for which a case study was written.

Step 2: Constructing a case record: This was a consideration of the new data organizing, classifying and editing the raw data into manageable and accessible package.

Step 3: Writing a narrative case study: The case study was presented theoretically

2.4.4 Research design

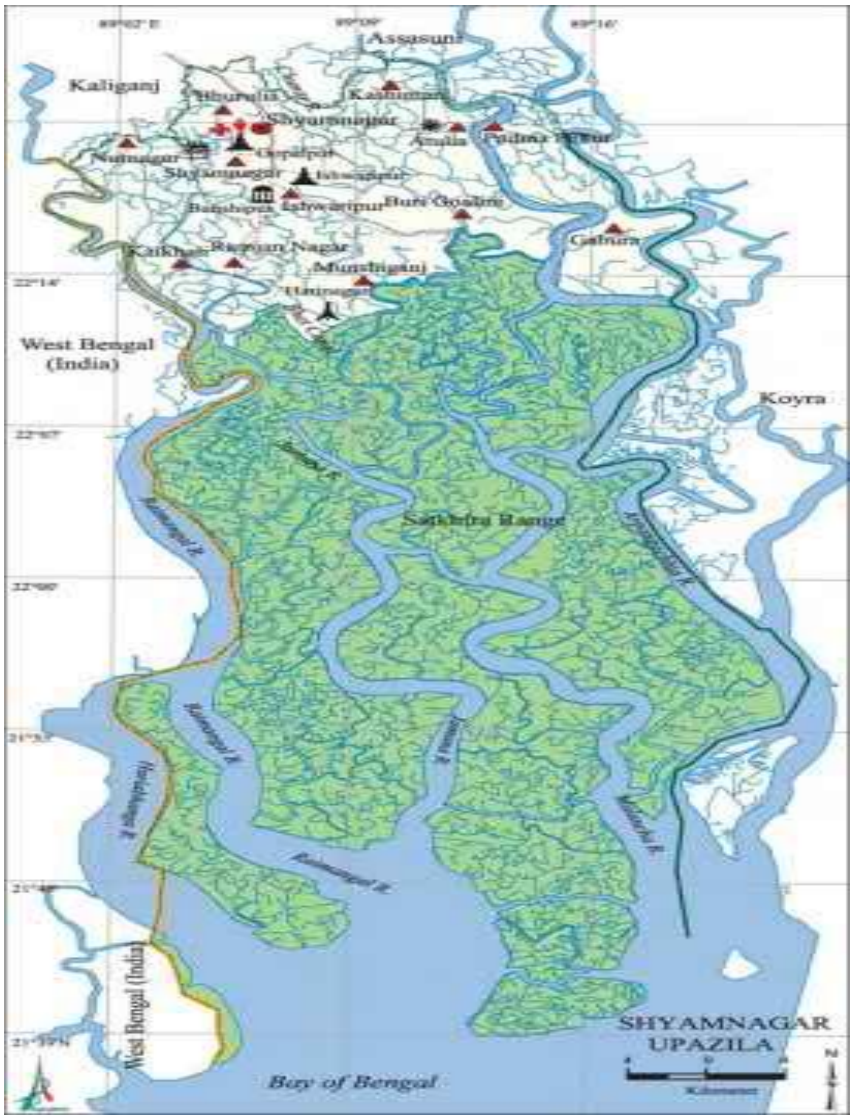
Figure 1 Summary of Affected Union information of Shyamnagar Upazilla



2.5 Geographical Background of the Study Area

2.5.1 Location and Area

The district Satkhira is positioned in the southwest of Bangladesh. The administrative district is segmented into seven Upozillas. Shyamnagar is one of them and the biggest Upozels of Bangladesh from the area perspective. This Upozela occupies an area of 1968.24sq.km including 1622.65sq. Km forest area and bounded by Kaligonj and Assasuni in the north, on the east by Koyra Upozilla of Khulna Zila, on the south Bay of Bengal and on the west India. The study area Burigoalini is a village of Burigoalini union of Shyamnagar Upozila.



2.5.2 Social Map

Figure 2 Social Map

Figure 3 Social mapping

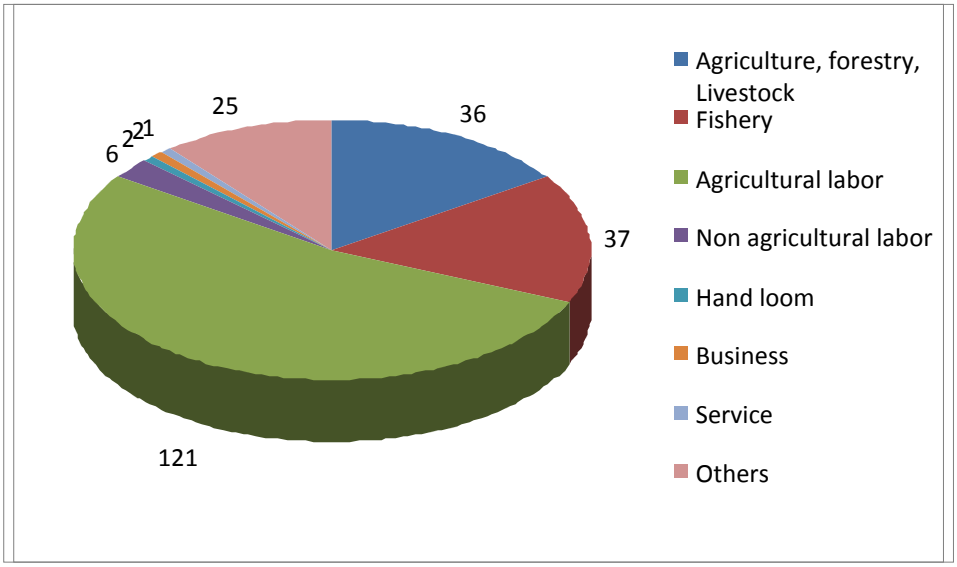
2.5.3 The Barrack in 2011

Figure 4 Barrack

Barrack in 2016

Figure 5 Features of Livelihood

2.5.4 Features of Livelihood Strategies of Burigoalini



Source BBS, 2001

2.6 Ecological Condition

2.6.1The Climate

The climate of the area is tropical Monsoon. The Monsoon starts from May and lasts till September. The Nor'wester usually begins in April and lasts up to May. The rainy season receives maximum precipitation due to south-westerly Monsoon. The cool and calm season of the winter begins from November and lasts up to February. The hot summer is experienced during the months of March to May (Azeem and khalequzzaman, 1994).

2.6.2 The Rainfall

The rainfall is maximum between May to august. Rainfall decreases from September and it is minimum between Octobers to April (Azeem and khalequzzaman, 1994).

2.6.3 Flora and fauna

The keora, sundari, goran, gaowa are the flora. The Sundarbans hosts a large variety of animals. It is the last stronghold of the BENGAL TIGER (*Panthera tigris*). Within the forest habitats there are about 50 species of mammals, about 320 species of inland and migratory birds, about 50 species of reptiles, 8 species of amphibians, and about 400 species of fish. (Banglapedia).

2.6.4 The land use

Total cultivable land 38552 hectares, fallow land 6257.79 hectares; single crop 23.8%, double crop 55.06% and treble crop land 21.14% (Banglapedia).

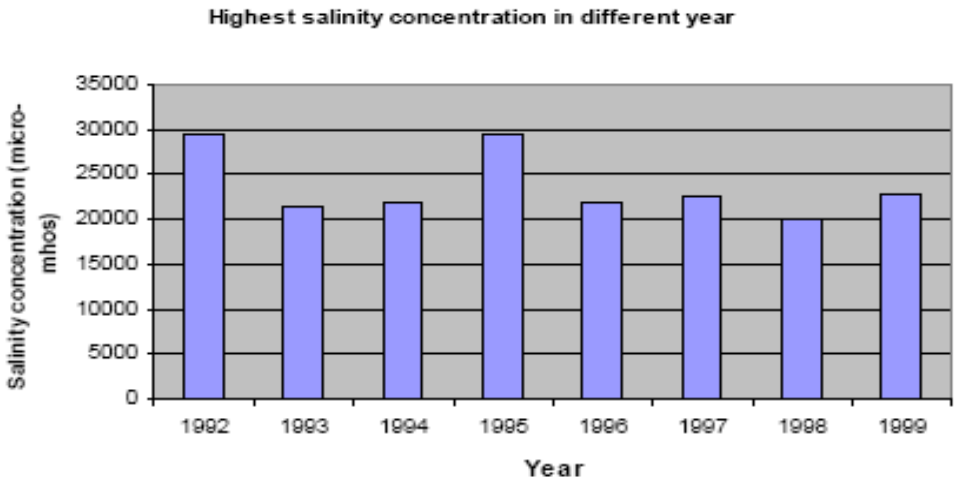
2.6.5The river and water sources

Main rivers are RAYMANGAL, Kalindi, KOBADAK, Mother Kholpetua, Arpangachia, Malancha Hariabhanga and Chuna. South Talpatti Island at the estuary of the Hariabhanga is notable (Banglapedia).

2.6.6 Tide and salinity

Salinity is mostly related with cyclone and tidal surge. Recently cyclone AILA (2009) attacked in this area and push saline water into farmland and fresh water ground. Finally salinity increases in farmland and fresh sweet water is polluted by saline water. On the other hand, Chuna is the main source of tidal surge. It fetches saline water from the Bay of Bengal. The people who are involved with crab and shrimp aquaculture are depended on this river tide. They also increase salinity and dismiss the soil fertility and other agricultural production by using saline water for crab, shrimp and other aquaculture. The highest salinity concentration from the nearest station of Satkhira study area was observed. The highest concentration was 29500 micro-mhos found in 1992 and 1996.

Figure 6 Highest Salinity Concentration for the Period 1992-1999



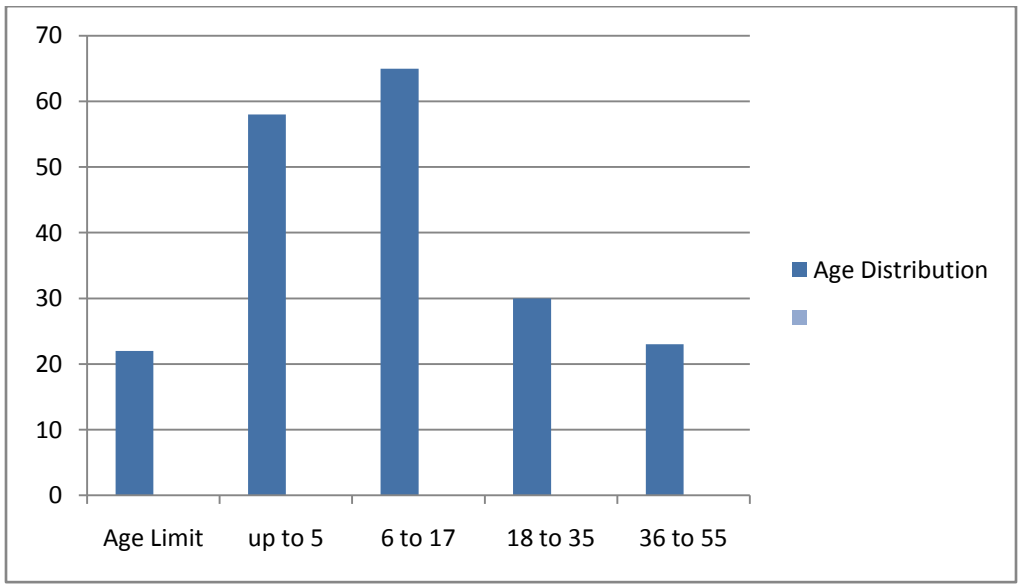
Source- CCC-2009

2.7 Profiling the Respondent

2.7.1Family Structure and Household Size

The average household size of the study area is 5.4. Total household is 1137. Among them male is 3075 and women is 2972 (BBS, 2001). I have surveyed 50 household. The total populations of this surveyed household were 198. The population distribution according to age group is given in the following figures.

Figure 7 Age Distribution

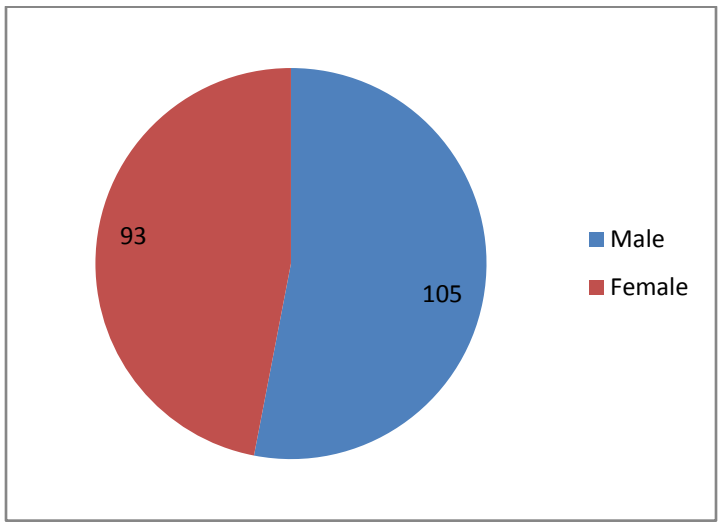


Source: Household survey

2.7.2 Male Female Ratio

This bar graph depicts the age distribution. We see that there are people who are 6 to 17 age is maximum in number. 36 to 55 is less in consideration.

Figure 8 Male Female Ratios



Source: household survey

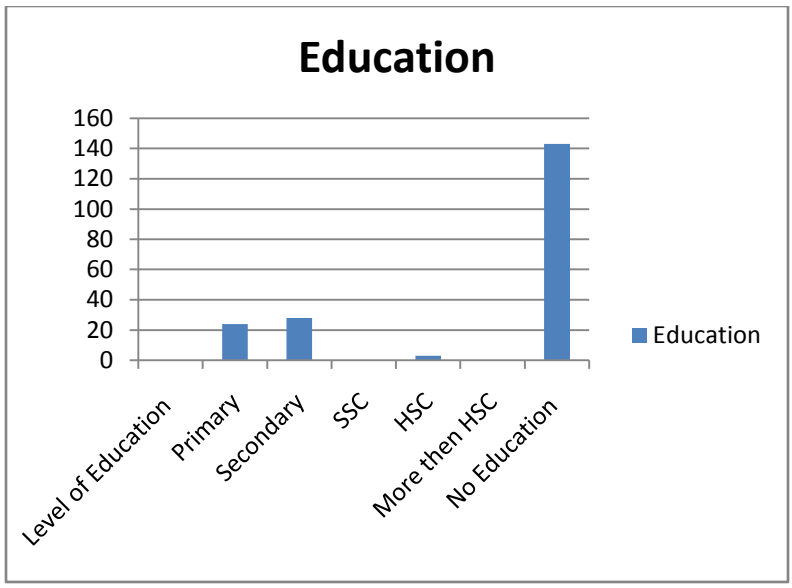
Among 198 people 105 were male and 93 were female. So we see that surveyed people were mostly male in number.

2.7.3 Educational status

The education status of the study area is like other village of burigoalini union. The burigoalini village did not have any school. The nearest school was in Kalbari village next to burigoalini. So the education status is medium. The literacy rate of male is 56.95 and female is 38.47. (BBS, 2001). Now they have school but still it is far from my study area. So the education status remains poor.

The following figure shows that no education rate is high. Primary and secondary education is almost equal. There is very little number of HSC passed.

Figure 9 Education Status

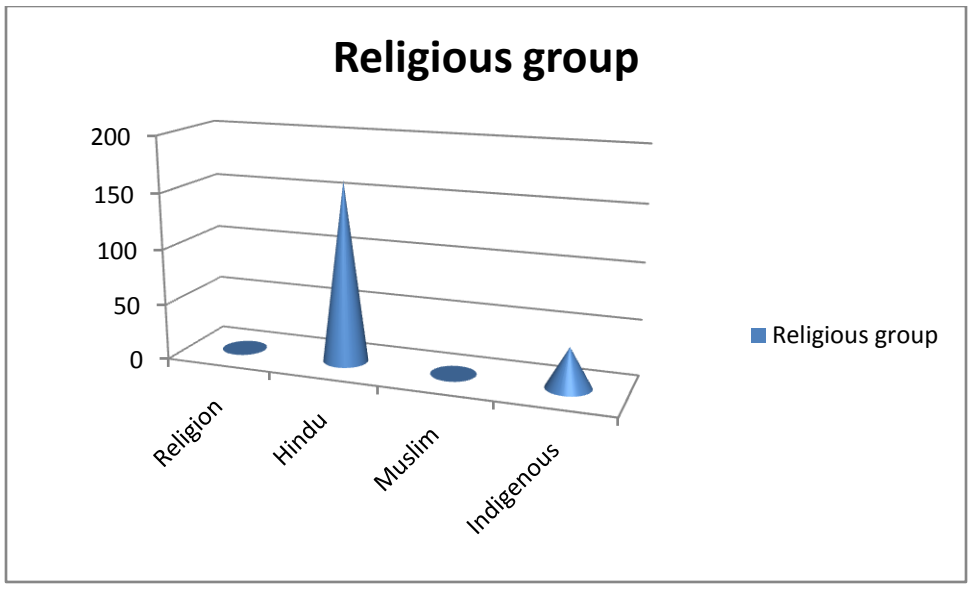


Source household survey

2.7.4 Religious group

There are different religious group in the village. But Hindu religious people are more in the Barrack. There are some Mundas (Indigenous people) living here also. Figure shows that among surveyed people 150 are Hindus rest are Mundas.

Figure 10 Religious Group

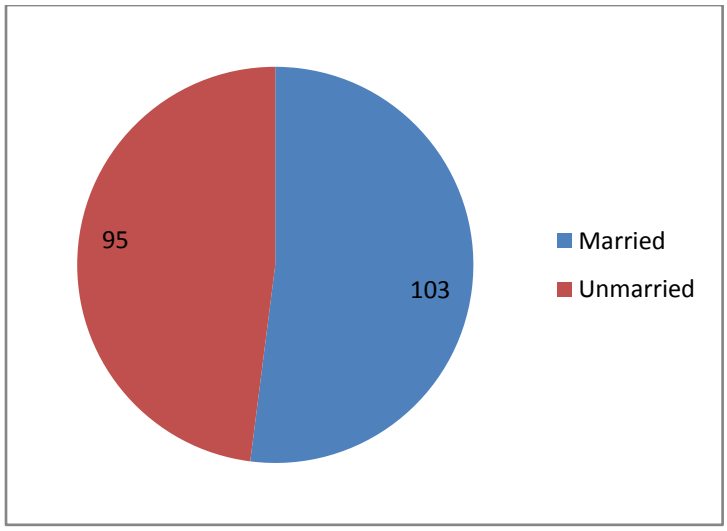


Source household survey

2.7.5 Marriage and post marital residences

Marriage system of this area and other part of Bangladesh are alike in both religion Hindu and Muslim. But polygamy is more practiced in this area than that of other areas. On the other hand residences are patrilocal but there are some matrilocal residences as well. This is mainly because of poverty and some time the economic dependency on women jhonmojur.

Figure 11 Marital Status



Source household survey

This Pie chart shows that among 158 people 103 are married and 95 are unmarried.

2.8 Economic Condition

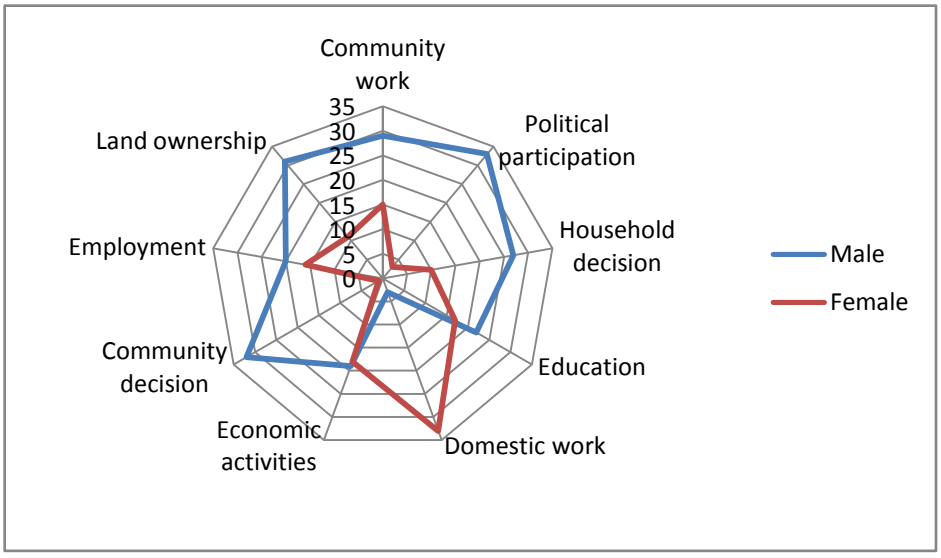
2.8.1Agriculture and production

After AILA cyclone of 2009 two year there was no agricultural production. The saline inundates the soil of the crop land. But most respondents are involved with shrimp farming. As brackish water is appropriate for shrimp farming. Along with this other aqua cultures are also prevalent in this area. Rice production are mainly continues with Aman and Aus. They produce vegetable with their own land.

2.8.2 Activity

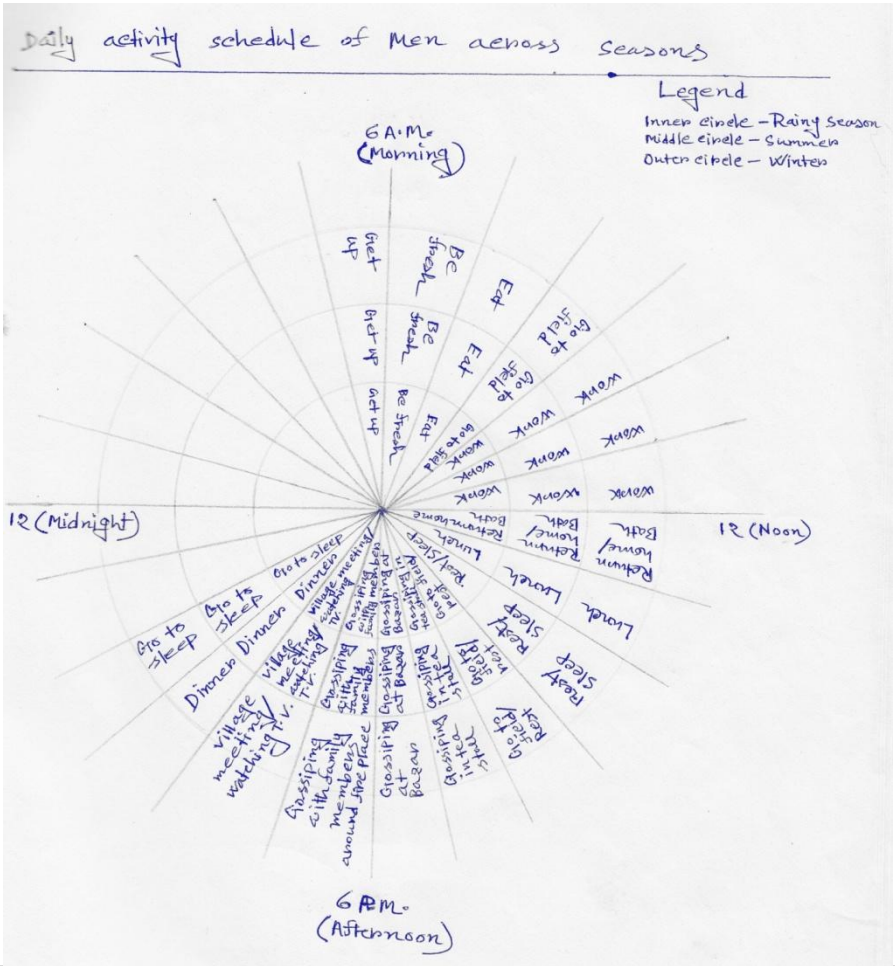
This spider diagram shows that male participant's political involvement is high. They are also dependent on community decision. On the other hand females are confined in domestic chores in high rate.

Figure 12 Man and women activity

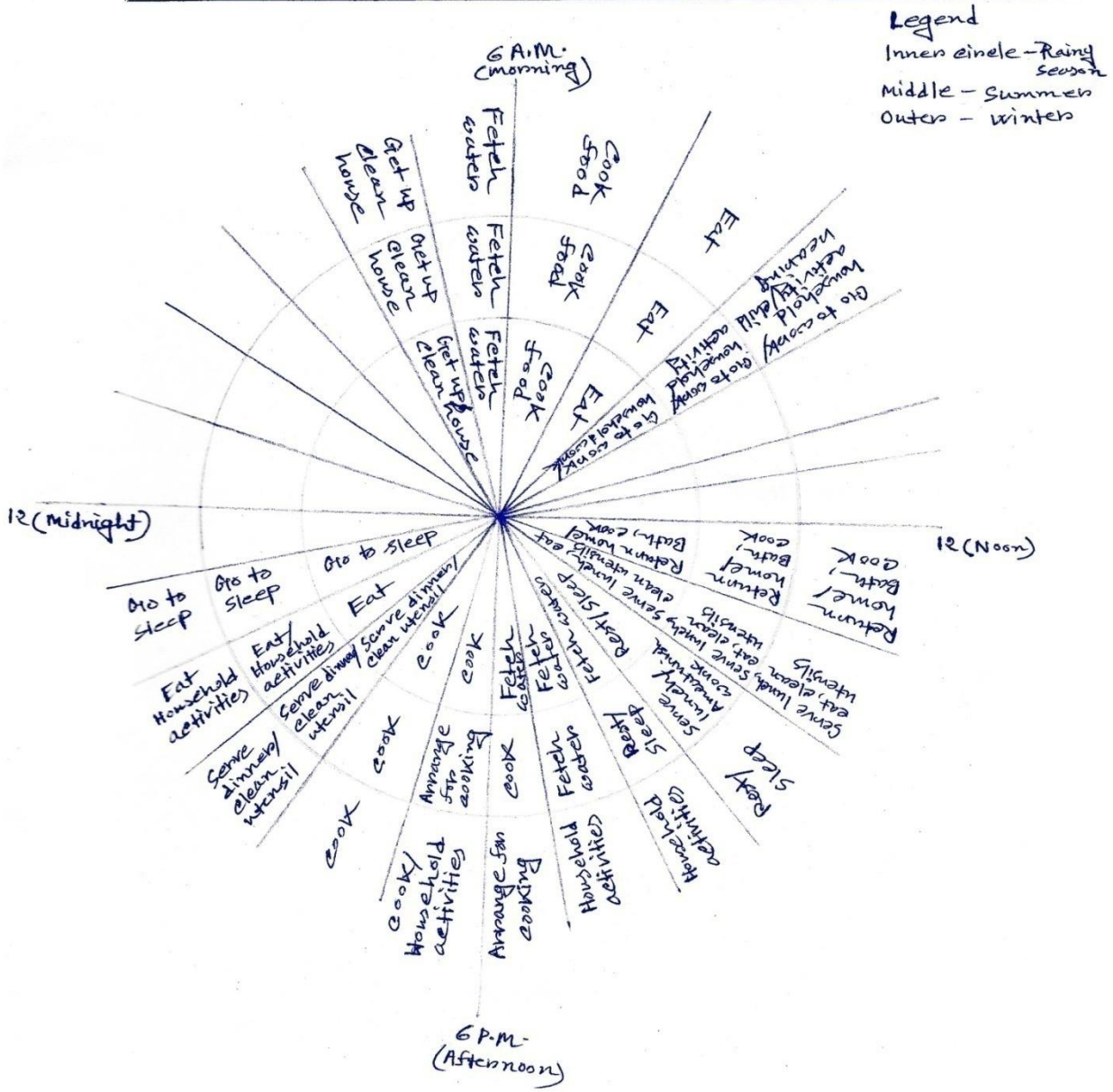


2.8.3 Daily activity schedule of man and women

Figure 13 Daily activity schedule of man and women



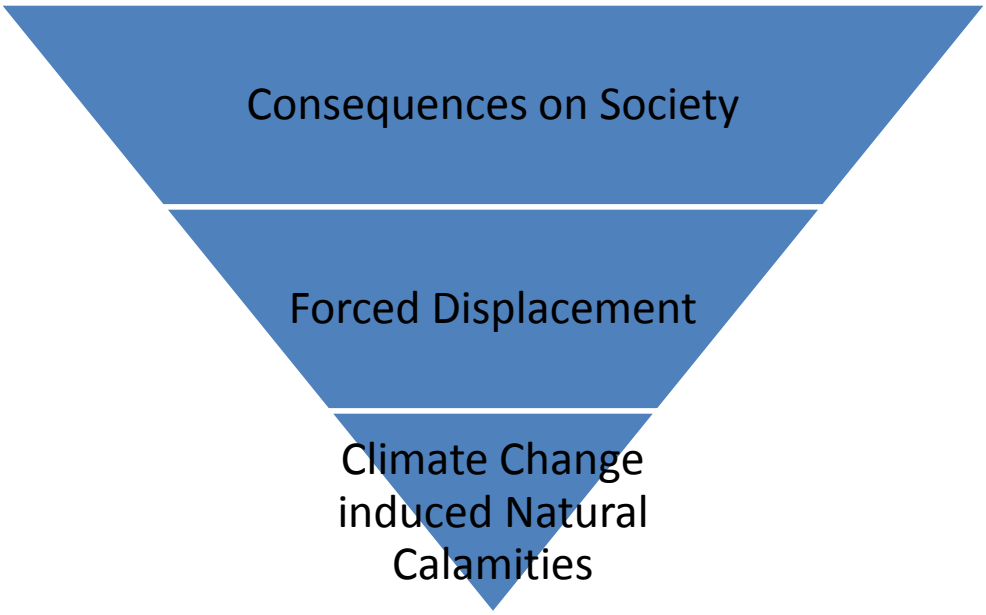
Daily activity schedule of women across season



Chapter Three
Vulnerability and Displacement

Displacement is no more confined into safety net or living standard improvement. Now-a-days Displacement becomes a climate change induced event also. There are so many reasons for displacement. People displace from one place to another place for improving their livelihood, for their job proficiency, for better privilege etc. But without all these cause climate change plays a significant role for force displacement. This force displacement brings the society huge amount of social consequences. In this chapter i will show the consequence of Forced Displacement on the society.

Figure 14 Social Consequences



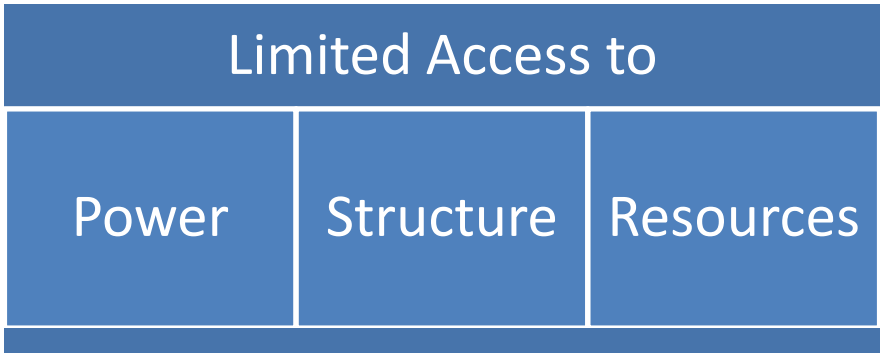
3.1 Vulnerability in Social Consequence

The social consequences depend on many factors. When a man leaves his original living place he has to close his others social part as well. Economic, religious, political, cultural etc. these are the phenomena what make his identity in a place. A man without these phenomenons could not go so far as a human being. Every man has their social identity including these factors. When they lose all these factors of living they displaced from one place to another place for the better life and these Displacement pusses them to vulnerability. When my study people displaced from their

original place they also had some of those factors which they leave at their previous living places. Through the pressure and release model we can see that how vulnerability develops within society due to forced displacement. Though they lose all this phenomena at their previous living place but they again started living in a new place. It is their adaptation capacity that makes them alive to new places.

3.1.1 Root Cause

Figure 15 Root Cause



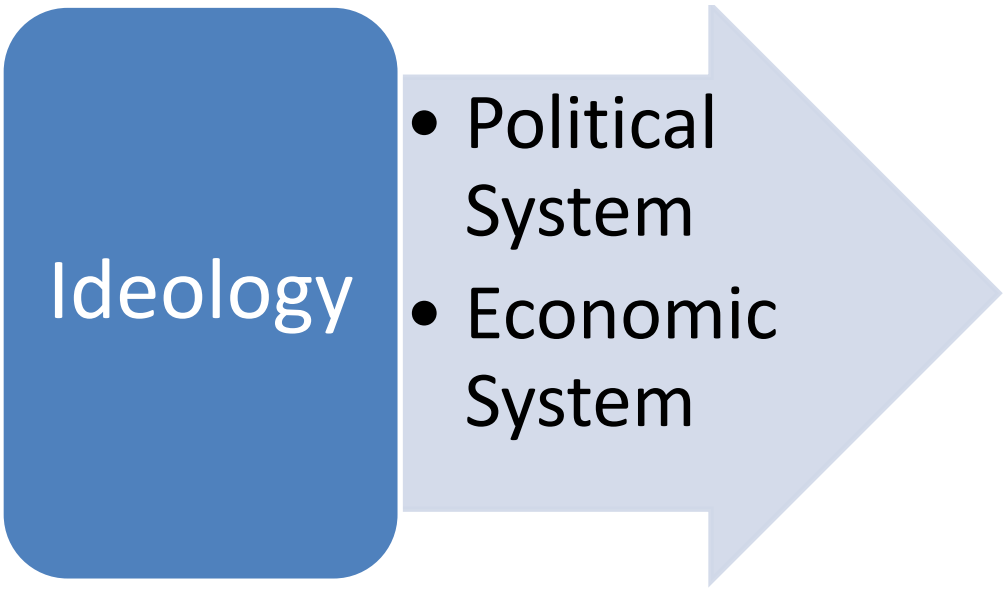
Power: The people who are displaced are now living in a new place. In this new place they don't have any power. But when they lived at their original place they have some sort of power that they can use. Though they were poor and marginal landless but still they had some sort of power at their original place. But in this new place they are not acquainted. Nobody knows them well. So they don't have any power to exercise.

Structures: The educational and health system is a structural function of a society. But due to displacement the displaced people could not make their participations at this system. Their children could not get admitted at the school of this new place, the children who are student have to go to their old school at their original place. Sometimes it is impossible for them to attend the school. On the other side they could not get admitted in the school of this new area. Health system is altogether same for the resident and displaced villagers. They could not get the enough treatment from the health complex. As the resident villagers could not get the proper treatment from the health complex so it's difficult for the immigrant villagers to get. For not having proper nutrition and treatment the displaced people are getting malnutrition day by day.

Resources: Resource is a big issue for them. Though they don't have any private property but the displaced people had their own allocation to the natural resource. They can collect the Sundarbans Produtcs from a familiar place which was near to their village. They had their own place for fetching water. They had other access to the natural resources at their original place. But initially after displacement they could not take access to the resources in the newer place.

Figure 16 Ideologies

Ideologies

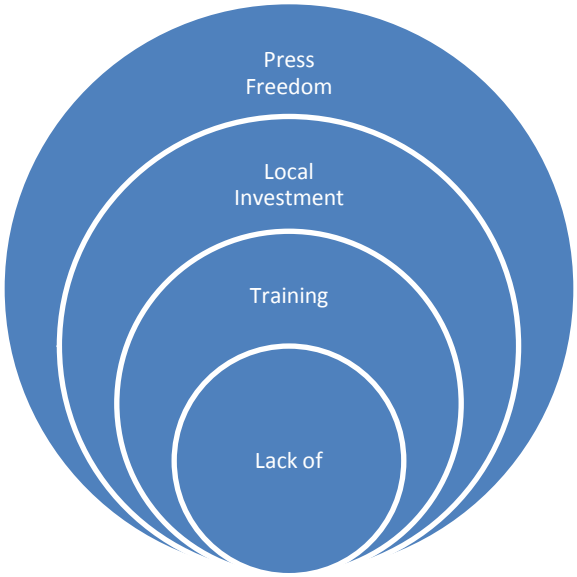


Political system: The political system is a significant role player of a society. When the displaced people leave their original place at the same time they also divorced from their political support. In the original place they had their own political party to support. They can participate at the party politics. But initially in the newer place they lost all the political support.

Economic system: Economy plays a vital role for a society. Economic condition promulgates one person's social status. The displaced people who earn their livelihood by doing some job what makes their economic system activate has been destroyed though this displacement. When they leave their original place they also leave their earning sources. This finding confirms wisners study on Kenya during 1970s (Wisner 1988a *cf* wisner et.all 1994).

3.1.2 Dynamic Pressure

Figure 17 Dynamic Pressure



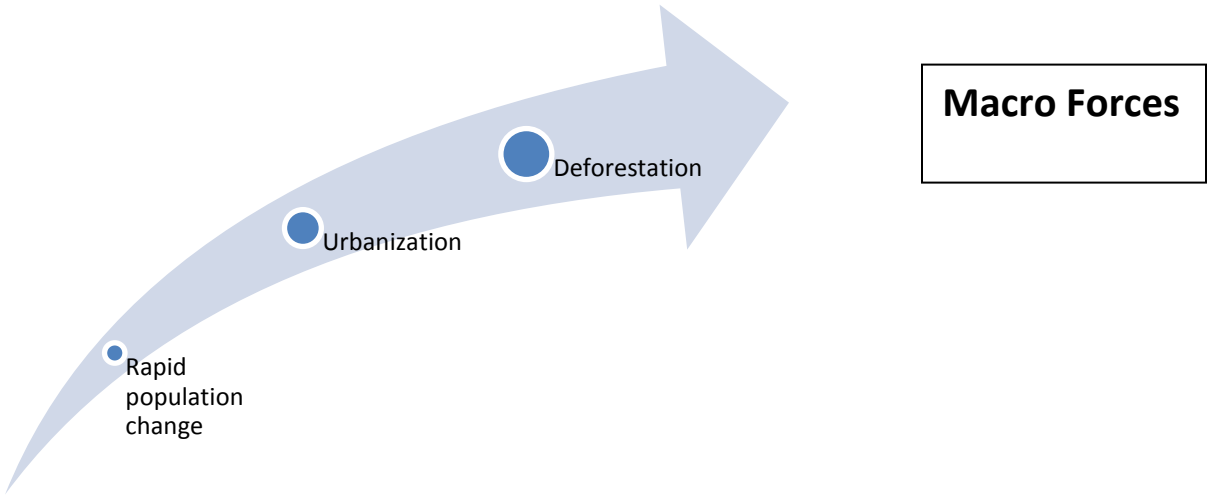
Training: The displaced people are deprived from training related issues such as they are trained in particular how to make aquaculture, how to manage disaster post situation. They were also given their transport cost. But now they are deprived of all this.

Local investment: Some people told me that though they don't have land but they had some amount of money what they invested with other people in the original place for profit. But after displacement, that investment becomes lost. Now they neither have money nor have any scope of

Sri Robindranath das is displaced men from Talbari village. He is 43 years old in his age. He was a butcher at that village. He worked at the local market of Talbari. He was also without land. He has his 3 child and a wife in his family. Her wife was a day laborer. She worked at the rich households of the village and at the shrimp farm. Whatever they earned somehow they passed their days with that. Several times they fought against poverty along with natural disaster. But the AILA of 2009 has snatched away everything what they have. They have lost their homestead. They lost their identity. Water filled everywhere. They float for 2days. They took shelter at the Kalbari School. Becoming looser they displaced from their own village and searched for a safe place to live. Suddenly one of their relatives informed them about the shelter of the barrack and they come to the barrack. With lots of difficulty they are being allotted a room for their living. From then they are living here. But inadequate work facility makes them starved several days. So sometimes they thought of back their origin. But due to landless/shelterless they fear to attempt this.

investment because they are outsider from other villages. So this is lack of their local investment.

Press freedom: Initially the displaced people have also lost their freedom. They are now controlled by the rich and the poor class of this village. As their outsider they are dominated by the resident villagers.



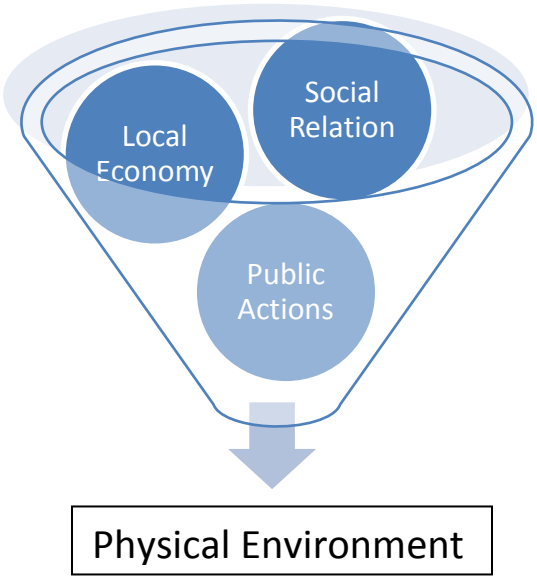
Rapid population change: Due to this displacement there occurs a massive change in the population quantity. Now the Burigoalini village got over population. This displaced people come and started living in this village forever. So there are a massive population growth occurred.

Rapid urbanization: Among the displaced people the majority is women and children. Because the man are move into the town of Shyamnagar, Jessore, and other near towns for van and rickshaw pulling, for day labor and other works as well. So urbanization is also elaborated through this Forced Displacement

Deforestation: The local peoples claim that the Sundarbans area has been shortened day by day. Initially after displacement when the displaced people collect the biomass fuel ingredients they damaged the social forestation which is plant on the Chuna River. Besides they also collect the trees, leaves, fruits from Sundarbans. And this way the deforestation occurred.

3.1.3 Unsafe condition

Figure 18 Unsafe condition



Social relations: Social relation has been dismantled by this displacement. The people who are displaced have lost their relatives. They have lost their societal relations. One of my respondents told me that he had the good term with the member and the chairman of that village where he lived. So at any problem he could go there for help. But here at Burigoalini no one knows him. So he is quite helpless here. Like him many others have lost the social relations. Due to this social relations they have also lost some others privilege. At their original place they had their own friends, neighbors'. So if they need to lend money or any kind of help they could easily get this from them. But here as nobody knows them so nobody trusts them for lending money or anything else.

Sobita munda is a 28 year old woman from Munda Barrack. She has come from Datnakhali Hulo. A village which is near to Burigoalini. Her husband Rajkrisno Munda. They were the day laborer at their village. Beside that, they worked at the shrimp farm of the rich farmers of that village. They have 3 children. They were landless at that village. During the period of AILA they lost their last shelter where they (matha guje rakhto) resided. After losing their last shelter, they quickly came at burigoalini. Here in Munda para one of their relatives was lived. Their relatives came in help of them at that time. After living their some days, her husband Rajkrisno Munda went back to Datnakhali. But he could not make any scope to regain their lost property. They were all damaged. As they don't had any current money in their hand they compelled stop thinking of rebuilding their house. Then Sobita Munda and her family went back and lived in a house of one master of their village. After living some days there, they said them to leave their house. Then they fall in a tremendous miserable situation. Then suddenly their Munda relative of Burigoalini informed them about the Barrack. Hearing that they found a new hope to live and come running at the barrack. From then they are living in the barrack. But here they don't have any person familiar who will help them or lend them any money for any work. So they have to depend on the natural resources of this village for earning their livelihood.

Local economy: Every place has some local economy. The place where I worked their local economy depends largely on shrimp farming. But due to this displacement this shrimp farming has been greatly damaged. Some told me that when they live their original place they worked at the shrimp farm. But now in this village they did not have any work at the shrimp farm. As the resident villagers already working there. So they could not make participation there. At the same time from where they displaced the shrimp farmers definitely have lost their workers. In This anomalies situation the local economy faced loss.

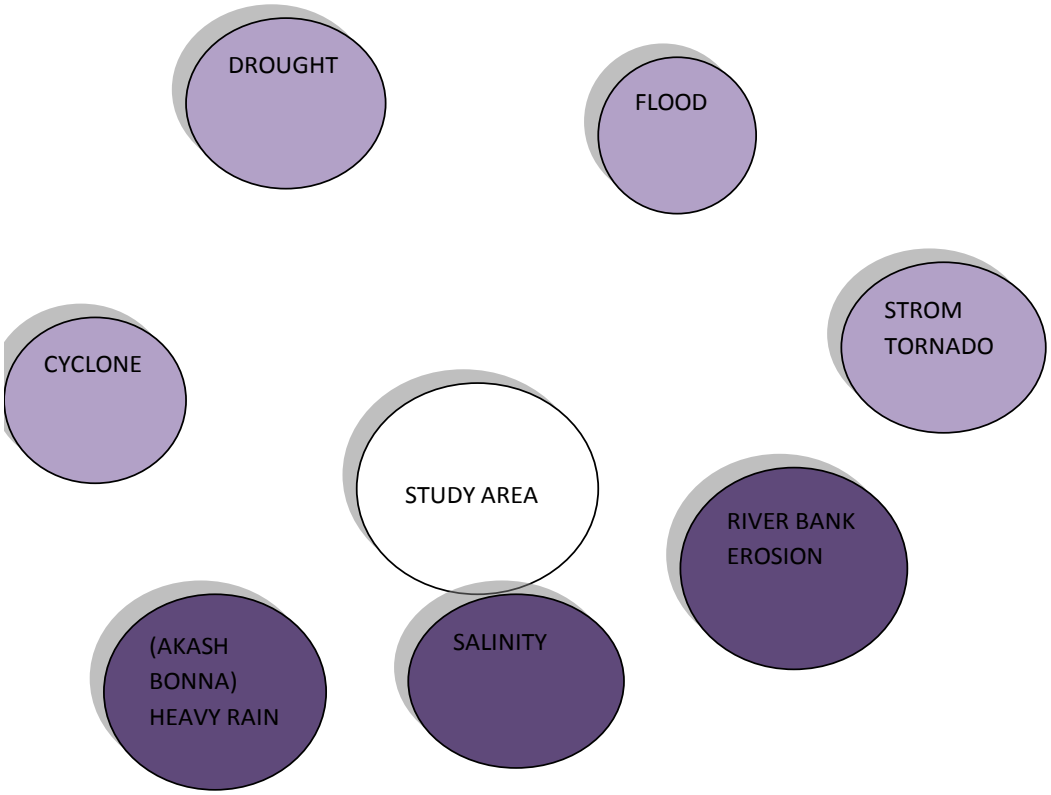
Public action: The displaced people are losing their confidence as they are marginal and poor. The government does not give look on them or any kind of special notice. So day by day they become confidence less and they could not make participation into the public action.

3.2 Hazards

Key climatic hazards of the study area are cyclone, tidal surge and salinity intrusion. Moreover, river bank erosion, heavy storm, temperature variation and flood also are seen in the study area. The people of the study area have already got the result of climate change by observing cyclone, salinity and tidal surge. Cyclone SIDR in 2007 and AILA in 2009 hit this area and directly increased water salinity. There are interrelation among cyclone, tidal surge and salinity,

and between drought and salinity. Cyclone, tidal surge, and drought increase both water and soil satiny. Here, a diagram of key hazard and hazard map of the study area is described below.

Figure 19 Van Diagram of Hazards



3.3 Most vulnerable group

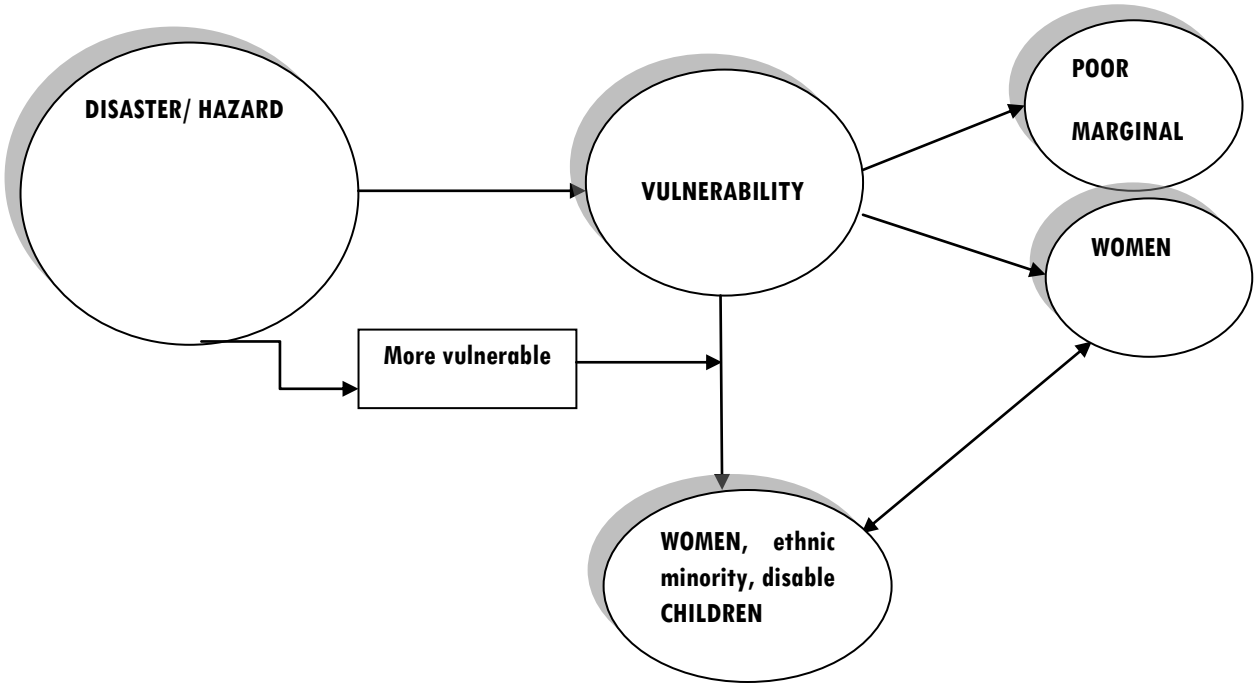
Since disaster brings same impact for all the people. But all people does not suffer or the suffering category does not same for all. Vulnerability is seen among the poor most. Poor and marginal's are most vulnerable. Then women and children are vulnerable. There are sharp differences across regions and those in the weakest economic position are often the most vulnerable to climate change. This finding confirms the IPCC 2007 annual report that there is increasing evidence of greater vulnerability of specific groups such as the poor and elderly not only in developing but also in developed countries (IPCC 2007).

3.3.1Poor and marginal

My study also confers that the two group of displaced communities the fisher community and the Munda Community both are marginal poor. They don't have their own land or other property.

Only property was the house on the land of other people and some domestic animal they had which AILA2009 has snatched away. They also even don't have any money left.

Figure 20 Vulnerability



They were poor and they remain poor. For example, 1.5 million perished in the famine of 1974 in Bangladesh, and between 900,000 and 2.4 million in North Korea between 1995 and 1999 (Noland et al. 1999*cf* wisner 2005). They all were poor. So in any hazard situation the poor are vulnerable in all the way.

3.3.2 Women and children

In the barrack most people are women rather than man. Among them widows number is much. Or the woman's who have divorced living with or without children. They are the most vulnerable group. All are not capable of earning their livelihood. So they have to depend on the relief and the help of other people of the village.

Taramoni Karmakar one of my respondents from barrack. She is now 60 years old. She is living in this barrack for about 5 year and 2month. Before living here she was a dweller of Talbari village. She is a widow. After 9 month of her marriage her husband was died. Her husband was a (maoali). Sundarbans forest was the only earning source for them. One day when he entered in the forest with seven other maoali, the tiger embossed him. His other partner could not rescue him from the grave attack of the tiger. Though it's a common incident for the Sundorban relied people. Become widow Taramoni started earn her livelihood by relying heavily over the Sndarban. She collected crab, snail, shrimp and other fishes. And sell it to the near market. She has one daughter married and a grandchild. Her daughter lived with her. She was land less at her village. The land that she only had of her own was her residence place (bosot vita) and some domestic animal. AILA has snatched all from her. Now she becomes shelter less. Becoming displaced she reached at the barrack. And allocate one room for her. She could not do anything for livelihood as she is growing old. Now her livelihood is earned by N.G.O. relief. Some time she tried to sell labor at the market but cannot due to her age. Now she works at rich houses of the village.

3.3.3 Ethnic minority

The Mundas are the ethnic minority group at the study area. They are religiously Hindu. Their traditional occupation is agriculture. As ethnic minority they were vulnerable at their original place. When they displaced from their original place and settle down at this area they become more vulnerable. They lose their human capital, societal status, bondage with their original place, along with the social facilities they could have at their original place.

Chapter Four
Livelihood after Displacement

"ASSRAYAN PROJECT" was a project of Bangladesh Navy. They built 10 barrack for the displaced people. Initially among 10 barrack 5 barrack was allocated for the displaced people under this project. Those who have lost everything due to this devastating natural calamity AILA in 2009 was allocated Barrack. Two communities live in this 5 barrack. One is for the fisher people, and another is for the indigenous Munda people. They both were displaced from their original location outside Burigoalini village. These two groups of people were mainly landless where from they migrate. They had only their residence there. But what we see that climate change has impact on it. It has snatched away everything what they only had.

We know that people permanently migrate when they lost their last hope with livelihood. And at the same time those people migrate permanently who have nothing. Mainly poor landless people migrate. Here displacement works as a safety net.

4.1Livelihood

In my study I have shown that the people's who's displaced from several places and came's at the barrack for shelter after a devastating natural calamity AILA they are from different working group. But after becoming displaced all become the same occupational group. Their tendency towards work are reassembly same. Now coping with this struggling phenomenon they managed to do something for their livelihood with the scarcity of resource.

All the way they work only to feed and live. The men who were from different occupational group are now selling their labor at the local market or the city market. Women are collecting the (badabaan somvar) the products of Sundarbans. That's the way they tried to manage their livelihood. The dynamic approach of earning livelihood is absent here. Among five capital assets of human life, human capital, social capital, natural capital, physical capital and financial capital they achieve their livelihood only with the human capital. That is skill of knowledge, capacity to work, capacity to adaptation. This natural asset simultaneously delineates their scope of consumption and conflict. Because we know that when resource is scarce and population is excess there will be conflict or competition for earning the livelihood. Their means of livelihood is hard core here.

4.2 Livelihood of the resident people of Burigoalini Village

4.2.1The rich

The livelihood of the resident people of my study area is heavily dependent on the sundarbans. The fish of salt water, shrimp, crab, honey etc. are the resource of their livelihood. The rich people (resident) who have the 30-50 bigha land in my study area used their land in shrimp farming. They used to cultivate their land by the labor. Brackish water and salinity facilitate them farming this. Some are doing job outside the village that are educated. They are the head and all in the entire village. They maintain the village politics and sometimes the micro credit program is run by them. So they are the power holder of the village. The women from rich family usually do the household work, child rearing and others luxurious work at their leisure time.

4.2.2 The middleclass

The middle class residents of the village who have 10-30 bigha land of their own usually cultivate their land themselves. They are more or less involved with the village politics. The women usually do their household work.

4.2.3 The poor or the landless

That don't have any land of their own gives labor on others land. And they usually live on others land as well. They collect the fish, crab and honey from sundorbans and sometimes sell their labor at the local market. Their women have also collected the fish, crab snail and sell it at the local market. Now the competition is occurred with this group of people who are land less here. They are losing their priority at the local market and as well as their resource is being limited day by day due to this extra population.

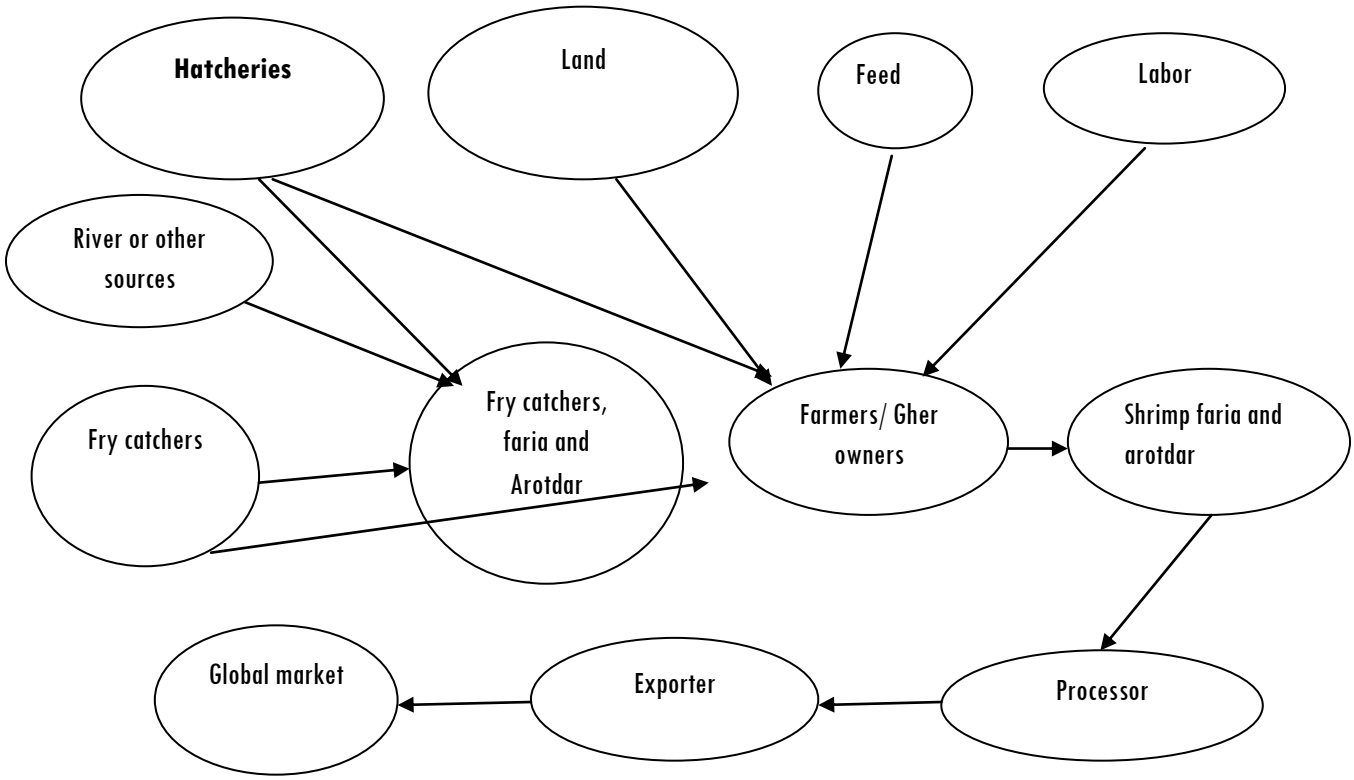
Figure 21 Livelihood of the resident people

The resident villagers category	Land distribution	education
The rich	30-50	50%
The middle	10-30	30%
The poor	0	20%

Source: Household survey

Shrimp farming a major source of livelihood for all

Figure 22 Shrimp Farming



4.3Fisher community

In my study area there is a fisher group. This community captures fish as their main occupation. They mainly live on that. Majority of this community are poor.

4.3.1Local Fisher community

There are too many fisher people in Burigoalini village also. They catch fish at sundarbans. They catch fish and sell them in the local market or at the arot (where the fish is collected for export).

This local fisher group sometimes works at the shrimp farm of the villagers. They mainly collect the salt water fish of sundarbans. They also collect the crab, snail, and other fishes of sundarbans. They have their own boat. They have their own house.

4.3.2 Displaced Fisher Community

The fisher peoples are Hindu caste community. Their main occupation is fishing. They caught fish and sold them into the near market of their original places. They had their own fishing equipments such as boat, net, basket, bamboo and such other equipments for catching fish. They had also their fishing place. The near Sundarbans Rivers provide them their destination for earning livelihood. It's like they had a location where they usually cached fish. The place was allocated for them. Some said that they had some of their regular customer there. Who usually do not take fish from other fisher man. So they laid assured that they will not return home with empty hand. Another thing that they don't had to compete for the resources. So whatever they earned they passed their days with it happily. Moreover they had their own living place. Thought they don't have their own land or property but they had their living place of their own.

After the displacement from their original place they have lost their sources of earning livelihood. They also lost their equipments like boat, net, bamboo, basket and other things. Not only that but also the place or the location where they everyday rides. They have to rely heavily on the resources of this village. The place where they go to catch fishes is the place where the villagers also catch fish. The near local market where they want to sell their fish and labor also allocated for the villagers. Most male fisherman of the barrack leaves their home for work. They are now working either at shymnagar or at dhaka or at jessohore, satkhira. They are now giving their labor into other works. Here the women or the wife's of these fisher people are not happy. They thought that they were happier when they were at their original place. They had their own traditional work there. One respondent said (*age kom khaliao valo chilim, ekhon to kajer jonni na khati pere moirte hobi*). After displacement they pass their days with insecurity. The women who worked at their original place with their husband before displacement become workless. They have to rely on the sundarbans inproducts. Where the other people also compete for earn their livelihood (From the FGD).

Majority of the people is landless poor or the marginal. So they had to live on other peoples land. But after displacement they get individual room allocation for their own. So this is the only facility they got after displacement.

4.4 Agricultural livelihood strategies

Agriculture is a big source of earning the livelihood of this area. But agriculturist people could not make their land cultivate because of excessive salinity in the paddy land.

Figure 23 FGD at Barrack

4.4.1 The local villagers

Among the local villagers, there were agricultural groups too. They have their own land. Some does not have their own land but they pay labor on others land. But after AILA they don't get any crop from their land. So this agricultural group also diversified for earning their livelihood. They participated in different economic activities.

4.4.2Local munda

There is a munda group in this village. The mundas are mainly indigenous group. They are Hindu in religion. The main activity of the munda group is agriculture. This is their traditional occupation. They mainly work as a day laborer of the rich farmers land. Sometimes they work as long as a fixed labor. The munda women also work at the agriculture land. But after AILA two years there was no paddy in the field. The land filled with salinity. So the crops cannot harvest at that time. That time the munda people along with the women started joining different occupation.

4.4.3 Immegrent munda

The mundas are originally hindu religion group. They are indigenous people. Their main work was agriculture. They worked at their own land as well as other peoples land. They have their knowledge for that work. As it was their traditional work they had their skill over it. They knew how to cultivate land. How to seed crops. On what time crop should be seeds. On what whether which crop will be best harvest. The munda women's are very hard working. They put their labor on the field all the day during the cultivation time. The young juveniles of the munda community also worked hard for the land cropping. Besides they made their nessecery requirements to their own. They produce the biomass fuel by themselves. They made their bedding a kind of mat made from coconut leaves or date leaves by them.

Now the munda people are doing the job of diversified occupations. They are now catching fish. They are now collecting honey. They are now giving labor to other peoples work. The munda people are producing vegetables in their portion of barrack with the help of NGO. After dispalcement when they want to made their biomass fuel by their own, they have to face quarrel. They collect the leaves of the trees field from sundarbans. This is often become a source of conflict. Moreover the young boys of the community did not get any work till then. So they remain workless at the destination area. After AILA when the NGO relief was available they did not feel that much lacking. But after that they suffered from severe want of work.

4.5 Comparison

Now what we see is both these displaced people of the barrack were happy when they were in their original place. They had their own traditional work there. But now they have to diversify to earning their livelihood. With the diversification they also lost their human capital. The capital that is involved with knowledge, expertise, skills etc. Besides they have to compete for earning their livelihood. Because with this limited resource they have to manage their living strategy. The resident villagers also earn their livelihood from this resource. Therefore the conflict comprises. We know that when resource is scarce and population is access to these resources then there is a competition occurred there. So we can easily say that the displaced people's previous condition was much better than their present condition. The only facility they got is the shelter. The barrack brings the shelter for their living. That most people don't have.

4.6 Human Capital lost in Livelihood Earning

Among the displaced population two group munda and the fisher people were comprises their own traditional occupation at their original place. But due to displacement their human capital has been lost. They are diversified at earning their livelihood now.

The Scenary after Aila was a fisherman who caught fish is now selling his labor at the local market. Here he loses his knowledge of work that he previously used to invest while catching fish. On the other hand a Munda woman who used to do their own traditional work is now catching fish or producing vegetables' with the help of the N.G.O.

Now this is the diversification of occupation has greatly influential determinant of livelihood. The closing of skill make them less potential of produce anything. As there is no such adequate source of resource they are compelled to live their traditional occupation. If there is any chance to keep this up they would go for it first.

4.7Adaptation in Livelihood Earning

Livelihood assessment is a way of looking at how an individual, a household, or a community behaves under specific frame conditions. One of the ways to understand livelihood systems is to analyze the coping and adaptive strategies pursued by individuals and communities as a response to external shocks and stresses such as drought, civil strife and policy failures (AIACC 2005). According to AIACC findings coping are a short time strategy and adaptation is a long time strategy. Usually people tried to cope up in sudden onset problem and adapt with the slow on set problem. Now my findings shows immediate after AILA the settlers tried the coping strategy first. Because on that time they had no shelters to live, no food to feed and Relying on relief goods, and the

help of G.O. N.G.O make their days pass. But when they displaced and started thinking their life start again they followed the adaptation strategy. Because of adaptation their job pattern becomes changed. Diversification has occurred. In the new place they did not find their traditional work. So they have to start work diversified. All the way they work as a homogenous group. The fisherman, the munda all are now doing the same job. But among the group they become heterogeneous.

For example Fish catching was the only earning way of the fisher people. They are now selling labor at the local market, working at the shrimp farm of the village, boating at the river collecting honey from sundarbans, pulling vans at shyamnogor or doing some other job. Therefore, we see that how they are diversified from their original work. And at the same time they are losing their skill of knowledge, expertise and all other quality which we called human asset.

4.8 COMPETITION FOR EARNING LIVELIHOOD

4.8.1 Local market

Local market is a big source of competition. The displaced people are now started selling labor into the local market. Not only labor but also other things such as fish, crab, snail, etc. when they get access to the local market the local resident who comes from this village deprived. The villagers complained that they don't get chances enough after coming of this displaced people. The resident villagers had a fixed market demand at the local market. But now they are losing this. Because there is an over population in the local market now. So buyers are diversified. That's the thing what makes a source of competition.

4.8.2 Hard livelihood

There is an invisible competition for earning livelihood existing everyday among the settlers and the residents. The scarcity of resource is an impending truth for this competition. Livelihood is too much hard here. Because of shortage of natural resource and absence of livelihood facilities they are suffering in the long run. The women suffer more. They had their specific work at their original place of living. But now when they are displaced and joined a newer place they become work less. Man can go outside for searching of foods, works, and other things. But women remain confined into the homestead. They can only go to catch fish, shrimp, crab, snail tree leaves etc. while collecting this they face competition with the resident dwellers. The resident dwellers also go to collect these sundarbans ingredients. So they mainly women faced the difficulty in livelihood earning. One case study will clear this.

Koisolla Munda one of my respondents. She is 43 years old. She lost everything at AILA. After displacement she was sheltered in the Barrack. She has three daughters and one son. After AILA her husband used to sell labor at town. Sometimes he worked at Brick Mills. But now he is age old. Her elder daughter married. Other four children's are studying. In Burigoalini they don't have any fixed work. Koisolla used to catch shrimp Lurva from Chuna River. I saw how difficult is for her. With this hard work she only gets 40 tk daily which is too poor to maintain a family of five members. She does not always go to collect lurva. In this situation she started vegetable gardening at Barrck with the help of Sheba Agriculture Organization, Hebayetpur, BARCIK, Forest Department. They provide with various vegetable seeds. This seeds are seasonal and throughout whole year one can produce vegetable. So Koisolla started cropping her land with others in the Barrack. And what produced she get one share. She also gets trained with an agriculture specialist. Koisolla tell that she do not mix any harmful fertilizer with seeds. She uses Mehogani Fruits poison. With Household garbage and domestic animals litter she makes the soil. She also conserves the seeds of the local vegetable. Her husband Santosh Munda also cultivate vegetable garden. This is how she meets the demand of her vegetable. Not only that, she also sell some of it. After displacement she had passed her days with tamarind prickle and rice (Jolvat). Now she has adapted new equipments to feed her and her family.

Figure 24 Hard Livelihood

4.9 The policy of GO and NGO

1. BARSA

- At shyamnagar from 1998.
- Started working at burigoalini 2008 1st september.
- Mainly deal micro credit.
- AILA after activity- six month gave water to the AILA victim of the village by their own funding. They give the loan to the AILA victim with very low interest. They consider if anyone fails to give the credit back.

2. NGF (NOUABEKI GONOMUKHI FOUNDATION)

- At burigoalini- 22 year
- Mainly deals- microcredit
- AILA after activity- soft loan, food distribution for 2 month, food for work, sanitation program, and pond sand filtering 8, 30 lakhs litter water supply at 30 spot at shyamnagar. first rescue AILA victims from GABURA
- Recent activity- free training for generating income, free health service, low interest loan, project of 5 crors for the building of houses for AILA victim, project of 7 crores for the rescue of the business of the small business mans, 5thousand tk for every family for the purpose of sanitation.

3. SUSILON

- At burigoalini- 1997
- Mainly deals- microcredit
- AILA after activity- relief giving program, relief sent at PADMAPUKUR, GABURA.
- Recent activity- trained the poor for income generating activity, crab fattening system training, with crab whatever the poor affected people need is given by them, maternal health care activity at BARRACK.

4. BRAC

- Recent activity- insects, seed giving activity among the AILA affected people who's land has been destroyed due to AILA, medicine giving activity, gives van to the poor people for earning their livelihood free of cost, the fisher people who are loser due to AILA gets larva of fish, pond clearing of them, pond side binding activity for them,

- AILA after activity- Sanitary system develop
- 84 thousand tablet distribution at burigoalini after AILA

- Road construction after AILA
- Food for work program, women priority

5. **ASA**
    - At burigoalini- 10 years
    - AILA after activity- relief giving activity
    - Recent activity- no activity for the AILA effected people
6. **Health complex-**
    - Serves the whole burigoalini union including barrack
    - General health care and maternal health care
7. **Gono unnoyon fedaration**
    - At burigoalini- 2003
    - Mainly deal- helps the hard core poor, trained 525 family who are dependent on sundarbans.
    - AILA after activity- gives soft loan to the people according to their occupation gives support according to the occupation.
    - Health care activity
    - Fund- action aid.
8. **Barcik**
    - AILA after activity- give boat to the forest dependent pople
    - Give boat, equipments for crab and fish catching to the fisher people of the fisher unit of the barrack
    - Give vegetable seeds, cowdung to the munda barrack
    - Trained how to cultivate paddy and other local crops at the less saline area.
    - Trained the forest dependent people to make jam, jelly, prickle from sundarbans ingredients
    - Gave priority to the tiger attacked families

Chapter five
Community Based Adaptation

Some people are displaced not by their decision but by some environmental factors such as disaster, whether natural or manmade. The unexpected occurrence of the event which do not give the people enough time for preparation make the people vulnerable to displacement, disease and further risk. Like more often people displaced are uprooted from their homes and settled voluntary in other areas. Given the circumstances of extreme need these affected population has no resource but capitalize on their adaptive capacities in order to survive. Community-based adaptation describes an approach to increasing the resilience of some of the world's poorest communities to the impacts of climate change.

To get a complete picture of adaptation I need to explain on what issue they have adapted and how. Resource conflict is an abstract notion which is induced from climate change. This chapter aims to focus at how displaced people adapted with scarce natural resources and other villagers of Burigoalini and brings resilience to their lives.

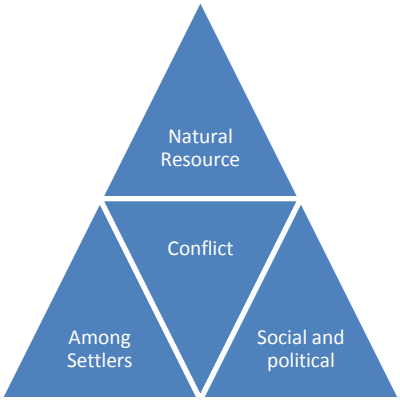
If I start from the very beginning it was 2009, when the extreme natural calamity AILA has stuck this area. Heavy inundation of this cyclone has greatly damaged this locality. Many become homeless. Losing their shelter and wealth they displaced from their original place. In a new place their identity holds with settlers. They tried to adapt with new place and also tried to develop their livelihood process. They take entrance into the natural resource of the new area. This is logically allocated for the resident villagers and then starts the conflict. The conflict starts with the settlers and ends with the inter conflict consisted between the displaced community.

Now after about five years I see that they have developed some resilience in some particular issue. There were mainly three types of conflict or competition held in the village of Burigoalini at Shymnagar after displacement. They gradually develop resilience in these five years.

1. Conflict for natural resource
2. Conflict among the settlers.
3. Conflict in social and political sphere

Conflict and Resource

Figure 25 Conflict and Resource



At first we will see the interest behind this dispalcement.

5.1Particular interest behind this displacement

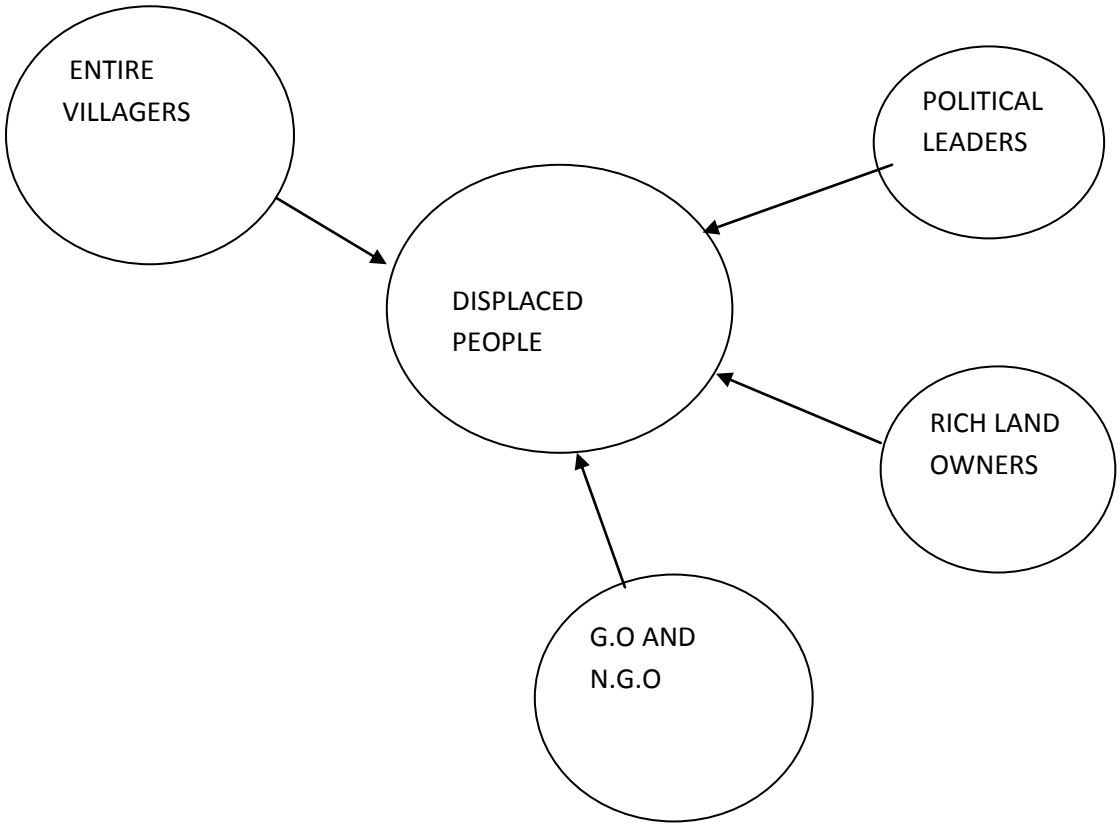
The resident dwellers of Burigoalinii do not want to establish this Barrack. They knew that this new peoples will bring extra shortage on their limited resource. Moreover there will arise so many socio economic problems. Knowing all this problematic issue the member and chairman remain silent. Even the rich people, the gher owner also remain quite. This is the political strategy being followed by the political leaders of the village. The entire villagers though that when they put objection about the barrack the chairman of union parishad refused their objection. He ignores their entire objection. Moreover he tried to make the villagers convinced that there will not be any problem. This finding confirms Salihs African Pastoralist. There he stated the relation between policies of institution and resource conflict (Salih 2001:41).

5.1.2 Political leaders

The educated villagers thought that this is the vote politics of the union parishad. As the authority gives the displaced people residence they will awfully gratitude to them and will support them at the time of election being their supporter. So there is particular interest behind this displaced people. When the chairman interviewed he clearly refused the problematic issue. He said there is no scarcity of natural resource and there is no competition.

However the villagers thought that if this people stay here the union parishad will get more relief. So the authority wants them to stay here. That's why they decided to let them settle. This is the politics arises with these displaced people.

Figure 26 Influence on Displaced people



5.1.3 Rich land owners

The rich land owners having huge amount of land and current money don't think that this people is creating any problem to them. They even also don't fell the crisis. As the group has money to buy drinkable water they don't have to compete for the collection of water. They could buy it easily. And the displaced people usually compete with the middle class poor and marginal people.

Besides the gher owner and along with the people are the owner and controller of the land does not fell any problem.

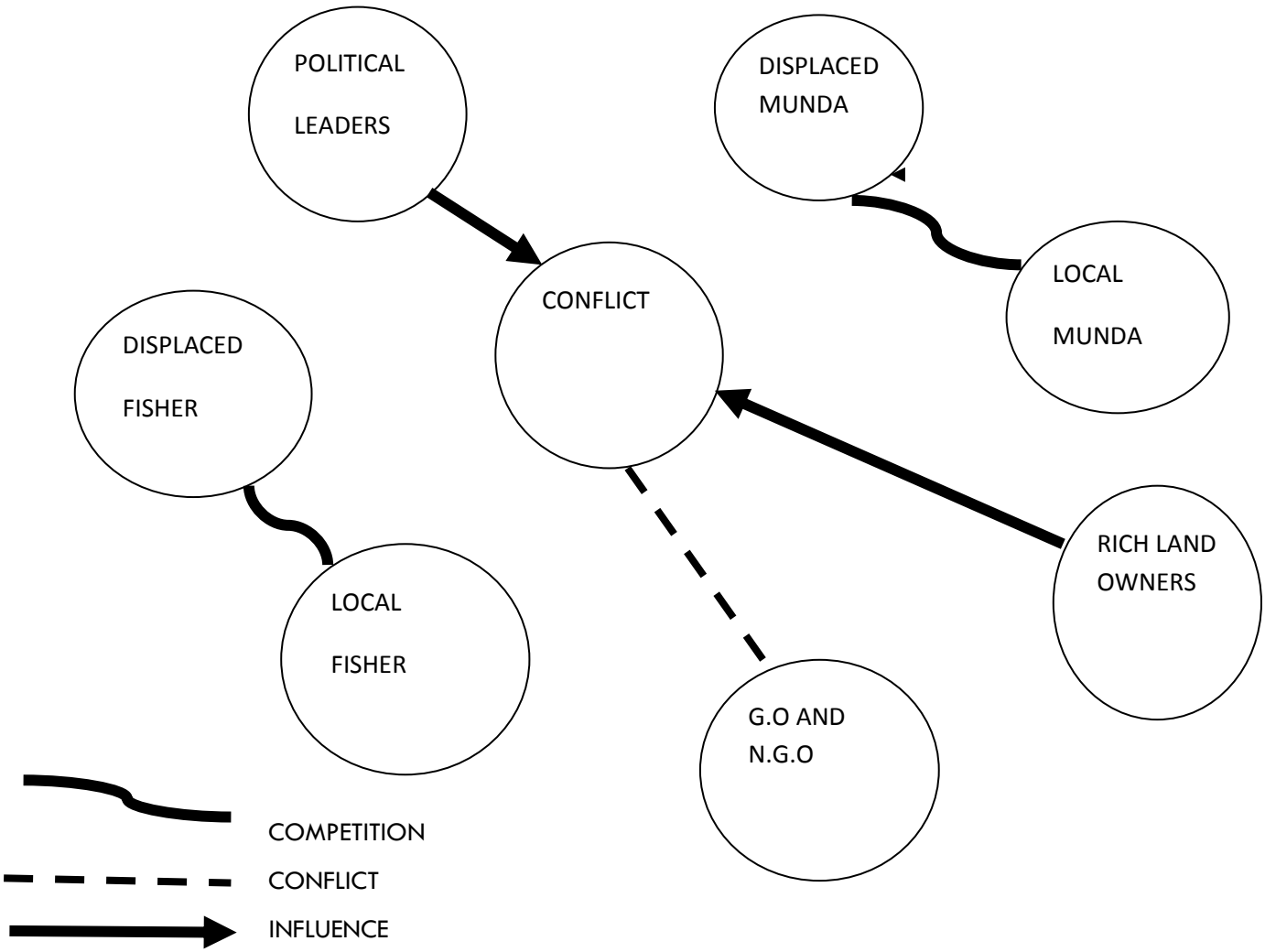
5.1.4 G.O and N.G.O

There are also some interest reside behind the displacement for the organizations both government and non government. The NGOs encourages these displaced peoples settle down in this area. If these climate refuges stay here the NGOs got much donation and project on this occasion.

The barrack is a government projection. So this will highlight the governance of the govt. that's why knowing all this objection of the resident villager's political figure, the govt. decided to make the barrack here.

So we can see that there comprises particular interest of particular groups.

Figure 27 Stakeholder analysis



5.2 Social problem and Resilience

At the beginning it was the complaint against displaced people that they take drugs hard drink etc. which is a social problem to the resident villagers. The indigenous people drink their indigenous drink. But sometimes they become imbalanced and come out of the barrack shouting. This often disordered the environmental peace. The resident villagers do not get enough relief. The relief goes to the barrack dwellers. They even don't get the civil service regularly. They thought that if this people would not have come they would have gotten so many facilities.

They are losing the job priority near the local market. Labor market has undergone. Another striking was from the resident villagers the settlers often steal their things. They cut the tress for wood collection. They are stealing shrimp near the barrack.

One of my respondents told me that the near fuel resource is being shortage day by day due to the settlers use. That's why they have to collect this fuel from the deep sundarbans nowadays. One of my respondents told me that he was teaching the pupils of the village in a school. But now more pupils are coming from the barrack. So the education environment is hampering.

The resident villagers claim that the chair man and member are supporting these people coming here because they will get more votes in the next election. So we see that there is a politics comprises around these displaced people.

But after five years of displacement this people has made their societal boundary little bit smooth. They solve their resource management problem as well as their habitats. So that people from Burigoalini village accept them.

It was five years back when I asked the young juveniles that how do they manage their playing ground? They replied that they don't have any. The villagers do not accept them. They don't like them to play with them. They call them outsiders. But now they make a play ground at their Barrack. And they are playing there.

Figure 28 Resilience

The young people are now happy. And with their playground they also keep themselves decent with other villagers. They don't make any noise or any kind of disturbance to the villagers. The villagers who were against the Barrack also accept them. Villagers are now reducing their complaint against the displaced people. Now if the young boy goes to play with other villagers they even don't mind and accept them. From the (FGD)

Figure 29 FGD on Young Juveniles of the Barrack

5.3 Conflict for natural resource and Adaptation

Natural resource is the most potential source of conflict or competition for any population. It is the most important phenomenon for livelihood. Livelihood comprises with natural resource. Our source of natural resource is scarce or limited in comparing the population. In this situation when a natural calamity occurs and damages the sources people loss their way of earning livelihood. This is what happened with the people of Burigoalini after AILA.

5.3.1 Meaning of natural resource for the Burigoalini villagers

Natural resource has its ideal meaning which may be depends on the understanding of the different people of different area. The Burigoalini village dwellers understand natural resource by land, water, fuel, air, river, pond, tree, and Sundarbans products specially crab snail, salt water fish, shrimp, honey etc.

5.3.2 Drinking water and Household Sanitation Management

Among the sources of drinking water, most of the people used ponds and tube well. But the cyclone AILA changes their drinking water sources by inundating most ponds by salt water. The

sweet water sources ponds become fulfilled by salt water. In this situation most of the Barrack people depend on the two filter that are known as PSF ponds. However, because of being polluted by salt water locally known as Dudhnunta water, the water of the PSFs was not pure for drinking. Besides depending on this PSF, many of them collect water from munsigonj thana PSF and tube well of burigoalini union and other sources. Women and adolescent girl are usually required to fetch drinking water from distance sources from the residences. On the other hand, AILA destructed sanitary and unsanitary latrines that all are not reconstructed yet, so the people mostly use unsanitary latrines. The Muslim aid organization had made some latrines for the entire villagers. But this is was not quite enough for all. So the people of barrack often came out searching for drinking water and it was followed by quarrel with other women of the village. But now i see that they are collecting drinking water from their PSF. They repair this. Sometimes they also buy water from the filter which govt. Establish for the villagers. They collectively repair their latrines so they can use this.

5.4 Land and Adaptation

Land was another potential source of competition I saw at the study area. When the displaced people started coming at this village the residents at first take it normally. They thought that they will back after the AILA situation is over. But when they settled in this village the resident firmly refused it. The resident villagers don't want the displaced people to come and live in this village. From that time they first realize that this people will bring resource shortage to them. Moreover this displaced extra population will create an extra shortage.

When the barrack was started building the villagers of Burigoalini protested and stood against its building. The place where the barrack built was the pastoral land for the villagers. It was government property and abundant land. The villagers ride their domestic animal on that place. The young boys played on that field. It was their common playground. Besides any occasion they can observe on that place. But when the barrack build over there they lost that facility. That's why they strongly refused the idea of this barrack.

Besides the allocation of the land was a burning issue for the villagers. They don't want all the land to be given to the displaced people. So they demand the land for their own residents who are the AILA victim. In this situation the chairman and the member becomes accuser and settled a negotiation with the villagers that 50% of barrack allocation will go for the resident villagers who have lost everything due to AILA. After that negotiation the villagers agreed.

One old man has 1acress of land near the barrack place. For the building of the barrack the land was taken away from him. He was not happy with this but at last agreed. This study finding also confirms Abiodun Alaos study in Africa. That scarcity is big factor of conflicts and conflicts arises two ways, Natural and artificial scarcity creates conflict situation. Artificial scarcity arises when forced migration occurs (Alao 2007:64).

But now in 2016 I see that the resident villagers become used to with this displaced community. Moreover in the evening some villagers come to join gossiping with this barrack people. They now totally forget about the land issue. And as some resident shelter less also living in this barrack they accept this.

5.5 Adaptation and Biomass fuel

Fuel collection was one of the most important sources of conflict between the resident villagers and settlers. I must mention that the village Burigoalini does not have electricity connection five years back. They used solar system to get current. But this solar system is only used by the rich house holders. Not all the villagers use this. The rich families take the help of solar system only to use light and fan and Sometimes for watching TV. But they also use the biomass fuel for cooking. On the other hand the poor and marginal uses fuel for their cooking. The displaced people collect the biomass fuel ingredients from the Sundarbns tree leaves, wood piece floated from Sundarbans, cow dung etc. this is a means of competition. Because the resident villagers also try to collect this fuel for their household work, cooking etc. but when this people come they are now sharing their proportion. The Munda people making their biomass fuel in their own indigenous way. For that they collect the leaves floated from the Sundarbans. But by the time doing that they destroyed the social forestation of government unconsciously. The forestation is on the river. And the rivers water up downs according to tide and ebb. When the water goes downward at the time of ebb they get down into the water to collect the biomass fuel. At that time their feet's crumbled the tree plant planted on the river. In this way the tree plantation is destroyed which the objection is made by the villagers several times.

People of another barrack opposite side of the river (I must mention here that the barrack is situated just beside a river named Chuna) become angry when this displaced people collect the biomass fuel. Because the leaves and wood what comes from the sundarbans was there before coming this settlers. But now the settlers started sharing this biomass fuel for their needs. Every day they are collecting this fuel and every time the residents of other side of the river shouted with them quarrel with them for this biomass fuel. They strongly exclude their entrance and collection of fuel. But now I see that with help of BARCIK a local research organization this barrack people make Social Forestry at the side of the Barrack in the edge of CHUNA River. Now they collect their own leaves and other biomass fuel as they planted those trees. A picture will clear this statement.

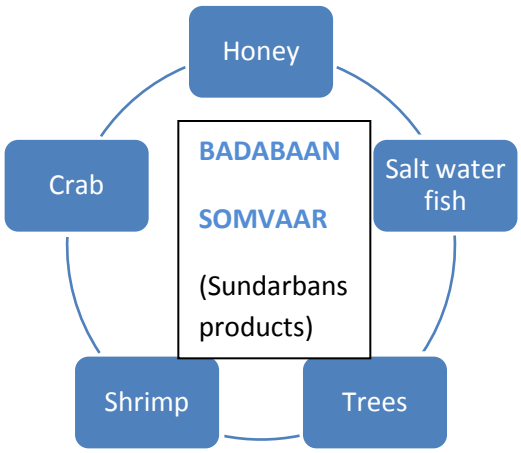
Figure 30 Tree Plantation For Fuel

5.6 Adaptation with Sundarbans products

Sunderland is the main source of the livelihood of the people of this area. Both rich and poor people heavily dependents over sundarbans. A major proportion of earning comes from the sundarbans. Sundarbans provides this large population with their livelihood earning sources. The fisher people can collect salt water fish from sundarbans. The maoali collect honey. The other

people as well as women collect crap, snail, shrimp etc. from sundarbans. The kaora tree provides lots of means of production to them. So from many aspects this people are heavily dependent on sundarbans.

Figure 31 Forest Resource



The people of this are who are living here for more than three generation claims that they are the owner of these ingredients. But when this displaced people came to this area they are losing their priority to this sector. They could not find the availability of these resources now days. There often founds scarcity of these resources which was not prevailed before this natural disaster AILA.

Mostly the poor people are dependent much on sundarbans of this area. On the other side the displaced people who has lost their means of livelihood are compelled to depend on sundarbans. As their previous traditional occupation is absent here in this new place so they diversified in many occupations for their livelihood earning. Therefore they are largely dependent on sundarbans ingredients.

The barrack contains a group of fisher people. Among the resident villagers there are also fisher people. So when this two group of people searching for fish at sundarbans they are reaching in a competing environment. Because most of the time they goes catching fish at the canal near the village. These sources are limited. So when many people are catching fish the amount of fish reducing. Here rise conflict situation. Because the resident villagers thought that if this displaced people would not have come they could get the full advantage of these resources. But now the displaced community finds new place at sundarban, sometimes go deep forest for searching fish, crap, snail, shrimp, honey etc. never quarrel with the resident villagers. They also share the fishes

comes through tidal waves. Mainly women collect fish, crab, and snail. So now we can see that they adapted with this situation.

Figure 32 Forest resource collection

5.7 Social Political and Cultural Adaptation

As I mentioned previously that the resident villagers did not want the barrack to be built here. They thought that there must be a shortage of resource. Many people with many cultures could have make anomalies. Therefore they refused this proposal at first. But after about five years I see that they have completely adapted with the environment of the village. They are now using their resource properly. When I came field five years ago there was no road. It seems that they are living in a desert. Now I see that how this community collectively developing themselves. They do not eat the fish from their ponds. They sold it and invest the money to make a road to their house.

Figure 33 Social/Cultural change

The Munda people are very gentle and soft hearted in nature. When they first came at the barrack they don't had any place or temple for their worship. But now they made a little place for the purpose of worship. This picture proves their community based adaptation at the same time resilience.

Figure 34 Adaptation picture

Before five years the picture was like below.

They made some idol of worship in the soil and propose worship to that. Five years ago they don't had any temple or resource for their worship. Not only that the cultural gap also mitigate. They are now much more similar to the culture of Burigoalini. They join the fair, workshop, school and many other events like other villagers of the village do.

Chapter Six

OVERVIEW ON FINDINGS AND CONCLUSION

Climate change impacts a wide range on our life. Though climate change is not a new concept but still its impacts are massive for all. Especially the SIDR of 2008 and the AILA of 2009 has kept a devastating impact for the southwest Bangladesh. AILA has snatched away so many things of this region. At the same time created lot of social changes especially the livelihood strategy of the people which has been modified greatly.

But the people fought back to face the natural adversary that wrought havoc to their lives which resulted to the following:

- Due to climate change displacement has occurred. This forced displacement has been created after the devastating AILA of 2009. People who become shelter less has taken shelter into the safe place. For this displacement some social consequences has been seen at the society.

- Society has taken some anomalies situation. People access to resource, power, and structure has become limited. Their ideologies have been changed, they are lack of training. Macro forces have been changed. Physical environment such as local economy, social relation and public action has become unsafe. All these social consequences are the outcomes of this forced displacement.

- Moreover these extreme natural calamities have made people vulnerable. Though disaster brings same amount of affliction for all but the poor and marginal people who are land less suffers the most. Among these vulnerable people the women are more vulnerable. Majority of the vulnerable women's were widow or divorced. So they suffer most.

- Besides this the livelihood strategy is hard and sometimes afflicting for them. As livelihood earning resources is limited so the life leading with this limited resource is tough for all. The sundarbans has dominated the life style of the people of this area. The ingredients of sundabans are the source of earning livelihood of the people of this area. By consumption all these ingredients for livestock the area of the forest is growing shrink day by day.

- The limited natural resource has become a potential source of conflict between these two groups of people the residents and the settlers after immediate displacement. After five years this displaced community has managed to adapt with this new place, new people and new resource. Therefore we can say that they have made resilience to their live.

- The G.O and N.G.Os have their own strategy for these AILA affected people. But the displaced people what really need are work. Work for providing food, medicine, education and other things as well. What most N.G.O s is not capable to provide.

Not intimidated by the damages, the people stood their grounds to survive by undertaking adaptations to environment with the help of the NGOs who provided them with livelihood support for their subsistence:

a. Migration- The displaced people have been diversified at their earning of livelihood. The people who are doing their traditional work at their original place are now doing another work at the newer place.

b. Land reclamation- The limited space in the area of destination of the settlers for habitation encouraged them to reclaim the land. The settlers placed rocks and stones in the barrack and trying to registered the allocated dwelling place to their own name.

c. Development of unproductive land for livelihood- The displaced people settled in the Barrack which is not fit for vegetation or agriculture. But the people struggled to turn this barren land into productive one where they grew crops for livelihood. They took advice from agriculturist and help from N.G.O. Their livelihood strategy has been changed. Their previous condition was better than after displacement at Barrack five years back. But now after five years they bring so many positive changes to their lives.

d. Maximized their Reliance on Forest/Marine Resources- The settlers relied on marine resources, mangrove resources in competition with the residents, for livelihood and food source.

e. Strengthened family ties and roles- The calamities brought the family members of the settlers closer as a potent force for survival. It had strengthened their family ties, developed gender role sharing between the male and female members, and family preservation.

The calamities which struck the people had resulted to social disorder and breakdown of social bonds between the family and community which affected their values. The French sociologist, Emile Durkheim, called this state of disorder as “anomie”. But the people did not surrender. The societal response of the settlers leads them to the road of slow recovery to an orderly living although fragile due to the threat from the residents.

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Census form

Respondent name		**Age**	**Sex**	**Occupation**	**Marital Status**	**Religion**			**Education**	**Source of drinking water**	**latrine**
Family Member						Hindu	Muslim	Indigenous			
1											
2											
3											

Check list

1. Occupation

1.1.1. Honey collector
1.1.2. Fisher man
1.1.3. Day laborer
1.1.4. Shrimp cultivator

2. Drinking water

2.1. Barrack pond
2.2. PSF
2.3. River

3. Earning Member

3.1. 1
3.2. 2
3.3. 3

4. Diseases

4.1. Diarrhea
4.2. Fever
4.3. Skin diseases

5. Recreation source

5.1. Outdoor games
5.2. Ludu
5.3. Cricket

6. Disaster

6.1. Strom
6.2. Flood
6.3. Draught

7. Adaptation in

7.1. Social sphere
7.2. Cultural sphere
7.3. Political sphere

8. Involvement with NGO

8.1. 100%
8.2. 80%
8.3. 50%

9. Influence

9.1. Political leaders
9.2. Rich land owners
9.3. NGO