

**‘NGO’s role in Cyclone Disaster management of  
Bangladesh: focusing cyclone Sidr in Patuakhali’**

**SUBMITTED BY:**

Examination Roll No: 4556  
Registration No: HA-4364  
Session: 2011-12 (2<sup>nd</sup> Semester)  
Masters of Social Science  
Department of Sociology  
University of Dhaka

**11 January, 2014**

**University of Dhaka**

**‘NGO’s role in Cyclone Disaster management of  
Bangladesh: focusing cyclone Sidr in Patuakhali’**

**SUBMITTED BY:**

Examination Roll No: 4556  
Registration No: HA-4364  
Session: 2011-12 (2<sup>nd</sup> Semester)  
Masters of Social Science  
Department of Sociology  
University of Dhaka

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of the  
Masters of Social Sciences

## Acknowledgement

Completing this thesis was one of the hardest tasks for me. At the same time I also have enjoyed doing this different type of thesis. While conducting this I have faced so many obstacles but the success of overcoming those problems was the gift for my student life. It gives the first chance to prove my potential in doing research. I have got a chance to improve my potential and lesson for mistakes. This thesis would not have been possible without the guidance and the help of several individuals who in one way or another contributed and extended their valuable assistance in the preparation and completion of this study

First and foremost, my utmost gratitude of my supervisor, whose sincerity and encouragement I will never forget. She has been my inspiration as I handle all the obstacles in the completion this research work. During the middle part of my thesis I have made several mistakes but she guided me the right pathway. It was really hard for a supervisor to guide a student who is not personally very much active. She has shown patience in guiding me to the main objective of this study. Without her help I could not have finish my thesis paper successfully.

I am also grateful to some governmental and non-governmental office or organization for providing me required information.

My deepest gratitude goes to this research's population victims of Sidr in Patuakhali and some NGO staff worked in different NGO in Patuakhali who helps me to giving information by killing their important time.

## **Abstract**

Bangladesh is one of the most natural disaster prone countries. Over the last 40 years many cyclones have affected the country accompanied with loss of lives and property. Recently it's visiting frequency increase so rapidly, which attract my concern to study on this sector. The low-lying coastal areas are particularly vulnerable, thus placing these population, infrastructure, agriculture, livestock and economic development in a high-risk situation. Cyclone disaster mitigation is a major concern in Bangladesh. The role of NGOs, especially with relief and rehabilitation programs, during and after disasters is to complement governmental efforts in Bangladesh. In principle, NGOs are responsible to assist the government in implementing national programs successfully. This study aims to assess the efforts of NGOs in cyclonic disaster management in Bangladesh. Coastal belts as cyclone disaster prone areas were included mostly for analysis. Study focused on response, recovery, rehabilitation, and affected community people. Cyclone SIDR (and the associated response) has been selected as the basis for this research and CARE Bangladesh and BRAC were included mainly for the study. Data were collected based on both primary and secondary sources. Both qualitative and quantitative research approach were applied for the study. Role of CARE Bangladesh and BRAC to SIDR disaster management especially with emergency response, recovery, and rehabilitation activities was significant. Presently, NGOs are giving emphasis on work with preventive measures as a strategy of disaster risk reduction.

## Table of Content

Acknowledgement

Abstract

Abbreviations

### Chapter-1: Introduction

Disaster and development	2
Background of the Study	3
1. Characteristics of Cyclone in the Bay of Bengal	4
2. Some Major Cyclones	6
1970 Cyclone	7
1983 Cyclone	7
1988 Cyclone	8
1991 Cyclone	8
November 2007 Cyclone SIDR	8
May 2009 Cyclone Aila	18
3. Cyclone and Coastal Environment	19
4. Cyclone Warning System in Bangladesh	19
5. Standing Orders on Disasters (SOD)	<b>20</b>
6. Institutional Preparation	20
7. Mitigation	20
Rationality of the Study	21
a. Cyclone Disaster Risk in Bangladesh	21
b. Disaster Vulnerability of Bangladesh	22
Definition and Description of some Basic Concepts	24
a. Cyclone	24
b. Emergency	27
c. Vulnerability	27
d. Adaptation	28
e. Socio-economic vulnerability	28

f. NGOs	29
g. NGOs in Bangladesh	31
h. The role of NGOs in coastal area of Bangladesh	31
Operational Definition	32
<b>Chapter-2: Literature Review</b>	<b>33</b>
<b>Chapter-3: Research Methodology</b>	<b>48</b>
Selection of the Study Area	48
Study Population	54
Study Instruments	54
Mixed Method Research	54
Qualitative Research	56
Quantitative research	59
Sampling	61
Research Question	62
Objectives of the Study	62
Data Collection techniques and data sources	62
Data Processing and Analysis	62
Preparation before Field Study	63
Negotiation and Gaining Access	63
Field Notes	63
Limitations of the study	64
<b>Chapter-4: Theoretical framework</b>	<b>65</b>
Vulnerability	67
Sustainable Development	70
Chaos Theory	71
<b>Chapter-5: Findings</b>	<b>74</b>
The role of NGOs related with cyclone disaster management	74
1. NGOs in cyclone disaster management focusing cyclone 1970 prior to Bangladesh	75
2. NGOs in cyclone disaster management focusing cyclone 1991 in Bangladesh	77

About Sidr Victims	79
Preparation of NGOs for upcoming cyclone sidr	80
Sidr Effects of patuakhali	83
Requirements and response	84
a. National response	85
b. International response	85
c. Relief programme in Patuakhali	87
Role of NGOs focusing Care Bangladesh and BRAC in Cyclone focusing Sidr:	
BRAC	88
CARE-B	99
Gender initiatives in SIDR response	107
a. CAREB's initiative to promote Gender Equity in SIDR Response	108
b. Selection of pregnant women and lactating mothers as beneficiaries of BRAC	110
c. View of general coastal people about gender role of NGO in cyclone disaster management	110
Have experienced or noticed any difficulties in the time of receiving help from NGOs	111
Problem faced by NGOs in relief program	112
<b>Chapter-6: Conclusion</b>	<b>115</b>
<b>Annex-1: Case Studied</b>	<b>i</b>
<b>Annex-2: Check List</b>	<b>vi</b>
<b>References</b>	<b>viii</b>

## List of Table

Table 1: Major cyclones in Bangladesh	6
Table 2: Overall Summary of Damage and Loss	11
Table 3 Properties Damaged by the Devastating Cyclone ‘Sidr’ in Patuakhali	18
Table 4: UNDP has identified Bangladesh to be the most vulnerable country in the world to tropical cyclones & the six most vulnerable country to cyclone	22
Table 5: Education Level	79
Table 6: Distribution of households based on numbers of people who listen to cyclone warnings	80
Table 7: Damages and Losses in Sidr	84
Table 8: Help Received From Any NGO	88
Table 9: NGOs role or programs are effective in reducing the loss for cyclone Sidr	107
Table 10	111
Table 11: problem faced by victims on disaster management program of NGOs’	111
Table 12	113



## ABBREVIATIONS

ADAB	Association of Development Agencies in Bangladesh
ADB	Asian Development Bank
BBS	Bangladesh Bureau of Statistics
BCAS	Bangladesh Centre for Advanced Studies
BEMP	Bangladesh Environment Management Project
BMD	Bangladesh Meteorological Department
BRAC	Building Resource across Community
BUET	Bangladesh University of Engineering and Technology
CARE	CARE
COB	Community Based Organization
CDMP	Comprehensive Disaster Management Program
CFW	Cash For Work
CEGIS	Center for Environmental and Geographic Information Studies
CORR	Chittagong Organization for Relief and Rehabilitation
CPP	Cyclone Preparedness Program
CRS	Catholic Relief Services
DMB	Department of Environment
DAE	Department of Agriculture Extension
DRR	Disaster Risk Reduction
ECHO	European Commission for Humanitarian Aid
EPP	Emergency Preparedness Plan
ERT	Emergency Response Team
HAF	Humanitarian Accountability Framework
GoB	Government of Bangladesh
IPCC	Intergovernmental Panel on Climate Change
IDB	Islamic Development Bank
IRW	Islamic Relief Worldwide
JTWC	Joint Typhoon Warning Center
MDG	Millennium Development Goal
MFDM	Ministry of Food and Disaster Management
NGO	Non-Governmental Organization
NDMAC	National Disaster Management Advisory Council
PNGO	Partner Non-governmental Organization
SOD	Standing Orders on Disasters

## ***Chapter 1- Introduction***

Whenever disasters attack, they do not discriminate or differentiate - they cause havoc and destruction. They strike countries rich and poor affect both men and women, old and young and cause destruction leaving behind a trail of devastation and irreparable losses. When these hazards attack, the communities are the first to react, irrespective of their profession, status, cast or culture. NGO's are Non-profit organizations or associations of private citizens with a common interest to assist the disaster affected people.

The country Bangladesh has been subjected to frequent natural disasters in many forms, particularly cyclonic storms and tidal surges, while floods are an annual event. From 1797 to 2007, 69 major cyclone storms and tidal surges have been reported (Tod, 2008). These indicate that Bangladesh is prone to frequent destructive tropical cyclones associated with tidal surge, particularly in pre-monsoon months of April-May and post-monsoon months of October-November. The coastal areas are particularly vulnerable and coastal population; infrastructure, agriculture, livestock and economic development are in a high-risk situation. Cyclone disaster management is a major concern in Bangladesh. There has been a paradigm shift in our approach to disaster management during the last one decade. The shift is from a relief centric approach to a multi dimensional endeavor involving diverse scientific, engineering financial and social processes to adopt a multi disciplinary and multi- sectoral approach with stress on building up capabilities of community to enable them to work towards their own risk reduction, in one phrase from relief and response to preparedness and adaptation. The role of NGOs in this context therefore assumes added significance. The NGOs were focused in playing key roles in the immediate aftermath of disasters by extending assistance in emergency response, rescue and first aid, sanitation and hygiene, damage assessment and assistance to external agencies bringing relief materials (Begurn, 2004). During the post disaster phase, the NGOs played important roles by providing technical and material support for safe construction, revival of educational institutions and restoration of means of livelihood and assist the government in monitoring the pace of implementation for various reconstruction and recovery programs.

**Disaster and development:**

Bangladesh is frequently exposed to different weather-related hazards such as storms, cyclone, floods and droughts. These hazards are often translated into disasters due to the low level of human development and a vulnerable population. Disasters have had adverse long-term effects on the socio-economic life of the poor. It hinders the country's development process directly by causing the loss of lives and livelihoods, and indirectly by causing the diversion of funds from development to emergency relief and reconstruction (White et al. 2004:19 cited in Kamal, 2012). Thus disasters affect poverty reduction and hold back the progress towards the Millennium Development Goals (MDGs). In this context, disasters are deeply embedded in contemporary and historical development decisions. Disaster risk reduction is thus a critical element of development and poverty reduction. As White et al. (2004:17) suggest:

“...poverty reduction can help reduce disaster risk, but this requires an active focus on disaster issues to be built into poverty reduction programs. While poverty reduction measures help to support livelihoods, disaster risk reduction adds value to this work by protecting livelihoods from and boosting their capacity to cope with specific hazard impacts, thus helping to make them sustainable”.

As noted above, Bangladesh is widely recognized as one of the most disaster prone countries in the world because of its state of development and densely settled population. Disaster risk reduction therefore needs to be considered at the core of any development planning. The aim of current disaster management approach is to achieve a paradigm shift from conventional relief and post-disaster recovery efforts to a more comprehensive risk reduction culture which attempts to include disaster management into development planning (CDMP, 2010). In so doing, it emphasizes enhancing the capacity of affected people to create resilience to disasters. However, without addressing underlying vulnerabilities to natural hazards, disaster risk reduction strategies are considered unlikely to succeed. Instead, it may reproduce vulnerability by maintaining existing social structures. As Hewitt (1997) contends, “Robust and enduring reductions of vulnerability are unlikely without changes in the social order or the situation of more

vulnerable groups in it”. From this perspective, disaster response is highly political since it is related to the wider socio-economic context (Paulson and Gezon 2005:23 cited in Masud, 2012).

Poverty is not same as the concept of vulnerability, but they are highly correlated. Poverty is a static concept measured in terms of a minimum level of income and consumption, whereas vulnerability is a dynamic concept characterized by changes in socio-economic status and refers to an inability to cope with shocks and stresses (Vatsa 2004). A vulnerable household can maintain a minimum standard of living at a certain period, but it falls below that level following any shock. Vulnerability is more than just poverty, and the poor tend to be the most vulnerable (Twigg 2001). Poverty is an important aspect of vulnerability because of its direct association with access to resources (Adger 1999:252 cited in Kalam, 2012). Poor people are more exposed to hazards, suffer greater relative loss of livelihood assets and have a much lower capacity to recover. As Adger and Kelly (1999:260) suggest:

“Poverty affects vulnerability through individuals’ expectations of the impacts of hazards and their ability to invest to alleviate risks. It also affects the coping and recovery from extreme events through directly constraining opportunities for coping and reducing the resilience to impacts”.

Aside from Government initiatives, nongovernmental and humanitarian organizations and other informal support mechanisms have made significant contributions during and post-disaster relief and recovery efforts. In so doing, these institutions try to enhance the adaptive capacity of the affected people. In the analysis section, the role of these institutions will be explored.

### **Background: Cyclone disaster and its management in Bangladesh**

Bangladesh often suffers from many climate induced disasters such as flood, drought, and cyclone. Among those natural hazards, cyclone is a tropical storm or atmospheric turbulence involving circular motion of winds, occurs in Bangladesh almost every year. About one tenth of the global tropical cyclone occurs in the Bay of Bengal (GOB, UNDP, World Bank, 1993). About one sixth of tropical cyclones developed in the Bay

of Bengal had landfall on the Bangladesh coast. The Bay cyclones also move towards the eastern coast of India, towards Myanmar and occasionally into Sri Lanka. But they cause the maximum damage when they come into Bangladesh, west Bengal and Orissa of India. This is because of the low flat terrain, high density of population and poorly built houses.

### **1. Characteristics of Cyclone in the Bay of Bengal:**

It is essential to understand the nature of disaster for its management. Cyclone is a tropical storm or atmospheric turbulence involving circular motion of winds, occurs in Bangladesh as a natural hazard. The tropics can be regarded as the region lying between 30°N latitude and 30°S latitude. All the tropical seas of the earth with the exception of the south Atlantic and southeast Pacific give birth to deadly atmospheric phenomena known as tropical cyclones. On an average, 80 tropical cyclones are formed every year all over the globe.

Bangladesh is part of the humid tropics, with the Himalayas on the north and the funnel-shaped coast touching the Bay of Bengal on the south. This peculiar geography of Bangladesh brings not only the life-giving monsoons but also catastrophic cyclones, Northwesters, tornadoes and floods. The Bay of Bengal is an ideal breeding ground for tropical cyclones. Cyclones are usually formed in the deep seas and hence their study has been very difficult. It is only with the advent of the Space age that weather satellites have provided valuable information about them. Direct studies of cyclones with aircraft reconnaissance are also being carried out by advanced countries. However, only a beginning has been made in Bangladesh towards the understanding of cyclones.

In cyclone forecasting, it is often assumed that a cyclone follows the direction of the upper atmospheric current. SPARRSO (Space Research and Remote Sensing Organization) in collaboration with Dhaka University has undertaken an investigation of the problem and it has been found that there seems to be a steering current for every cyclone, but the level differs from cyclone to cyclone and there does not seem to be any relationship with the intensity of the cyclone. Moreover, the upper atmospheric current is as variable as the tract of the cyclone. SPARRSO has installed the model TYAN for

predicting the track of a cyclone based on the climatology of the Bay of Bengal cyclones for the last one hundred years. The model has shown promising results in forecasting a cyclone's movement twenty-four hours ahead of landfall.

In addition to the waves associated with winds, abrupt surges of water known as storm surges are associated with cyclones. They strike the coast nearly at the same time that the centre of the storm crosses the coast. In Bangladesh the maximum value of this storm surge has been reported to be as high as 13m. Most of the damage during a cyclone is done by the storm surges, which sometimes wash over entire offshore islands and large areas on the coast.

The most destructive element of a cyclone is its accompanying surge. There is little that can withstand a great mass of onrushing water often as high as 6m. In Bangladesh, cyclones occur in April-May and also in September-December. On an average, five severe cyclonic storms hit Bangladesh every year and the accompanying surge can reach as far as 200 km inland. Surge-heights increase with the increase of wind speed. Astronomical tides in combination with cyclonic surges lead to higher water levels and hence severe flooding.

Storm surges accompanying cyclones hitting Bangladesh have been noted to be 3m to 9m high. The 1970 cyclone (12-13 November) with a cyclonic surge of 6m to 10m and a wind speed of 222 km/h occurred during high tide causing an appalling natural disaster that claimed 0.5 million human lives. The cyclone of 29 April 1991 hit Chittagong, Cox's Bazar, Barisal, Noakhali, Patuakhali, Barguna and Khulna along with a tidal bore (6.1m to 7.6m), killing 140,000 people.

Cyclones in the Bay of Bengal Because of the funnel shaped coast of the Bay of Bengal, Bangladesh very often becomes the landing ground of cyclones formed in the Bay of Bengal. The Bay cyclones also move towards the eastern coast of India, towards Myanmar and occasionally into Sri Lanka. But they cause the maximum damage when they come into Bangladesh, west Bengal and Orissa of India. This is because of the low flat terrain, high density of population and poorly built houses. Most of the damage occurs in the coastal regions of Khulna, Patuakhali, Barisal, Noakhali and Chittagong

and the offshore islands of Bhola, Hatiya, Sandwip, Manpura, Kutubdia, Maheshkhali, Nijhum Dwip, Urir Char and other newly formed islands.

## 2. Some Major Cyclones

From 1981 to 1985, 174 severe cyclones (with wind speeds of more than 54 km/hr) formed in the Bay of Bengal. The month-wise occurrence is as follows: 1 in January, 1 in February, 1 in March, 9 in April, 32 in May, 6 in June, 8 in July, 4 in August, 14 in September, 31 in October, 47 in November and 20 in December. It is apparent from the above figures that severe cyclones occur mostly during pre-monsoon (April-May) and post-monsoon (September-December) periods and they are the ones which cause the most destruction. A detailed list of historical records of tropical cyclones made landfall at the Bangladesh Coast is given in the appendix of this report (SMRC, 1991).

Table 1: Major cyclones in Bangladesh

Serial No	year of Occurrence	Velocity (Km/h)	Number of Death
1	1822	-	40000
2	1872	-	270
3	1876	-	400000
4	1897	-	175000
5	1911	-	120000
6	1917	-	70000
7	1919	-	40000
8	1926	-	606
9	1941	-	7000
10	1958	-	12000
11	1960	-	11464
12	1960	210	8149
13	1961	145	11468
14	1961	145	10466
15	1962	200	50000
16	1963	201	11520
17	1965	161	19970
18	1965_	-	12000
19	1965	200	870
20	1966	-	850
21	1967	130	128
22	1969	-	175
23	1970	222	500000

24	1971	110	11000
25	1973	122	183
26	1983	122	1043
27	1983	136	300
28	1985	154	11069
29	1988	160	5708
30	1990	-	150
31	1991	235	145000
32	1997	225	126
33	2007	200	3406

Note: Means the cyclone hit in the Patuakhali District.

Source: Sharbari Ahamed, Mohammad Mizanur Rahman, Mostofa Amir Faisal, 2012

Some major cyclone and cyclone management element are described in follow-

#### **a. 1970 Cyclone**

The 1970 cyclone was a devastating tropical cyclone that struck East Pakistan (now Bangladesh) and India's West Bengal on November 12, 1970. It was the deadliest tropical cyclone ever recorded, and one of the deadliest natural disasters in modern times. Up to 500,000 people lost their lives in the storm, primarily as a result of the storm surge that flooded much of the low-lying islands of the Ganges Delta (JTWC 1970). Total loss was estimated at US\$490 million for all sectors. This cyclone was the sixth cyclonic storm of the 1970 North Indian Ocean cyclone season, and also the season's strongest, reaching a strength equivalent to a Category 3 hurricane. (Quaiyum Sarkar, 2009)

#### **b. 1983 Cyclone:**

October 14-15 Offshore islands and *chars* of Chittagong and Noakhali; severe cyclonic storm with a wind speed of 122 km/hr; 43 persons killed, 6 fishing boats and a trawler lost, more than 150 fishermen and 100 fishing boats missing and 20% aman crops destroyed.

November 5-9 Chittagong, Cox's Bazar coast near Kutubdia and the low lying areas of St Martin's Island, Teknaf, Ukhia, Moipong, Sonadia, Barisal, Patuakhali and Noakhali;



severe cyclonic storm (hurricane) with a wind speed of 136 km/hr and a storm surge of 1.52m height; 300 fishermen with 50 boats missing and 2,000 houses destroyed. (BUET, 2008)

**c. 1988 Cyclone**

November 24 Jessore, Kushtia, Faridpur, offshore islands and *chars* of Barisal and Khulna; severe cyclonic storm with core wind speed 162 km/hr, storm surge of 4.5m at Mongla point; killed 5,708 persons and lot of wild animals - deer 15,000, Royal Bengal Tiger 9, cattle 65,000 and crops damaged worth about Tk 9.41 billion. (BUET, 2008)

**d. 1991 Cyclone**

The cyclone which struck Chittagong, Bangladesh on the night of 29-30, April, 1991 was particularly severe causing widespread damage, killing 138,882 people (Garry 1999 cited in Quaiyum Sarkar, 2009). There was massive damage to life support systems as well as private properties. Total loss was estimated at US\$2.07 billion for all sectors.

**e. November 2007 Cyclone SIDR**

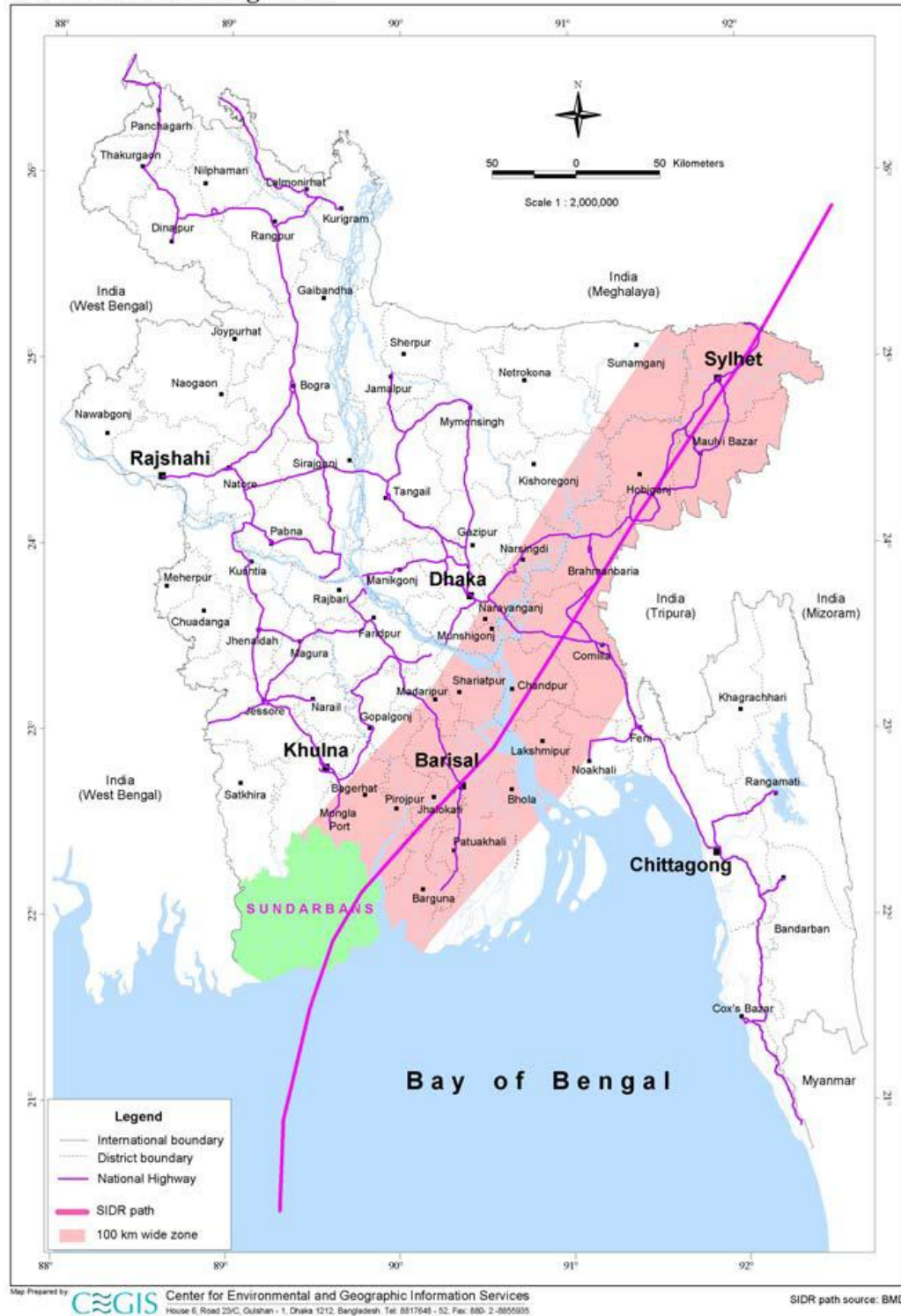
Cyclone SIDR (JTWC designation: *06B*, also known as Very Severe Cyclonic Storm SIDR) is the fourth named storm of the 2007 North Indian Ocean cyclone season. The storm formed in the central Bay of Bengal, and quickly strengthened to reach peak sustained winds of 215 km/h (135 mp/h), which would make it a Category-4 equivalent to tropical cyclone on the Saffir-Simpson Scale. The storm eventually made landfall near Bangladesh on November 15, 2007. As of January 20, 2008, about 3,447 deaths have been blamed on the storm.

**Synopsis of Cyclone SIDR**

• <b>Formed</b>	November 11, 2007
• <b>Enter to land</b>	November 15, 2007
• <b>Dissipated</b>	November 16, 2007
• <b>Highest winds</b>	215 km/h (130 mph)
• <b>Lowest pressure</b>	944 hPa (mbar)
• <b>Fatalities</b>	≥3,447
• <b>Damage</b>	\$450 million (2007 USD)
• <b>Areas affected</b>	Bangladesh and West Bengal, India

(BUET, 2008)

**SIDR Path over Bangladesh**



Source: Center for Environmental and Geographic Information Services, 2007

On November 9, an area of disturbed weather developed southeast of the Andaman Islands, with a weak low-level circulation near the Nicobar Islands. Initially moderate upper-level wind shear inhibited organization, while strong influence aloft aided in developing convection. Vertical shear decreased greatly as the circulation became better defined, and a Tropical Cyclone Formation Alert was issued on November 11 while located a short distance south of the Andaman Islands. Around the same time, the India Meteorological Department (IMD) designated the system as Depression BOB 09. The Joint Typhoon Warning Center (JTWC) upgraded it to Tropical Cyclone 06B after Dvorak estimates indicated winds of 65 km/h (40 mph). Later that day, it intensified into a deep depression as it moved slowly north-westward.

The IMD upgraded the system to Cyclonic Storm SIDR early on November 12. The system then began to intensify quickly as it moved slowly northwestward, and the IMD upgraded it to a severe cyclonic storm later that day and a very severe cyclonic storm early the next day. On the morning of November 15, the cyclone intensified to reach peak winds of 215 km/h (135 mph) according to the IMD, and a peak of 250 km/h (155 mph) according to the JTWC. SIDR officially made landfall around 1700 UTC later that day, with sustained winds of 215 km/h (135 mph). It weakened quickly after landfall and the final advisories were issued early on November 16. The name SIDR was contributed by Oman; it is an Arabic name of a tree belonging to the genus *Ziziphus*, specifically the *Ziziphus spina-christi*. There is another saying that it is derived from the Sinhalese Language where "SIDR" means 'hole' or 'eye'. ([http://en.wikipedia.org/wiki/Cyclone\\_Sidr](http://en.wikipedia.org/wiki/Cyclone_Sidr))

### **Brief description of loss and management programme of cyclone Sidr:**

The total amount of damage and loss caused by Cyclone Sidr in Bangladesh has been estimated at BDT 115,600 million (US\$ 1,675 million). Damages, which are an expression of the destruction of physical assets, were estimated at BDT 79.9 billion (69 percent of total effects), while losses were estimated at BDT 35.7 billion (31 percent of the total).

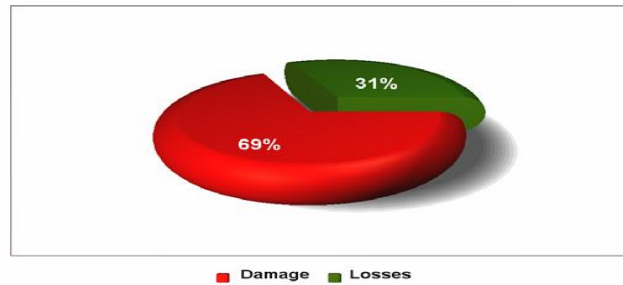
Table 2: Overall Summary of Damage and Loss

<b>Disaster Effects (BDT Million) Ownership</b>						
Sector	Subsector	Damage	Losses	Total	Public	Private
Infrastructure	Housing , Transport ,Electricity ,Water and Sanitation ,Urban and Municipal, Water Resource Control	<b>71,064</b>	<b>2,130</b>	<b>73,194</b>	<b>15,758</b>	<b>57,436</b>
Social Sectors	Health and Nutrition, Education	4,482	1,453	5,934	5,485	449
Productive Sectors	Agriculture ,Industry , Commerce, Tourism	1,734	32,083	33,817	19	33,798
Cross-Cuttin g Issues	Environment	420	0	420	420	0
Total		79,904	35,665	115,56 9	21,682	93,888

Source: GoB, 2008

Cyclone Sidr were disproportionately located in certain sectors of the economy (e.g. housing), and among certain districts and *upazilas* where the damage and losses were concentrated. Thus while the overall damages and losses from the disaster were not pronounced, the effects were felt more severely in relatively poor areas of the country. Most of the effects were also damages, or lost physical assets, rather than economic losses further exacerbating problems for the poor in the worst affected districts.

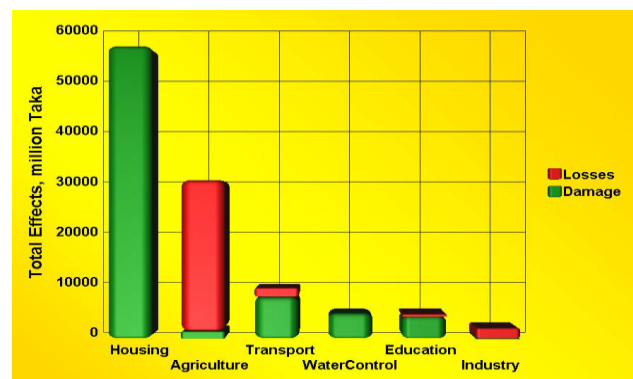
## Distribution of Disaster Effects



Source: GoB, 2008

The effects of the disaster were also concentrated unevenly in the different sectors of the economy. Damage and losses in the housing sector amount to BDT 57.9 billion or 50 percent of the total; those in the productive sectors of agriculture, industry, and commerce were 33.8 billion (29 percent); infrastructure sector effects (excluding housing) represent a further 16 percent, and the social sectors amount to 5 percent. The most affected individual sectors, in order of decreasing magnitude of total effects, were housing (BDT 57.9 billion), agriculture (BDT 30.2 billion), transport (BDT 9.7 billion), water resource management and control (BDT 4.9 billion), and education (BDT 4.7 billion). When only losses are considered, the most affected were agriculture (BDT 28.7 billion), industry (BDT 2.0 billion), transport (BDT 1.7 billion), and commerce (BDT 1.3 billion).

## Damage and Losses Caused by Cyclone Sidr in Most Affected Sectors



Source: GoB, 2008

The effects of the disaster were also highly concentrated geographically in the Districts of Bagherat, Barguna, Patuakhali, Pirojpur, and Barisal where, according to the 2005

Household Survey, poverty levels range between 35 to more than 50 percent of the population. Therefore, the brunt of the disaster will be borne by some of the poorest population groups of the country, and will significantly further degrade their living conditions. The total estimated amount of the disaster effects- both damage and losses- represents 2.8 percent of the country's Gross Domestic Product for the previous fiscal year. This reflects relatively moderate levels of losses to the overall economy. However, this is the second such disaster to hit Bangladesh in the same year, leading to an estimated BDT 189.4 billion in disaster effects, or 4.7 percent of GDP. In addition, the effects just from Cyclone Sidr alone must be further examined on the district level, given the disproportionate effects on the coastal and poor districts.

Now we try to estimate the economic and social impacts of Sidr-related damage and losses. These are measured at the macroeconomic level—including the performance of the country's economy, the balance of payments, and the fiscal sector—and also at the personal or household level, where declines in income and livelihoods are estimated. These disaster impacts are contextualized against the pre-cyclone state of the economy and level of social wellbeing. To estimate economic impact, the baseline data were comprised of the expected performance of the Bangladesh economy in fiscal year 2007–08. The analysis shows how the forecast will be affected by the Sidr-caused losses. For the case of social impact, numerous studies describing the situation prior to the occurrence of the disaster were used to develop a baseline for comparison to post-disaster conditions. The analysis shows how living conditions, including livelihoods, employment and income, will deteriorate due to cyclone losses.

### **Impact on Economic Growth**

Based on this report's estimates, the aggregate estimated loss in value added in the current fiscal year (FY08) from the cyclone amounts to BDT 25.76 billion (US\$ 373.4 million) at current market prices. The loss in value added is estimated to be around 0.5 percent of the national GDP. The impact of the cyclone is by far the most severe in the agricultural sector, at more than BDT 23 billion (US\$ 333 million), which accounts for 89 percent of the total loss in value added. Much smaller losses in value added are estimated for the fishing, manufacturing, commerce, tourism, and energy (electricity)

sectors: around BDT 1 billion (US\$ 14.5 million) for manufacturing (all in the small scale sector), BDT 1.2 billion (US\$ 173.9 million) for commerce and in the range of BDT 250-300 million (US\$ 3.6 – 4.3 million) for the fishing and energy (electricity) sectors. With the output losses in agriculture, the share of the agriculture and fishing sector in GDP is expected to fall.

This section has so far focused exclusively on the cyclone's negative impact on GDP and growth in FY08, not taking into account economic losses that may persist into the future or the possibility of higher economic activity in certain sectors due to reconstruction activities. The assumption that all economic losses will be incurred in FY08 and none in subsequent years seems reasonable, given that nearly 90 percent of losses in value added are in agriculture, and consultations with the sectoral ministry have suggested that agricultural production should fully recover in FY09. The impact of increased activity on GDP during the reconstruction stage is unclear at this point, and therefore not considered. For one, it is too early to estimate the rates of reconstruction, which depend on the availability of financing for reconstruction and new construction and on the installed capacity of the construction sector. In any event, the growth of the construction sector is likely to take place in the future (FY09 and beyond), rather than in the current fiscal year, and is therefore unlikely to have much impact on FY08 GDP. It was observed during the field visits that several new sawmills appeared after the cyclone, generating employment and lumber, which may reflect a positive impact on lumber-related industries as fallen trees in affected areas are being utilized. However, it is impossible to estimate any positive impact on FY08 GDP from the information currently available.

### **Impact on livelihood and income**

#### **Households Affected**

About 2.3 million households were affected to some degree, of which about one million were seriously affected in their livelihood. This includes two million affected on their farms, though only 0.58 million of them depended mainly on their farm incomes. Many of the households have complex livelihoods, combining several overlapping activities, and thus some were simultaneously affected by losses in crops, livestock, fisheries,

commerce, industry, or wage employment. The most vulnerable groups include landless laborers, female-headed households (the latter making up about 10 percent of households, many of them with several young children), and marginal farmers with very little land and no other sustainable source of income. Households are using various coping mechanisms in reaction to cyclone damage. These households resort to coping strategies that include:

- Borrowing funds
- Relying on relief distributions and changing the normal diet
- Reducing the frequency and quality of meals
- Searching for “wild foods” from the forest, instead of normal market purchase
- Using savings to meet basic needs
- Begging

About two-thirds of households own agricultural land and slightly more than half of the employed population has an agricultural sector occupation, but only one-third of households have their own agricultural sector production as their main source of income. A quarter of all households get most of their income from wage labor (of which a majority is in the agricultural sector, including fisheries and forestry), 30 percent live mainly off small non-farm businesses and nine percent depend chiefly on rent, remittances, and other sources of income. Some 10-12 percent of households are headed by divorced, widowed, or separated women. Most do not receive any support from their husbands, ex-husbands or other relatives, and have to fend for themselves. Most (except older widows) must raise and support several small children. Almost all of these women are landless, and work as casual wage workers or street hawkers for wages well below those of their male counterparts. Women laborers can be found in brick and tile factories, making textile and garment products in small enterprises or from their homes.

According to the WFP study on Rural Bangladesh socio-economic profiles about 15 percent of households in the coastal areas are non-vulnerable, about 30 percent are "on the edge", about 38 percent are vulnerable, and 17 percent are among the "most vulnerable" or "invisible poor."<sup>26</sup>



This last group has been also described in other analyses as the "ultra-poor." The percentage of vulnerable and ultra-poor households in the coastal areas is above the national average.

### **Asset Damage**

Damage to assets includes mainly the loss of fishing boats and gear, factory equipment, tools of

self-employed workers, damage to fish ponds, loss of livestock, destruction of common assets such as roads and electric networks, destruction of cowsheds and other farm infrastructure, silting of land, destruction of shop inventories and business premises, and the loss of income-earning human capital in many of the households hit by loss of human life.

### **Crop Losses**

Cyclone Sidr has severely affected more than one million hectares of cropland, washed away food storages and personal stockpiles, and destroyed fruit trees. The rice crop was the hardest hit among many affected central crops including pulses, vegetables (an important source of income and nutrition), and bananas.

### **Livestock**

Large numbers of animals were killed in the cyclone, mainly by the tidal wave surge. Not only does this represent a major loss of assets, and loss of purchasing power for the affected families, but it also leads to an expected and protracted decline in the consumption of meat, milk, and eggs in the diets of affected people, plus further loss of income from the use or sale of such products.

Livestock deaths were highest in Pirojpur, Borguna, Patuakhali, Bagerhat, and Jhalakathi.

### **Fishery Damage**

Nearly 2,800 boats were reported lost, most of them small boats washed away by the surge. The cyclone has also affected the shrimp industry, which accounts for the country's second largest export.

### **Nonagricultural Business Damage**

Private businesses lost infrastructure, equipment, and inventory in the cyclone. This included small retail shops in marketplaces across the affected areas, small factories (rice

mills, sawmills, ice factories, potteries, etc.), trade shops (blacksmiths, barber shops, repair shops of various sorts), some wholesale trade stores, many tricycle vans and rickshaws, sewing machines, tools held in private homes for the self-employed, and many other kinds of equipment. Damages affected about 30,500 establishments and 75,000 jobs. In addition, about 27,000 self-employed workers without a fixed establishment lost tools and other assets. Destroyed assets had an estimated total value of BDT 262 million (US\$ 3.8 million), most in the industrial sector.

### **Loss of Output and Revenue in Nonagricultural Businesses**

Private businesses had to interrupt or reduce activity for varying lengths of time due to the cyclone, extending in some cases to more than two months, due to destruction of assets, lack of electricity, or other reasons. The average industrial establishment interrupted operation for more than 40 days. Commerce and service enterprises stopped for much shorter periods, but were also affected. Total loss of revenue in industrial and commercial establishments due to reduced activity has been estimated at BDT 3.3 billion (US\$ 47 million), most of it in the non-industrial sector.

### **Sidr's Effect in Patuakhali:**

Most of the people who lost their houses during super cyclone Sidr in southern districts of the country are still passing hard days amid problem of dwelling houses. Many of them are living in low huts as they have no ability to build new houses. As coastal district Patuakhali, according to district administration, 54,006 families comprising 2.25 lakh people in the district lost their houses due to the Sidr. Paddy cultivations in 2, 48,694 out of 4, 97,389 acres in Patuakhali damages from hurricane Sidr. Vegetables and winter crops cultivated in 2, 54,551 (51.4 per cent) out of 5, 04,189 acres in Patuakhali damaged by Sidr.

Table- 3

List of Properties Damaged by the Devastating Cyclone 'SIDR' on the 15<sup>th</sup> November, 2007

Sl. No.	List of damaged proprties	Quantity	Value In Taka
1.	Rural Road (partly damaged)	20 number (about 15.5 km)	86,00,000/=
2.	Bridge/Culvert/Jetty, etc. (Partly damaged)	46 number	191,00,000/=
3.	Passenger Shed (Partly damaged)	6 number	10,00,000/=
4.	DakBungalow/Resthouse (partly damaged)	10 number	32,00,000/=
5.	Staff Quarter/Chowkidar Shed (partly damaged)	8 number	12,50,000/=
6.	Trees/Plants (Fully & partly damaged)	363 number	4,00,000/=
7.	Religious, Social & Educational institutions previously constucted/ repaired by Zila Parishad. (Partly or fully damaged).	155 number	180,00,000/=
	Total		Approx. 515,50,000/=

Source: Reported on June, 2008, Zila Parishad, Patuakhali District, Bangladesh

#### f. May 2009 Cyclone Aila

Aila struck Bangladesh during mid-day of May 25, 2009 putting coastal people in severe danger. About half a million people had to leave their homes and go to temporary shelters when huge tidal waves came crashing with the 100 kip (60 mph) wind. As this occurred during high tide, the impact was quite severe. But not everyone could move to safety on time. It was estimated that about 200 people died, 1,120 people are still missing and 200,000 people were trapped in water (Save the Children 2009). The misery of the affected people knows no bound. They did not have water to drink, as most of the sources of fresh sweet water were inundated by Aila, let alone food to eat. They did not have the place to bury their loved ones at that time, as most of the land was under water. They had to cross as much as 20 kilometers to find a place for burial. Even if the water went away soon, people were confused about how they will get back on their feet, as they lost their assets. Although it was forecast that there would be minimum damage on account of the low severity of the cyclone, but in reality the damage caused to the lives and properties was enormous due to high tide prevailing at that time. The entire coastal

belt witnessed a human tragedy after the cyclone. Tidal surge swept away hundreds and thousands of homesteads, cattle, and standing crops. Ministers and high officials of the government and non-government organizations (NGOs), after visiting the affected areas, said that the damage on account of the cyclone 'Aila' is no less colossal than that of Sidr that had hit the coastal districts a couple of years ago. The total extent of the damage is still being assessed. Damage to infrastructure in the coastal belt was also enormous. Cyclone 'Aila' marooned a large number of people and their homesteads were submerged; significant damage occurred to roads and seedbeds. Various crops including paddy, jute, sugarcane and vegetables, livestock and fish production suffered badly. The management of cyclone disaster provided valuable experiences to prepare for the future in order to minimize loss to life and property and restoring normal conditions at a faster pace. These were identified and reflected upon for lessons to improve cyclone warning and mitigation in Bangladesh. (Quaiyum Sarkar, 2009)

### **3. Cyclone and Coastal Environment**

The coastal areas of Bangladesh (710 km long) are of recent origin formed out of the process of sedimentation. Most parts of the area are, therefore, low lying which can be subject to inundation even under ordinary circumstances of tides. A tidal surge accompanied by a cyclone storm makes the situation alarming which is further exacerbated by the triangular shape of the Bay of Bengal. The wide shallow continental shelf is conducive to amplification of surges causing wide spread flooding.

The human settlements in the coastal areas are mostly developed in an unorganized and isolated manner, primarily due to population pressure. In such a situation, community efforts to cope with disasters become extremely difficult. There are certain environmental conditions which lead to development of cyclones making the coastal human settlements vulnerable to destruction.

### **4. Cyclone Warning System in Bangladesh**

Bangladesh Meteorological Department (BMD) is the source of cyclone warning in Bangladesh. BMD generates the warning and passes this on to public media and

preparedness **units** for dissemination and follow-up action at periodic intervals. There are separate warning system for maritime ports and river ports. (BMD)

### **5. Standing Orders on Disasters (SOD)**

The Standing Orders on Disasters (SOD), promulgated by the Government of Bangladesh (GOB) in November, 1985 and updated thereafter, constitute the basic plan for coping with disasters. SOD laid down the guidelines for action at various stages of disaster by all government and non-governmental agencies to cope with situation arising out of cyclone disaster. It is presently being updated to incorporate all new lessons learnt. (Quaiyum Sarkar, 2009)

### **6. Institutional Preparation**

Being a disaster prone country, elaborate institutional preparations are in place to deal with disasters, including cyclones. There are three committees and three institutions at the apex level namely National Disaster Management Council, headed by the Honorable Prime Minister, Inter Ministerial Disaster Management Committee headed by the Minister, Ministry of Food and Disaster Management (MFDM), National Disaster Management Advisory Council (MFDM), Disaster Management Bureau and Directorate of Relief and Rehabilitation. There are broad based Disaster Management Committees at the field level at district, upazilla and union headed by deputy commissioner, upazilla nirbahi officer and chairpersons for the respective areas. However, the most dedicated agency for cyclone disaster information dissemination and mobilization at the coastal level is the Cyclone Preparedness Programme (CPP) and the Comprehensive Disaster Management Program, under the Ministry for Disaster Management. The CPP is an organization of large contingent of volunteers at the field who carry out the important function of mobilizing people at the community level to cope with cyclones. (Sirajur Rahman Khan-2013)

### **7. Mitigation**

The vulnerability of coastal population to cyclones and accompanying surges called for various mitigation measures. Structural mitigation measures like cyclone shelters, kill as, coastal embankment, improving housing conditions and non-structural mitigation

measures like coastal afford station, public awareness, community preparedness, local level contingency planning, social mobilization, emergency response, relief, and rehabilitation etc were included mainly during cyclonic disasters. Government, communities at different levels, NGOs including local, national, and international levels were actively involved in providing their efforts with emergency response, recovery and rehabilitation activities to manage cyclonic disasters over the periods. Among international organizations CARE, Islamic Development Bank (IDB), United Nations , UNICEF, WFP and among non-governmental organizations World Vision , Catholic Relief Services (CRS), Islamic Relief Worldwide (IRW), Oxfam Australia. Muslim Aid, ASA, Proshika, BRAC were especially involved with relief and rehabilitation activities. Comprehensive Disaster Management Program, with technical assistance of UNDP, is presently in operation for integration of disaster and development concept as well as for improvement in coordination between GO-NGOs' efforts in response to disasters at all levels. (BUET, 2008)

### **Rationality of the study**

Bangladesh is a disaster-prone country that is affected almost every year by some form of natural disaster, be it floods, torrential rains, erosion, or cyclones. Of the 508 cyclones that have originated in the Bay of Bengal in the last 100 years, 17 percent have hit Bangladesh, amounting to a severe cyclone almost once every three years. Of these, nearly fifty three percent have claimed more than five thousand lives. In mitigating or reducing these vulnerabilities beside governmental efforts, NGOs also play significant role. But there is lack of such research from sociological point of view which is very much needed as there are socio-cultural & economic factors involved with the issue of vulnerability. This study, thus, attempts to relate NGOs activities & the socio-economic vulnerability of people of different strata with emphasis on the poor. Two following section describe the rationality of this study-

#### **a. Cyclone Disaster Risk in Bangladesh**

The Intergovernmental Panel on Climate Change (IPCC) predicts that global temperature will rise between 1.8 C & 4.0 C by at last decade of the 21<sup>st</sup> century. The impacts of global warming on the climate,

Table-4

UNDP has identified Bangladesh to be the most vulnerable country in the world to tropical cyclones & the six most vulnerable country to cyclone(see table below)			
Most vulnerable countries to cyclone(Death/100,000 people exposed to cyclones)			
1.Bangladesh	32.1	4.Honduras	7.3
2.India		5.Vietnam	5.5
3.Philippines	8.3	6.China	2.8
*Of major flood-affected countries reporting an average of over 200 deaths/year			

Source: UNDP (2004), A Global Report: Reducing Disaster risk: A Challenge for Department

### **b. Disaster Vulnerability of Bangladesh:**

Some causes and pattern of vulnerability in Bangladesh:

- i. The location and pattern of settlement are the most important factors determining people's vulnerability to a tropical cyclone on the Bangladesh coast. Coastal and island people frequently differentiated vulnerability to previous cyclones by form of settlement, such as *Puran Bari* (old settlement), *Natun Bari* (new settlement), *Baro Bari* (large settlement) and *Choto Bari* (single settlement). Most of the past devastation occurred in single and new settlements. The people who lived in scattered settlements near to the coast and in linear settlements along the coastal embankment were those who died in the April 1991 cyclone. This type of settlement is more susceptible to cyclonic sea surge. Unfortunately, this type of settlement is currently spreading due to family fragmentation and to what the older population regards as individualism in this area. Houses closer to the coast are scattered, newly formed, and of various types. The soil of the new settlement was not strong enough and, in most cases, the land was without trees or had very small trees. During previous cyclones, this settlement faced more severe wind speeds and the first onslaught of sea surge caused devastation within a few minutes. The linear settlements along the coastal and island embankment consist

of straw, bamboo houses. Apart from wind speed and sea surge, they are also vulnerable due to fragmentation of the embankment in major cyclone periods. (Andrew E. Collins, 2009).

- ii.* The main occupations of the coastal and island communities are agriculture and fishing in the Bay of Bengal. During the peak cyclonic period (April–May and October–November), farmers are used to working in their fields and fisherman’s in the Bay of Bengal. The questionnaire surveys and discussions indicate that every year, the coastal and island people experience several tropical cyclones. It is tough for them to leave their means of livelihood and belongings when they hear of or comprehend the formation of a cyclone hazard in the Bay of Bengal. The lack of a proper transport infrastructure is another important factor in people’s vulnerability to cyclone disasters. Cyclone hazard is associated with severe wind and rain. Yet, most of the roads in the near coastal areas are made of earth. Most earth-made boundaries of the crop field are used to travel to the main road, which is also sometimes built of mud. During the rainy season or cyclonic period, these passageways are damaged or destroyed. Insufficient cyclone shelters in the most hazard-prone areas means that a decision to move to distant and hard-to-reach cyclone shelters becomes a matter of making one’s livelihood vulnerable during the extended period of disruption. (Edris Alam, 2009)
- i.* The coastal and island people’s particular process of response to cyclone can make them vulnerable to disaster. As they are used to facing multiple hazards each year, their responses to warnings depend on the intensity of wind speed, experience of hazards, local belief in the probability of dangerous cyclone events, or the presence of a cyclone signal hoisted by the Bangladesh Meteorological Department (BMD). If the symptoms of previous hazards coincide with a BMD warning of about six to seven on average, they start to prepare to save belongings or decide to leave their homes for a cyclone shelter or other stronger buildings nearby. Before that, they adopt a ‘wait-and-see’ approach, observing whether the cyclone intensity is rising. During fieldwork in southwest, coastal Bangladesh



after Cyclone Sidr on 15 November 2007, the affected people were found to have been reluctant to respond to cyclone warnings, even when the warning signal was raised to 10 for them. This was because they had not experienced a similar major cyclone since 1970. During Cyclone Sidr, most of the affected households only left their houses when they saw water coming close. Discussions with a female group indicated that the decision to save belongings and to leave home in most cases rests with the male head of the household. Therefore, the other family members wait for the arrival of the family head from outside. Due to conservative religious beliefs, many of the male heads of households prefer not to move to cyclone shelters, thinking that the female members of household might lose their purdha (a scarf worn by Muslim women on their heads) while travelling to or staying at cyclone shelters. The household also considers the problems that can arise at cyclone shelters, such as space issues, lack of light and poor sanitation.

Due to affection for domestic animals in these communities, concern about belongings in general, and loss of their only means of livelihood, household heads do not opt to move to cyclone shelters easily. However, if the severity of the cyclone increases and warning signals mount, the family may then decide to go. By then, though, they may not be able to move because the wind and rainfall have increased. Besides the elements, trees uprooted by the wind can block the access road to the cyclone shelters. A combination of rain and wind may damage or destroy earthen roads. Fear of injury by flying debris is another factor that deters people from moving to cyclone shelters once the winds gather pace. (Andrew E. Collins, 2009)

## **Definition and description of some basic concepts**

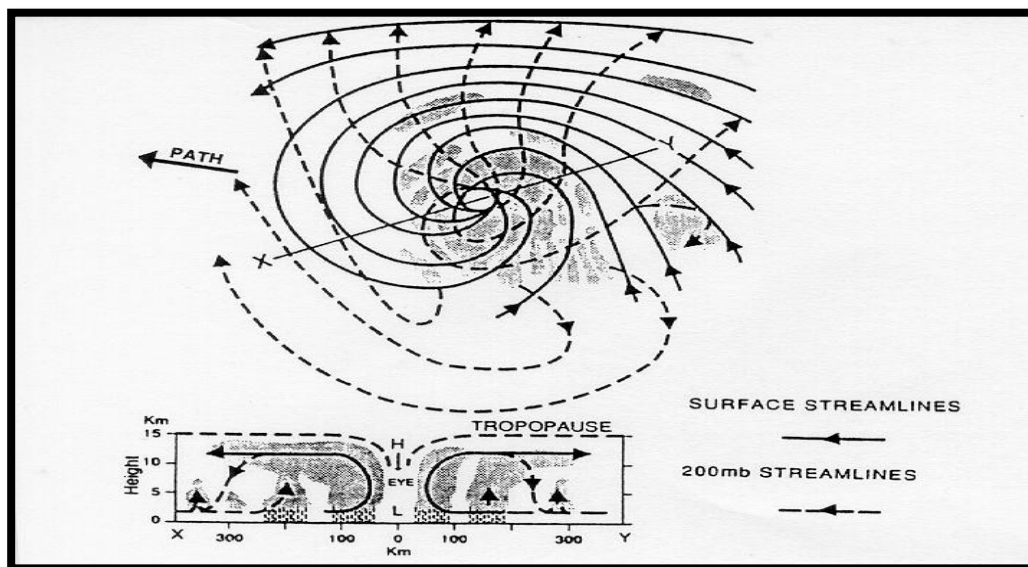
### **a. Cyclone:**

A system of winds rotating inwards to an area of low barometric pressure, with an anticlockwise (northern hemisphere) or clockwise (southern hemisphere) circulation; a depression

A cyclone is defined as being as an area with closed, circular fluid motion that rotates in the same direction as the Earth. Cyclones rotate counter clockwise in the Northern Hemisphere, and clockwise in the Southern Hemisphere.

A cyclone is an atmospheric system made of wind and air pressure. The center of the cyclone has the lowest pressure. The circular wind motion of a cyclone moves counterclockwise in.

Typhoons are tropical revolving storms. They are called 'Cyclones' in English, when they occur in the Indian Ocean area. The coastal regions of Bangladesh are subject to damaging cyclones almost every year. They generally occur in early summer (April-May) or late rainy season (October-November). Cyclones originate from low atmospheric pressures over the Bay of Bengal. Following figure shows a typical cyclone structure formed in the tropics of the northern hemisphere.



A model of the aerial and vertical structure of a tropical cyclone. The areas of rainfall are indicated in the vertical section X-Y across the system (Source: Barry and Chorley, 1992, cited by Shitangsu Kumar Paul and Jayant K. Routray, 2013).

### **Cyclone Eye:**

The most striking feature of a cyclone is its eye. The eye can be seen clearly in satellite picture in the case of a well-developed cyclone. The eye is small and almost circular.

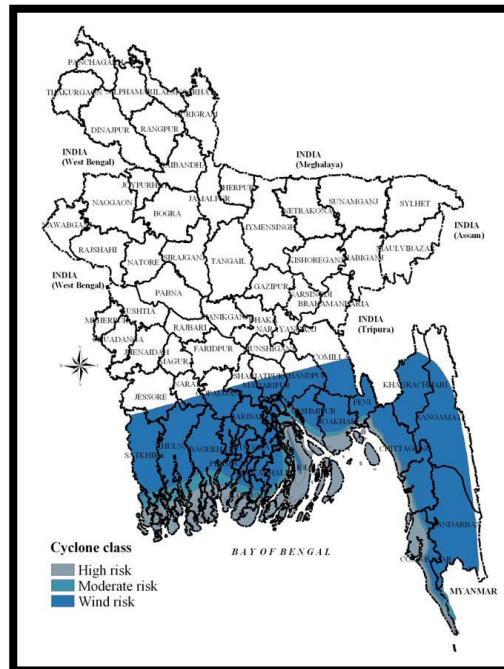
Every cyclone has an eye. It is the centre of the cyclone. Usually the diameter of a cyclone eye is 8– 50 km or more (<http://en.wikipedia.org/wiki/Cyclone>)

### Causes of Cyclone:

According to Rahman (2008), the main causes of cyclone formation in Bangladesh are - warm oceanic temperature (if the temperature of the sea is more than 26° C, it may contribute to the formation of cyclone), presence of high vertical wind, presence of low pressure area, presence of easterly wind in the Bay of Bengal, cyclone gets momentum from the diurnal motion of the earth etc.

### Trend of Cyclone Occurrence at Coastal Areas of Bangladesh:

Due to its unique geographic location, Bangladesh suffers from devastating tropical cyclones frequently. The coastal regions of Bangladesh are subject to damaging cyclones almost every year. They generally occur in early summer during April-May or late rainy season during October-November (Hossain, 2011). Bangladeshi coastal areas face more than one cyclone of various velocities every year. The major cyclones leave its devastating print on its path. The whole coastal areas are affected seriously.



The areas vulnerable to cyclone (Source: Climate Change Cell, 2007)

Bangladesh's coastal areas faced fifty two major cyclones in the 19th century and among them seven cyclones were in Patuakhali. During last 10 years of the present century, coastal areas have faced at least four devastating cyclones of which two hit Patuakhali district. The number of death and loss of socio economic condition are also increasing with the increasing number of cyclones. The following figure shows the trend of cyclone occurrences in Patuakhali district along with coastal areas of Bangladesh. From Table 2 it is found that the number of cyclone occurrence is increasing in Patuakhali district with the increasing number of cyclones occurrence in the coastal areas of Bangladesh. The study area faced 5 cyclones within the time period of 1821-1960. But 7 major cyclones have occurred were during the last 40 years, where 2 were within last 10 years.

**b. Emergency:**

Emergencies are defined by the World Food Program (WFP) as urgent situations in which there is clear evidence that an event or series of events has occurred which causes human suffering or imminently threatens human lives or livelihoods and which the government concerned has not the means to remedy. It is a demonstrably abnormal event or series of events which produces dislocation in the life of a community on an exceptional scale. For example:

- Sudden calamities such as earthquakes, floods, locust infestations and similar unforeseen disasters;
- Human-made emergencies resulting in an influx of refugees or the internal displacement of populations or the suffering of otherwise affected populations;
- Food scarcity conditions owing to slow-onset events such as drought, crop failures, pests and diseases that result in an erosion of communities' and vulnerable populations' capacity to meet their food needs;
- Severe food access or availability conditions resulting from sudden economic shocks, market failure, or economic collapse that results in an erosion of communities' and vulnerable populations' capacity to meet their food needs.

**c. Vulnerability:**

Definitions of vulnerability to environmental stress vary considerably. Some analysts regard assessment of vulnerability as the end point of any appraisal, others as the focal

point, and yet others as the starting point. And these different views carry considerable baggage regarding, amongst other things, levels of certainty and uncertainty, policy relevance & disciplinary focus.

According to the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report (Watson et al., 1996), vulnerability defines ‘the extent to which climate change may damage or harm a system; it depends not only on a system’s sensitivity but also on its ability to adapt to new climatic conditions’. Sensitivity in this context is ‘the degree to which a system will respond to a change in climatic conditions’. From this perspective, the definition of vulnerability must be contingent on estimates of the potential climate change and adaptive responses.

**d. Adaptation:**

Adaptation remains a strategy that is advocated by most humanitarian groups that argue it is necessary to protect development and vulnerable populations. As a strategy, it spans a wide variety of issues, from good governance to early warning system or sea walls to wetlands restoration. One of the major issues facing adaptation as a viable strategy is that many environmental groups remain opposite to dams, levee, and other projects that are sometimes labeled as for adaptation.

Adaptive measures are necessary to reduce the vulnerability of people to flooding. The construction of shelters at a household scale saves lives and properties, as shown during the last decade. Adaptation should reduce risk and vulnerability from extreme events: cyclones and storm surges and impacts of climate change. Adaptive measures should be geared to increase resilience and provide security in terms of food, water, and energy supply as well as safeguarding livelihoods and social coherence.

**e. Socio-economic vulnerability:**

Social vulnerability to disasters refers to the inability of a society and its people to withstand adverse impacts from multiple stresses to which they are exposed. Understanding variations in disaster vulnerabilities is essential for designing an effective Disaster Response Plan. An assessment of disaster vulnerability of coastal communities

was made based on various socio-economic determinants. Besides, vulnerable sectors in the socio-economic gamut of the rural communities were also tried to identify. Participatory Rural Appraisal as major socio-economic determinants of disaster vulnerability at community level: unemployment, no. of households living in a kutchra (structurally weak houses), literacy rate, population density, % of people use sanitary latrine, % of population having disaster and warning knowledge, % of agricultural labor, average income per household, ratio of loan-income per household and % of dependent population. Aggregated scores at union level showed significant variations in disaster vulnerability across unions; agriculture and fisheries were identified as most vulnerable sectors during disasters. . Muslim, Hindus and Christen are the three major religion found.

#### **f. NGOs:**

NGOs are difficult to define and classify, and the term 'NGO' is not used consistently. As a result, there are many different classifications in use. The most common NGOs use a framework that includes orientation and level of operation. An NGO's orientation refers to the type of activities it takes on. These activities might include human rights, environmental, or development work. An NGO's level of operation indicates the scale at which an organization works, such as local, regional, national or international.

One of the earliest mentions of the term "NGO" was in 1945, when the United Nations (UN) was created. The UN, which is an inter-governmental organization, made it possible for certain approved specialized international non-state agencies - or non-governmental organizations - to be awarded observer status at its assemblies and some of its meetings. Later the term became used more widely. Today, according to the UN, any kind of private organization that is independent from government control can be termed an "NGO", provided it is not-profit, non-criminal and not simply an opposition political party.

A non-governmental organization (NGO) is any non-profit, voluntary citizens' group which is organized on a local, national or international level. Task-oriented and driven by people with a common interest, NGOs perform a variety of service and humanitarian

functions, bring citizen concerns to Governments, advocate and monitor policies and encourage political participation through provision of information. Some are organized around specific issues, such as human rights, environment or health. They provide analysis and expertise, serve as early warning mechanisms and help monitor and implement international agreements. Their relationship with offices and agencies of the United Nations system differs depending on their goals, their venue and the mandate of a particular institution.

Non-governmental organizations (NGOs) are legally constituted corporations created by natural or legal people that operate independently from any form of government. The term originated from the United Nation, and normally refers to organizations that are not a part of a government and are not conventional for-profit businesses. In the cases in which NGOs are funded totally or partially by governments, the NGO maintains its non-governmental status by excluding government representatives from membership in the organization. In the United States, NGOs are typically nonprofit organization. The term is usually applied only to organizations that pursue wider social aims that have political aspects, but are not openly political organizations such as political parties.

A non-governmental organization (NGO) is a citizen-based association that operates independently of government, usually to deliver resources or serve some social or political purpose. The World Bank classifies NGOs as either operational NGOs, which are primarily concerned with development projects, or advocacy NGOs, which are primarily concerned with promoting a cause.

The International Standards Organization (ISO) is a non-governmental organization. As such, its standards are voluntary, but many of its member institutes are part of the governmental structures of their countries, and ISO standards have found their way into many laws. Information technology professionals, for example, are probably familiar with the ISO/IEC 27000 series of standards for IT security management.

**g. NGOs in Bangladesh:**

From its birth as an independent nation in 1971, Bangladesh became a site for Non Governmental organizations. Initially focused on relief and rehabilitation activities following the War of Liberation and succeeding natural calamities, International and local NGOs turned their effort to long term development in the absence of capacity to deliver welfare.

By the mid 1980s still lacking a strong state, NGOs were faced with the challenge/opportunity to deliver social services into the long term and became the champions of 'sustainable development'. International NGOs spun off their operators and 'client' base into local and national NGOs. Bangladeshi NGOs found many opportunities for partnership with the growing international community of development NGOs, and Northern/Western government Development Agencies.

During the 1990s the NGO sector in Bangladesh grew rapidly. NGOs developed business strategies to both provide outlet for beneficiaries' produce and to deliver goods and services to their 'target groups'. Local income has become increasingly important in strategies for sustainability of the organizations and the career of these employees.

**h. The role of NGOs in coastal area of Bangladesh:**

Non Governmental Organizations (NGOs) act as windows on applied knowledge and provide links to sources of information. NGOs are active in all nineteen coastal districts in Bangladesh. Among the NGOs that work exclusively in rural areas, the greater numbers are involved in water and sanitation, closely followed by environment and forestry, fisheries and micro-credits, providing small loans.

Many NGOs deal with typical coastal issues, assist in solving local coastal problems and implement programs among selected coastal communities. In recent years, the government has initiated several development projects addressing issues of coastal zone management and targeting programs to enhance livelihoods of the coastal population. A number of NGOs operate both at a national level disseminating coastal knowledge and promoting sustainable development as well as local level, assisting coastal people to recover from the effects of a cyclone.



NGOs do have special capabilities that are essential for alleviating poverty and vulnerability. An important advantage is their efficiency and effectiveness in reaching out to the poor especially by channeling donor support towards them. Different NGOs are acting at different levels and a growing number of NGOs play an important role in improving the living conditions of the poor coastal people.

National NGOs with a good overview of pressing coastal issues can assist both in monitoring coastal processes and helping coastal inhabitants both before and after hazard events. An example is “Bangladesh Centre for Advanced Studies” (BCAS), which also act as bridge between international and national coastal effort for local people. BCAS is effectively disseminating knowledge on sustainable use of coastal resources (e. g. floating vegetable beds) and co-produced the valuable Bangladesh vulnerability Assessment. (Website-www.bcas.net)

NGOs are also very valuable in providing a link between authorities and implementing organizations. The introduction of an overarching project: Coast-watch can increasingly help civil society to integrate within the national and local development processes, as an important stakeholder. This may lead to greater awareness about coastal issues, better planning through stakeholder participation in media debate and promoting the voice and participation of the civil society.

According to the Global Climate Risk Index, Bangladesh is the most vulnerable nation to extreme weather events, which many scientists say are being exacerbated by climate change. From 1990 to 2008, Bangladesh has lost 8,241 lives on average every year due to natural disasters. In addition, rising sea levels also threaten millions of Bangladeshis.

### **Operational Definition:**

Above described concepts are the key concepts of my study. Their standard definitions (given above) cover the operational definition for my study.

## *Chapter 2 – Literature Review*

A literature review is an evaluative report of information found in the literature related to your selected area of study. The review should describe summaries, evaluate and clarify this literature. It should give a theoretical base for the research and help to determine the nature of your research. Works which are irrelevant should be discarded and those which are peripheral should be looked at critically.

A literature review is more than the search for information, and goes beyond being a descriptive annotated bibliography. All works included in the review must be read, evaluated and analyzed (which you would do for an annotated bibliography), but relationships between the literature must also be identified and articulated, in relation to your field of research.

"In writing the literature review, the purpose is to convey to the reader what knowledge and ideas have been established on a topic, and what their strengths and weaknesses are. The literature review must be defined by a guiding concept (e.g. your research objective, the problem or issue you are discussing, or your argumentative thesis). It is not just a descriptive list of the material available, or a set of summaries. ([Http://www.utoronto.ca/writing/litrev.html](http://www.utoronto.ca/writing/litrev.html))

A literature review is a text written by someone to consider the critical points of current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic. Literature reviews are secondary source, and as such, do not report any new or original experimental work. Also, a literature review can be interpreted as a review of an abstract accomplishment.

Most often associated with academic-oriented literature, such as a thesis or peer-reviewed article, a literature review usually precedes a research proposal and results section. Its main goals are to situate the current study within the body of literature and to provide context for the particular reader. Literature reviews are a staple for research in nearly every academic field.

Voluminous researches have been conducted on disasters triggered by natural hazards in the context of Bangladesh. Disaster research in the country mainly focuses on the causes and consequences of disasters; however, less attention is given on revealing coping and recovery mechanisms in response to disaster. Moreover, the physicalist perspective of disaster is dominant in disaster research, and so a quite limited social science literature is available (Michiel Damen, cited in Mijanur Rahman, 2013). Here researcher would try to represent some related literature:

**“Cyclone Sidr in Bangladesh-Damage, Loss, and Needs Assessment for Disaster Recovery and Reconstruction”**, a Report Prepared by the Government of Bangladesh assisted by the International Development Community with financial support from the European Commission, in April 2008. This paper represents an overall view of cyclone Sidr. Given the severity of Cyclone Sidr, the projected destruction from the storm was expected to be much higher than what ultimately occurred. This was due, in large part, to the Government’s recent investments in an improved Early Warning System that served to alert the population to the impending storm as well in over two thousand emergency shelters that were able to accommodate over half of the evacuated populations. In addition, immediately after the storm, the Armed Forces launched search and rescue and early relief operations.

The aim of the assessment was to identify priority areas to support the Government of Bangladesh in cyclone recovery efforts as well as to recommend priority interventions for a long-term disaster management strategy. A comprehensive methodology was used to estimate damage to assets, changes in economic flows, and impacts on social and economic conditions. The estimates were based on quantitative information collected by the Government of Bangladesh and the Development Partners during field surveys in the aftermath of the disaster. This information was supplemented by completed and ongoing assessments of United Nations (UN) agencies and community-based analysis conducted by the national and international Non-Governmental Organizations (NGOs) that participated in the joint effort. The analysis of the damage and loss assessment has identified the needs and quantified financial requirements that will facilitate formulating comprehensive early recovery actions, medium-term recovery and reconstruction plans,

and a long-term risk management and reduction strategy. These should be formulated, adopted and implemented to reduce the impact of future disasters which are likely to be more intense due to climate change. International support will be essential as domestic resources and capacities are limited.

The JDLNA report was prepared as a joint effort between the donor community and the Government of Bangladesh through its Ministries of Planning, Food and Disaster Management, and other line Ministries/Agencies. The donors wish to thank these Ministries for the inputs they provided for the JDLNA, and are especially grateful for the role of the ERD and the Ministry of Finance for coordinating discussions between the joint partners. The experience in Bangladesh provides a particularly salient example of joint coordination and effort not only within the donor community, but also between the joint partners in this effort: the Government of Bangladesh, civil society and the donor community.

This paper is written on cyclone Sidr and the special focus of my study is Sidr, so it is relevant with me. This report helps me to understand the actual loss of Sidr and a total measurement of requirements that will facilitate formulating comprehensive early recovery actions, medium-term recovery and reconstruction plans, and a long-term risk management and reduction strategy. But it works with only description of destruction and requirement, not with its after effect. So my study is needed to see the performance of helping group.

“Cyclone disaster vulnerability and response experiences in coastal Bangladesh”, 2009 prepared by *Edris Alam* Assistant Professor and Disaster and Development Centre Affiliate, Department of Geography and Environmental Studies, University of Chittagong, Bangladesh and *Andrew E. Collins*, Reader in Disaster and Development, Disaster and Development Centre, School of Applied Sciences, Northumbria University, United Kingdom.

For generations, cyclones and tidal surges have frequently devastated lives and property in coastal and island Bangladesh. This study explores vulnerability to cyclone hazards using first-hand coping recollections from prior to, during and after these events. Qualitative field data suggest that, beyond extreme cyclone forces, localized

vulnerability is defined in terms of response processes, infrastructure, socially uneven exposure, settlement development patterns, and livelihoods. Prior to cyclones, religious activities increase and people try to save food and valuable possessions. Those in dispersed settlements who fail to reach cyclone shelters take refuge in thatched-roof houses and big-branch trees. However, women and children are affected more despite the modification of traditional hierarchies during cyclone periods. Instinctive survival strategies and intra-community cooperation improve coping post cyclone. This study recommends that disaster reduction programs encourage cyclone mitigation while being aware of localized realities, endogenous risk analyses, and coping and adaptation of affected communities (as active survivors rather than helpless victims). Key words of this study are coastal and island people of Bangladesh, coping, cyclone vulnerability, local response.

This paper discussed with vulnerability to cyclone hazards using first-hand coping recollections from prior to, during and after these events and qualitative field data is suggested. And my study is also based on cyclone but specifically focused on one ‘Sidr’. Now we see here that this paper is a detail where my paper is a deep and specific analysis.

“**Bangladesh super cyclone ‘sidr’ 2007**” Ministry of Food and Disaster Management Government of the People’s Republic of Bangladesh, a paper show whole quantitative measure of damage, loss, relief, donation and other destruction and help specifically. In this paper give a summary of cyclone Sidr by using some table type description. Like it gives a full measurement of damage and loss in the table headlined ‘Damage and Loss at a Glance’. It includes death toll, missing persons, and total affected districts, worst affected districts, badly affected districts, moderately affected districts, affected upazila, affected union/municipality, affected family, affected people, and injured persons. Then it gives a measurement of relief titled ‘Emergency Relief’, which includes immediate relief (in money), dry food, water, clothing, Household Shelter, vulnerable group feeding. Then next it discussed about priority in getting relief and other facilities titled in ‘Relief Priority’, where discussed about Food Grain, Vulnerable Group Feeding Program to feed, Total food requirement, GoB expects external food support. After that it gives

the list of donor and their donation amount as ‘Donor Commitment of Cyclone’. Next is ‘Disbursement through NGOs’ (clearance given by NGO affairs bureau). Then it discussed about water and sanitation condition and its impact. Next is ‘Needs and Priorities: Health’, this part is divided between two part one is ‘Response to date’ and another is ‘Action Plan’. These discussed about buffer medicine stocks available in Barisal, Khulna and Bagerhat, advance dispatch of medical personnel, A Pakistan medical team treating people with injuries in Bhandaria. 300 patients/days are expected to be treated, the U.S. medical team at Patuakhali running a 250 bed hospital address the major causes of death, fill gaps in and improve access to health care, operational and logistics assistance to Ministry of Health for the deployment of its human and material resources into the worst affected areas, reactivating damaged health facilities through the provision of medical equipment, clean water and generators, funding minor ad-hoc repairs, etc. 93 Upazila Medical Facilities need strengthening. Next the place is for agriculture titled ‘Needs and Priorities: Agriculture’. Then comes ‘Needs and Priorities: Fisheries and Livestock’, ‘Household Shelter’ within response to date and action plan. ‘Needs and priorities: Cyclone Shelter’ comes next, it discussed about the number of cyclone shelter, its damages and action plan. In the part of forest and environment, a summary description comes. That is 1. impacts- Over four million trees destroyed, GoB forest establishments destroyed, Livelihood losses, Flora and Fauna losses, Endangered species 2. Action plan- Rehabilitating forest establishments and infrastructure, Impose ban on cut/collection of forest assets, Social forestry initiatives, Saline and storm tolerant trees, Fund requirement: US\$150 million. Then transport and infrastructure, it includes the damages of water transport, road, bridge, culvert etc and needed resources for their reconstruction. Then this is the time of educational institutions, which includes the damage of both primary and higher secondary institution. At last this paper says about ‘Recovery with Risk Reduction’, and from where some important lines come, these are –

1. Not just replacement
2. Build back better
3. Build back with a view to reduce risk
4. Build to reduce risk
5. Ensure livelihood support

This paper is an overall view of cyclone ‘Sidr’ .This paper helps me lot to know about the destruction of cyclone Sidr. It is a Govt. ministry report so it has a good acceptance and reliability.

“**An Analysis of the Causes of Non-Responses to Cyclone Warnings and the Use of Indigenous Knowledge for Cyclone Forecasting in Bangladesh**”,2013, a paper prepared by *S. K. Paul* (Geography and Environmental Studies, University of Rajshahi, Bangladesh), *J. K. Routray* (Regional and Rural Development Planning (RRDP), and Disaster Preparedness, Mitigation and Management (DPMM), School of Environment, Resources and Development (SERD), Asian Institute of Technology, Thailand) and *W. Leal Filho* (ed.), *Climate Change and Disaster Risk Management, Climate Change Management*, DOI: 10.1007/978-3-642-31110-9\_2, \_ Springer-Verlag Berlin Heidelberg 2013.

This paper explores the causes of non-response to cyclone warning and unwillingness to seek refuge and identifies natural methods for predicting cyclones and storm surge through local knowledge, which could be integrated into a modern cyclone forecasting system in coastal Bangladesh. Despite significant progress in cyclone forecasting in Bangladesh, still it lacks in clear communication of warning information to people at risk at the local level, and also in terms of accuracy in the prediction of landfall timing as well as intensity factor. The study reveals that coastal inhabitants are frequently familiar with cyclones and aware of the potential risks; however, they do not respond to cyclone warnings proactively because of poor road networks, long distances between home and cyclone shelters, low capacity of cyclone shelters, fear of burglary and stealing of household assets and goods, disbelief and misinterpretation of warning information, etc. There is also a higher degree of fatalism among the people. There are other reasons why people do not respond to official warnings, such as poor understanding of cyclone warnings, past experience of the failure of warnings, no or limited income-earning opportunities during and after the cyclone if people decide to evacuate, pressure from employers to go fishing, etc. This study also explores the fact that coastal inhabitants can predict the onset of cyclones based on local indigenous knowledge gained through everyday life on the coast. This method of indigenous cyclone prediction is based on a combination of different factors, such as unusual animal behaviour, water and weather

conditions, etc. The present study advocates building awareness of proactive responses to official cyclone early warnings while integrating local knowledge systems in order to improve the proactive response rate and establish reliable forecasting that would help in disaster mitigation and lessen the emergency management activities. Keywords of this study are Cyclone warning, Community vulnerability, Indigenous knowledge, Cyclone sidr, Bangladesh.

This paper helps me to understand some basic psychological construction of coastal people. Actually it helps me by giving ideas about the indigenous knowledge of coastal people. For this information this is become easy to researcher to identify the deep sector and make her able to get more specific information.

**“Local Adaptation Strategies of a Coastal Community during Cyclone Sidr and Their Vulnerability Analysis for Sustainable Disaster Mitigation Planning in Bangladesh”** a study by *Bishawjit Mallick* (Ph.D. Student, Institute of Regional Science (IfR), Karlsruhe University (TH), Karlsruhe, Germany), *Sebastian Marcel Witte* (Ph.D. Student, Institute of Regional Science (IfR), Karlsruhe University (TH), Karlsruhe, Germany), *Raju Sarkar* (M. Sc. Student, Institute of Regional Science (IfR), Karlsruhe University (TH), Karlsruhe, Germany), *Apurba Swatee Mahboob* (M.S. S. Student, Department of Economics, Dhaka University, Dhaka, Bangladesh), *Joachim Vogt* (Professor, Institute of Regional Science (IfR), University Karlsruhe (TH), Karlsruhe, Germany),

Using a combination of geographical and social research methods, this paper examines the people’s (re)action and responses during cyclone Sidr 2007 at Baniasanta union of Dacope Upazila in Bangladesh. Finding shows that their adopted strategies to cope with cyclone address their vulnerability and it is necessary to integrate their local wisdom of living with unnatural situation into the future planning and development process of the coastal belt. Accordingly, the plans and development should not only be necessity, but also be accepted by the local community.

This study represents some different result which is unnatural situation into adopted strategies to cope with cyclone address vulnerability. It gives researcher a different view about adopted strategy.

**“Reducing Cyclone Impacts in the Coastal Areas of Bangladesh: A Case Study of Kalapara Upazila”** prepared by *Sharbari Ahamed* (Program Officer, Bangladesh Women’s Foundation,



Mohammadpur, Dhaka.), *Mohammad Mizanur Rahman* (Lecturer, Department of Urban and Regional Planning, Jahangirnagar University, Savar, Dhaka), *Mostofa Amir Faisal* (MURP Student, Department of Urban and Regional Planning, Jahangirnagar University, Savar Dhaka). Cyclone has both direct and indirect effects on human life and socio-economic development of a country. Bangladesh is one of the most cyclone prone countries in the world. The geographical location and climatic condition of the country are responsible for cyclone and other natural disasters. During the last 100 years, Bangladesh has experienced 53 major cyclones. Though cyclone affects almost every part of the coastal Bangladesh, but intensity and frequency of cyclone is dangerous in Kalapara Upazila of Patuakhali district. This Upazila is more vulnerable to cyclone than other places of the district. Due to poor disaster management system and ignorance of the physical plan, every year the country has experienced not only huge economic lose but also lives. The paper is an investigation into the cyclone damage scenario and scope of reducing the impacts of lives and properties. The paper makes some recommendations on the existing and proposed physical planning activities and plans of the Upazila to ensure effective cyclone management and sustainable physical development.

“Effect of cyclone Sidr on the Sundarbans, A Preliminary Assessment” 19 November 2007, by *Center For Environmental and Geographic Information Services*, source-

1 BBC

2 BBC

3 Ministry of Agriculture

4 The Daily Star, 17 Nov 2007

5 According to official figures of the Forest Department

Cyclone Sidr struck Bangladesh late Thursday, ripped through the southwestern coast, brought winds of over 220 km/h (150mph) and a tidal surge of several meters, killing over thousands of people and demolishing houses, crops, vegetables and plants alike along its trail of devastation over an area of thousands of sqkm. The authorities confirmed at least 2,3001 deaths but fear that the final toll could be significantly higher. An estimated one million families are thought to have been affected<sup>2</sup>. The cyclonic storm of hurricane strength, Sidr, was one of the 10 fiercest cyclones that hit the region

of Bangladesh in the 131 years between 1876 and 2007. Around 95 percent standing crops in eleven coastal districts have been affected badly by the cyclone Sidr<sup>3</sup> and the farming of shrimp and cattle were also damaged immensely. The shrimp hatcheries in Satkhira, Khulna and Cox's Bazar were badly affected. It has been predicted that Sidr would take its toll on the livelihood of ultra-poor people, as inflation rate will increase. The largest mangrove forest of the world, the Sundarbans and its biodiversity including plants and wildlife suffered immense losses. The cyclone Sidr, with a ferocious wind force of over 220 km/h, hit the eastern parts of the forest, especially the Chandpai and Sarankhola range including the Kochikhali, Kotka, Hiron Point, and the Dublarchar, leaving a trail of severe devastation<sup>4</sup>. It is predicted that much of the wildlife and plants of the Sundarbans might have been washed away by the tidal surge. The uprooted trees and destroyed houses on the edge of the forest are reminiscent of the devastation brought to the forest by the cyclone of 1988. The damage done to the forest by Sidr with its seven feet high tidal surge accompanied with a wind speed of over 220 kmph might be much worse than it was in 1988. According to official records, nine tigers and several hundred deer perished when a six feet high tidal surge accompanied by 160 kmph wind hit the Sundarbans in 1988. Several newspapers published photographs of the corpses of deer, tigers and other wildlife. Many wildlife including, royal bengal tigers, deer, crocodiles, wild boars, monkeys, snakes, birds and many species of plants might have been washed away and perished under the weight of uprooted trees of the world natural heritage site. The Sidr practically ruined the beauty of the Sundarbans and cause immense loss. In recent times more than 400 tigers and hundreds of deer were spotted in the Sundarbans<sup>5</sup>. The Sidr first hit south-east part of the Sundarbans then moved towards the north-east region of Bangladesh passing through Barguna, Pautuakhali, Jhalokati, Pirojpur, Bagerhat, Barisal, Bhola, Lakshmipur, Chandpur, Madaripur, Shariatpur, Munshigong, Narayanganj, Dhaka, Comilla, Bramanbaria, Narsingdi, Habiganj, Kishoregonj, Maulvi Bazar, Sunamganj and Sylhet. Information of wind speed and storm surge is presented

*“Cyclones in a Changing Climate: The Case of Bangladesh”*, a work by *Susmita Dasgupta* (Lead Environmental Economist, Development Research Group, the World Bank, Washington DC, USA), *Mainul Huq* (Development Policy Group, Dhaka, Bangladesh), *Zahirul Huq*

*Khan*(Director, Institute of Water Modeling, Dhaka, Bangladesh), *Manjur Murshed Zahid Ahmed*(Senior Specialist, Institute of Water Modeling, Dhaka, Bangladesh), *Nandan Mukherjee*( Adaptation Specialist, Climate Change Division, Center for Environmental and Geographic Information Services, Dhaka, Bangladesh), *Malik Fida Khan*(Director, Climate Change Division, Center for Environmental and Geographic Information Services, Dhaka, Bangladesh), *Kiran Pandey* (Senior Economist, Environment Division, The World Bank, Washington, USA), at January 2011.

This paper integrates information on climate change, hydrodynamic models, and geographic overlays to assess the vulnerability of coastal areas in Bangladesh to larger storm surges and sea-level rise by 2050. The approach identifies polders, coastal populations, settlements, infrastructure, and economic activity at risk of inundation, and estimates the damage versus the cost of several adaptation measures. A 27-centimeter sea-level rise and 10 percent intensification of wind speed from global warming suggests the vulnerable zone increases in size by 69 percent given a +3-meter inundation depth and by 14 percent given a +1-meter inundation depth. Estimates indicate investments including strengthening polders, foreshore forestations, additional multi-purpose cyclone shelters, cyclone-resistant private housing, and further strengthening of the early warning and evacuation system would cost more than \$2.4 billion with an annual recurrent cost of more than \$50 million. These estimates can serve as a prototype of the adaptation costs to extreme weather events in climate negotiations.

Keywords of this study are Bangladesh, Climate Change, Storm Surges, Geographic Overlays, Damage, and Adaptation Cost.

**“POST-SIDR FAMILY SHELTER RECONSTRUCTION BANGLADESH”**, Report authors: *Bill Flinn*, (Architect, Builder) *Peter Beresford*, (Structural Engineer), July 2009 Field-work carried out between February and June 2009. This work was funded by UK Department for International Development (DFID) with field support by the United Nations Development Program (UNDP). The key messages in this report are for the benefit and guidance of future rural housing programs in Bangladesh. They have been derived from the experiences of family shelter reconstruction in the wake of Cyclone Sidr. However

these lessons should not be limited to reconstruction projects after floods or cyclones: they are equally relevant to developmental programs that have preparedness and disaster risk reduction at their heart. There is a strong emphasis on technical issues – on proficient design, robust engineering and good construction techniques. This emphasis is deliberate. It responds to a well-recognized gap in shelter provision: there is often scant attention given to structural engineering and sound building methods despite the obvious hazards from flooding and storms. This discussion of technical issues is however set within the context of good humanitarian practice. It is not a manual. It includes key messages and pointers, but these must be accompanied by good construction detailing and engineering. This report concentrates solely on the reconstruction efforts after the widespread destruction and suffering in southwest Bangladesh. Many of the principles expressed here will be of relevance to housing projects in other regions of Bangladesh. However, like all building projects, there are no “off the shelf” solutions. Each circumstance should be treated on its own merits – nothing should be directly copied. Core shelters must be built to provide appropriate, safe and durable family homes in a manner that is easily understood and replicated. Achieving this will be a significant step in setting a higher standard for post-disaster reconstruction in Bangladesh. The findings of this report are centered on the program developed by UNDP with finance from DFID. Nine thousand one-room core houses were built in the first phase; the second phase that began one year later, was for a further eight and a half thousand. However the authors have drawn on the experiences of several national and international NGOs that have been involved in post-Sidr reconstruction. We are very grateful to everyone who advised and guided us through this process and in particular to the help and support from UNDP and DFID.

“**The stimulating role of NGOs in Bangladesh**”, a paper prepared by *Mohiuddin Ahmad* (Community Development Library, Dhaka), *Atiq Rahman* (Bangladesh Centre for Advanced Studies, Dhaka). Non Governmental Organisations (NGOs) act as windows on applied knowledge and provide links to sources of information. NGOs are active in all nineteen coastal districts in Bangladesh. Among the NGOs that work exclusively in rural areas, the greater numbers are involved in water and sanitation, closely followed by environment and forestry, fisheries and micro-credits, providing small loans. Many

NGOs deal with typical coastal issues, assist in solving local coastal problems and implement programs among selected coastal communities. In recent years, the government has initiated several development projects addressing issues of coastal zone management and targeting programs to enhance livelihoods of the coastal population.

A number of NGOs operate both at a national level disseminating coastal knowledge and promoting sustainable development as well as at local level, assisting coastal people to recover from the effects of a typhoon. NGOs do have special capabilities that are essential for alleviating poverty and vulnerability that are amongst the objectives of ICZM. An important advantage is their efficiency and effectiveness in reaching out to the poor especially by channeling donor support towards them. Different NGOs are acting at different levels and a growing number of NGOs play an important role in improving the living conditions of the poor coastal people. National NGOs with a good overview of pressing coastal issues can assist both in monitoring coastal processes and helping coastal inhabitants both before and after hazard events. An example is “Bangladesh Centre for Advanced Studies” (BCAS website [www.bcas.net](http://www.bcas.net)), which also acts as bridge between international and national coastal efforts for local people. BCAS is effectively disseminating knowledge on sustainable use of coastal resources (e.g. floating vegetable beds) and co-produced the valuable Bangladesh Vulnerability Assessment (see CCC II-1-1). NGOs are also very valuable in providing a link between authorities and implementing organizations. The introduction of an overarching project: Coast watch, can increasingly help civil society to integrate within the national and local development processes, as an important stakeholder. This may lead to greater awareness about coastal issues, better planning through stakeholder participation in media debate and promoting the voice and participation of the civil society.

“NGOs in Coastal Development” Study team is consisted by *Md. Sayed Iftekhar, Afsana Yasmeen, Rounakul Islam, Rob Koudstaal, Mohiuddin Ahmad*. Main theme of this paper is Non-government organizations (NGOs) have grown significantly in recent decades in terms of number and resources they use. They are considered important partners in development with their wide coverage using a multitude of activities in almost every nook and corner of the country. Their position, role and contribution within the context of the institutional surroundings therefore deserve more public attention, discussion and debate.

Promotion of enabling institutional environment at the local level is envisaged as an important component of the coastal development strategy (CDS), one major output of the PDOICZMP (Program Development Office-Integrated Coastal Zone Management Plan). In order to promote an institutional environment that would enhance the possibilities of coastal households for sustainable livelihoods, a thorough understanding of the existing institutional setting in the immediate environment of the households is necessary. NGOs are an important stakeholder in this setting. A review of their position and role in the overall institutional context is necessary to draw conclusions on working arrangements for enhancement of livelihoods of the coastal communities' models, which would contribute to developing models of harmonization and coordination. Objectives and scope of this work is to come to recommendations with regard to models of good practice for harmonization and coordination in an integrated coastal zone management (ICZM) framework, it is necessary to know under what framework the NGOs operate. Main objective of this study is to obtain insight on the following:

- ◇ The policy or views of NGOs on coastal development;
- ◇ Current structure of relations between the Government and NGOs; and
- ◇ Options for enhancing government-NGO co-ordination with regard to coastal development.

**Disaster Adaptation and Disaster Risk Reduction in Bangladesh:**

1) Institutional framework for DA and DRR:

Bangladesh signed the convention on 19th June 1992, ratified it on 15 April 1994 and ratified the Kyoto Protocol on 22 October 2001. The Department of Environment (DOE) under the Ministry of Environment and Forestry (MoEF) is the focal point for the United Nation Framework Convention on Climate Change (UNFCCC) and coordinates climate related activities in the country. Recently, a climate change cell (CCC) has been established to address several issues including adaptation to disaster. The change focus started with The National Environmental Management Action Plan (NEMAP) which was prepared in 1995 in order to initiate the process to address environmental, climate change and disaster issues as long-term environmental problems for Bangladesh. The process was initiated by the creation of a separate ministry: Ministry of Environment and Forestry, which is now responsible for dealing with environment and disaster issues.

Bangladesh has developed a Poverty Reduction Strategy (PRSP). In the PRSP document “Unlocking the Potential” there is a brief mention of disaster where the strategic goal has been set to integrate disaster issues with other policies, programs and projects. The PRSP has the following key disaster policy targets, some of which have already been reached:

- Study sector specific vulnerability to disaster.
- Preparation of a National Adaptation Plan of Action (NAPA)
- Integration of disaster adaptation in all policies, programs and projects as appropriate
- Finalize NAPA and identify programs.
- Mobilize resources for appropriate interventions.
- Coordinate NAPA with all private, public community stakeholders.
- Integrate NAPA in the planning process
- Build awareness on disaster adaptation
- Screen programs for critical interventions by various stakeholders

Despite the fact that most of the elements of mainstreaming adaptation to disaster are mentioned in the PRSP, there has been little progress in implementing the stated goals and targets with completion of the NAPA as an exception. There is no mention of DRR in the PRSP.

Bangladesh was one of the first countries to finalize a NAPA, which addresses disaster and climate change issues. The NAPA was completed in 2005, and is the first official initiative for mainstreaming adaptation to national policies and actions to cope with disaster, climate change and vulnerability.

On behalf of the Ministry of Disaster Management and Relief, *Md. Munir Chowdhury*, Head of the Government Delegations reaffirmed Bangladesh strong commitment to Disaster Risk Reduction and Climate Change adaptation at the 4th Global Platform on Disaster Risk Reduction (GPDDR) in Geneva, Switzerland. The key objective of the official plenary was to share and consolidate views, identify key priority agenda and further consult on the development of a post-2015 framework for disaster risk reduction. The country statement focused on some key areas particularly the progress achieved in climate change negotiation processes and Bangladesh position’s in framing the post

HFA framework. Further to that the country highlighted that the Post-2015 development global framework must contain legally binding international equitable governance mechanism with accountability. Joint Secretary Md. Munir stated the needs for transferring of technology and finance to address causal-consequences of disaster and climate change, fair and evidence-based claims and compensations at global level. SRSR Ms. Margareta Wahlstrom, UNISDR Chief and UN Deputy Secretary-General, Jan Eliasson addressed the opening ceremony. On 20th May 2013, the day before the official opening of the 4th GPDRR Md. Munir Chowdhury attended the consultative event on 'The role disaster-prone countries have played in preventing and preparing for disasters' as a panelist. The presentation mainly focused on measures implemented in Bangladesh over the past two decades that have saved lives and reduced cyclone-related losses. He shared lessons learnt from country perspectives to inform how the international community can come together to comprehensively support disaster prevention, preparedness and reduced losses in high-risk countries like Bangladesh. As consultations on a post-2015 framework for disaster risk reduction (HFA2) proceed, the integration of preparedness into disaster risk management needs to reflect the changing environment of more intense and frequent disasters. Development efforts need to systematically address the underlying risk factors that lead to disasters, he said. Bangladesh has participated in various technical sessions, featured events, market hub booth and side events at the 4th Global Platform on Disaster Risk Reduction being held at the International Conference Centre, Geneva, Switzerland. A 7 member government delegations also took part in different events led by the Joint Secretary *Md. Munir Chowdhury* of the Ministry of Disaster Management and Relief interacted with the wide range of participants towards linkage building on DRR and CCA. The government delegations include Professor *Mahbuba Nasreen*, Dhaka University, *Ms. Farah Kabir*, ActionAid Country Director, *Sifayet Ullah*, Programme Analyst, UNDP, *Shaila Shahid*, Communications Specialist, CDMP, and UNDP, representatives from Islamic Relief, Christian Aid and Centre for Disability Development



## ***Chapter 3-Research Methodology***

Methodology is the whole procedure of research work that defines how we go about studying any phenomenon. This part of research work has been designed with a complete picture of the whole procedure of research work in which objects of the research, research question, and methods of data collection and technique of data analysis are depicted. I would also, provide a brief description of qualitative approach that I used in studying my research problem along with rationale for choosing this approach.

### **Selection of the Study Area:**

Researcher has selected Sidr affected areas of Patuakhali district as study area. The study area has been described below.

### **Location:**

Patuakhali district is located in the south- western coastal area of Bangladesh. The region was once under the the ancient kingdom of “Chandradip” and Kachua under Baufal upazila was the capital of the Chandradip. Due to natural calamities in very often on the coastal area and the frequent attacks of Magh pirates, the capital was transferred to Madhabpasha in Barisal. The forestry area of Chandradvipa was separated from Chandradip and marked as Bazuha (means protected region). In the last decade of the eighteenth century, a number of Buddhist Rakhains of Arakan settled at Rangabali Island, Khepupara and Kuakata regions. Since then human settlement began to grow in this region. Patuakhali was a subdivision of the then Bakerganj district and upgraded into a district on 01 January 1969. The called name of the region is “Sagorkonnya” (the daughter of sea) because of locating the world famous Kuakata sea beach in the region. The Geo position of the district is 22°19’60’’ North latitudes and 90°19’60’’ east longitude. (Source: Wikipedia)

**Bordered By:**

Patuakhali District is bordered by Barisal district to the north, The Bay of Bengal and Barguna district to the south, Bhola district and Tetulia River to the east, Barguna district to the west.

**Administration:**

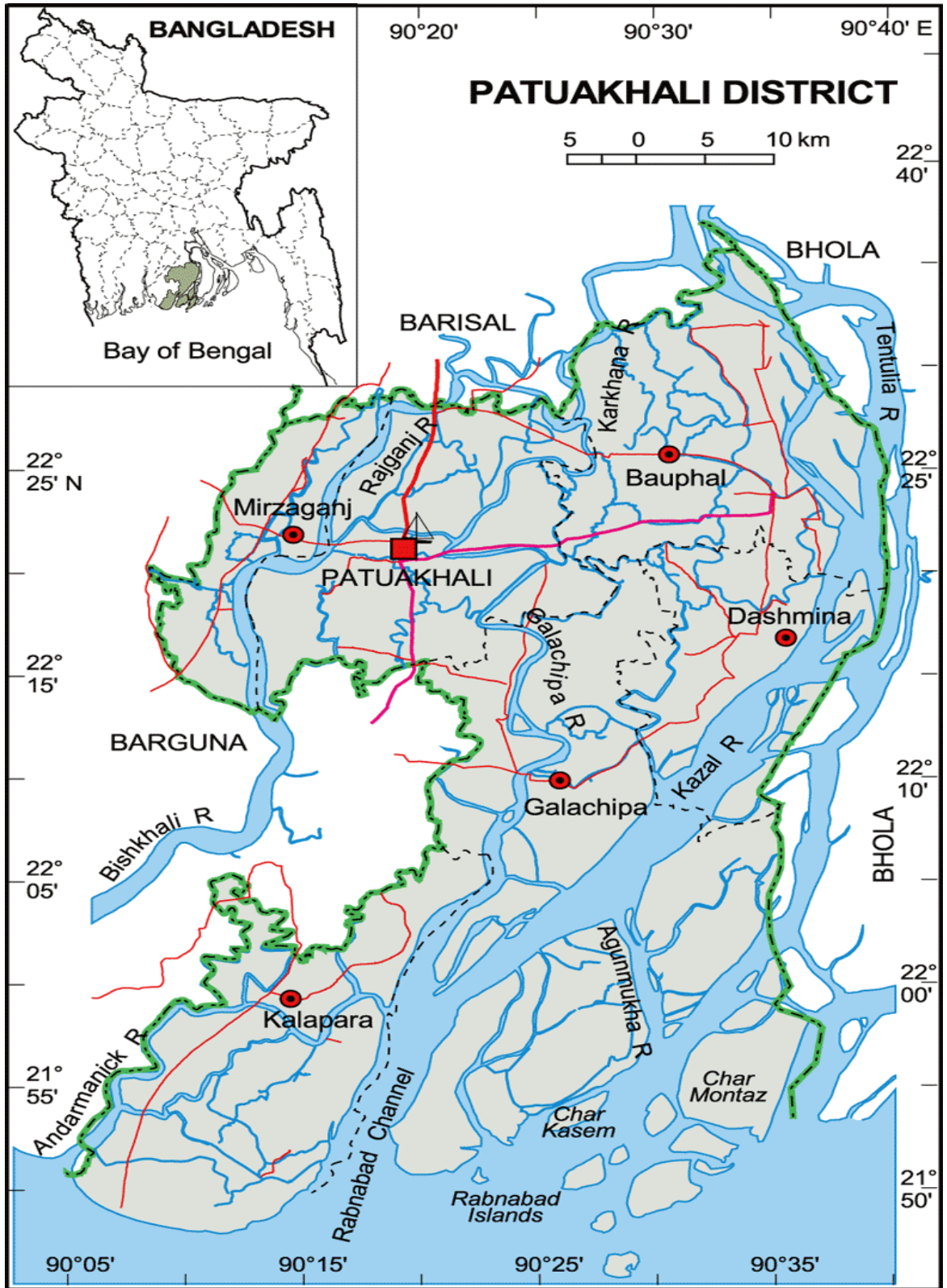
The area of Patuakhali is 3221.31 Sq Km. It is under Barisal Division. There are 05 Municipalities in Patuakhali named Patuakhali, Kalapara, Bawfal, Kuakata and Golachipa. The number of Upazilla (sub district) in Patuakhali district is 08, named- Patuakhali, Mirzagonj, Bawfal, Golachipa, Kolapara, Dasmina, Dumki and Rangabali containing 71 Unions, 561 Mauzas and 878 Villages.

**Population:**

The total population of Patuakhali district is 15, 35,854 (Male- 753,441 and Female- 782,413), Sex ratio 96:100, Population Density 1439/Sq Km and annual growth rate is 0.49%. The Literacy Rate of Patuakhali district is 54.10% (Male- 56.20% and Female- 52.00%).



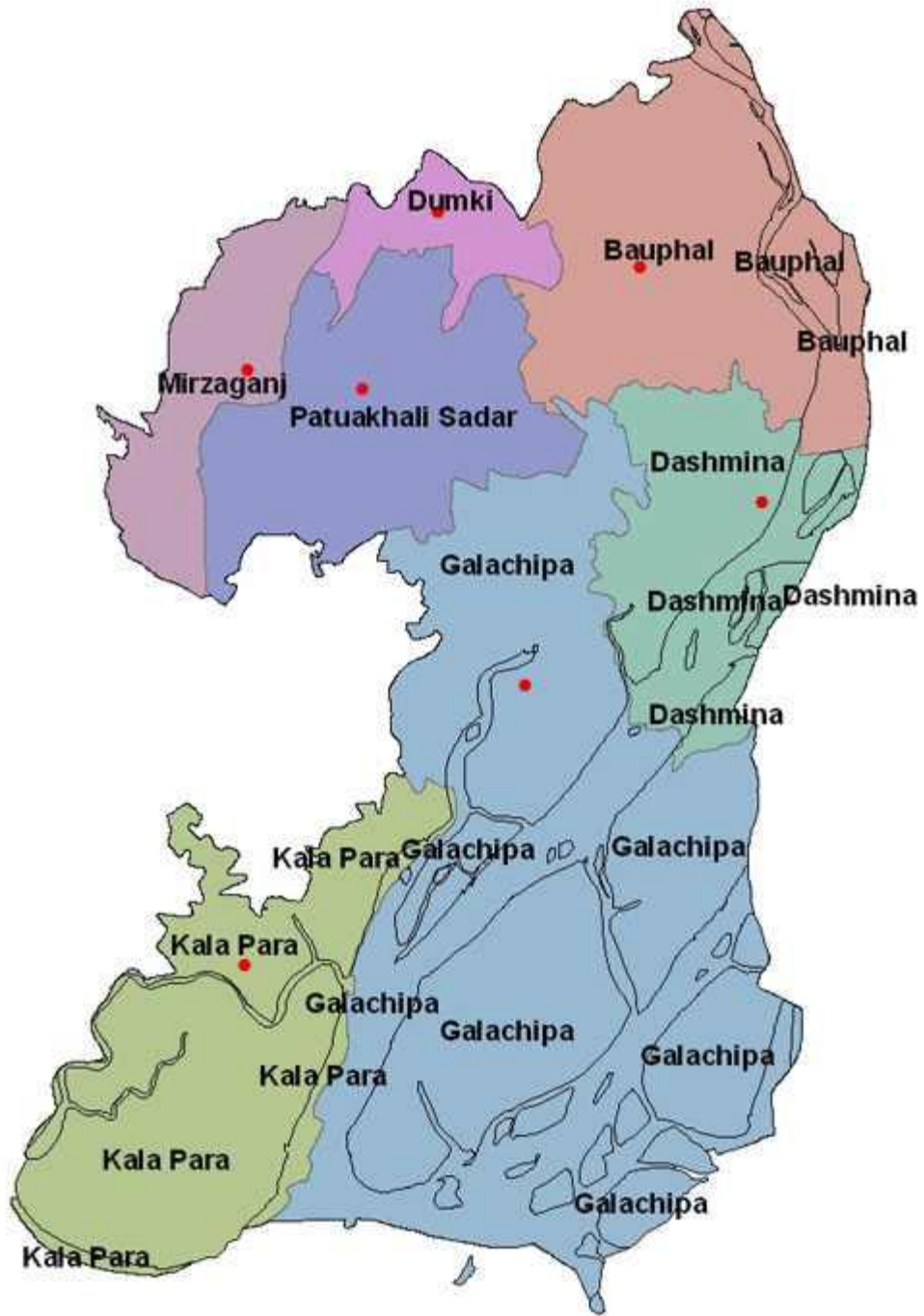
Figure 3-Map of Bangladesh focusing Patuakhali District



Map of Bangladesh focusing Patuakhali District



Map of Bangladesh focusing Patuakhali District



Map of Bangladesh focusing Patuakhali District

### **Study Population:**

In my advance research thesis, I look some cyclone induced vulnerable people and I covered most of the NGOs in my study area who working with cyclone induced vulnerabilities by including its' staffs.

### **Study Instruments:**

My study instruments were some papers, pen, pencil, diary, recorder, mobile phone, laptop, modem, and other materials.

### **Mixed Method Research:**

In mixed methods studies researchers choose to combine different types of research methods. Most often researchers combine quantitative and qualitative research methods, in this case producing a combination of statistical and experiential data. Other researchers may combine different types of quantitative and qualitative methods in one study. Whatever methods researchers want to use and combine together it is important to explore and acknowledge the paradigms/perspectives in which different methods are often located. Paradigms/approaches include ideas about how knowledge is produced, what it is possible to know as well as about how to understand the world we live in and what it means to be human? The potential advantage of using mixed methods is that it can provide the benefits of different methods while compensating for some of their limitations. Mixed methods can offer the opportunity for a more complete understanding of social as well as psychosocial phenomena.

### **Definition:**

Many definitions of mixed methods are available in the literature. For purposes of this discussion, mixed methods research will be defined as a research approach or methodology:

‘Focusing on research questions that call for real-life contextual understandings, multi-level perspectives, and cultural influences; employing rigorous quantitative research assessing magnitude and frequency of constructs and rigorous qualitative research exploring the meaning and understanding of constructs, utilizing multiple methods (e.g., intervention trials and in-depth interviews); intentionally integrating or combining these methods to draw on the strengths of each; and framing the investigation within philosophical and theoretical positions.’

### **Philosophy in mixed methods research:**

Mixed methods researchers use and often make explicit diverse philosophical positions. These positions often are referred to as dialectal stances that bridge post positivist and social constructivist worldviews, pragmatic perspectives, and transformative perspectives (Greene, 2007 cited in Abraham S. Fischler, 2012). For example, researchers who hold different philosophical positions may find mixed methods research to be challenging because of the tensions created by their different beliefs (Greene, 2007). However, mixed methods research also represents an opportunity to transform these tensions into new knowledge through a dialectical discovery. A pragmatic perspective draws on employing "what works," using diverse approaches, giving primacy to the importance of the research problem and question, and valuing both objective and subjective knowledge (Morgan, 2007 cited in Abraham S. Fischler, 2012). A transformative perspective suggests an orienting framework for a mixed methods study based on creating a more just and democratic society that permeates the entire research process, from the problem to the conclusions, and the use of results (Martens, 2009 cited in Abraham S. Fischler, 2012).

### **Theories and mixed methods research:**

Optimally, all studies draw upon one or more theoretical frameworks from the social, behavioral, or biological sciences to inform all phases of the study. Mixed methods studies provide opportunities for the integration of a variety of theoretical perspectives (e.g., ecological theories, complexity theory, stress theory, critical theories, or others).



Now we will try to discuss about two main part of mixed method used in this study:

### **Qualitative Research:**

Qualitative research is a method of inquiry employed in many different academic disciplines, traditionally in the Social Sciences, but also in market research and further contexts. Qualitative researchers aim to gather an in-depth understanding of human behavior and the reasons that govern such behavior. The qualitative method investigates the *why* and *how* of decision making, not just *what*, *where*, *when*. Hence, smaller but focused samples are more often used than large samples.

Qualitative research is designed to reveal a target audience's range of behavior and the perceptions that drive it with reference to specific topics or issues. It uses in-depth studies of small groups of people to guide and support the construction of hypotheses. The results of qualitative research are descriptive rather than predictive.

Qualitative research methods originated in the social and behavioral sciences: sociology, anthropology and psychology. Today, qualitative methods in the field of marketing research include in-depth interviews with individuals, group discussions (from two to ten participants is typical); diary and journal exercises; and in-context observations. Sessions may be conducted in person, by telephone, via videoconferencing and via the Internet.

Qualitative research is a generic term for investigative methodologies described as ethnographic, naturalistic, anthropological, field, or participant observer research. It emphasizes the importance of looking at variables in the natural setting in which they are found. Interaction between variables is important. Detailed data is gathered through open ended questions that provide direct quotations. The interviewer is an integral part of the investigation (Jacob, 1988). This differs from quantitative research which attempts to gather data by objective methods to provide information about relations, comparisons, and predictions and attempts to remove the investigator from the investigation (Smith, 1983).

In the early 1900s, some researchers rejected positivism the theoretical idea that there is an objective world about which we can gather data and "verify" this data through empiricism. These researchers embraced a qualitative research paradigm, attempting to make qualitative research as "rigorous" as quantitative research and creating myriad methods for qualitative research. In the 1970s and 1980s, the increasing ubiquity of computers aided in qualitative analyses, several journals with a qualitative focus emerged, and post positivism gained recognition in the academy. In the late 1980s, questions of identity emerged, including issues of race, class, and gender, leading to research and writing becoming more reflexive. Throughout the 1990s, the concept of a passive observer/researcher was rejected, and qualitative research became more participatory and activist-oriented. Also, during this time, researchers began to use mixed-method approaches, indicating a shift in thinking of qualitative and quantitative methods as intrinsically incompatible. However, this history is not apolitical, as this has ushered in a politics of "evidence" and what can count as "scientific" research in scholarship, a current, ongoing debate in the academy.

#### Characteristics

Purpose: Understanding - Seeks to understand people's interpretations.

Reality: Dynamic - Reality changes with changes in people's perceptions.

Viewpoint: Insider - Reality is what people perceive it to be.

Values: Value bound - Values will have an impact and should be understood and taken into account when conducting and reporting research.

Focus: Holistic - A total or complete picture is sought.

Orientation: Discovery - Theories and hypotheses are evolved from data as collected.

Data: Subjective - Data are perceptions of the people in the environment.

Instrumentation: Human - The human person is the primary collection instrument.

Conditions: Naturalistic - Investigations are conducted under natural conditions.

Results: Valid - The focus is on design and procedures to gain "real," "rich," and "deep" data.

### **Why Qualitative Method:**

Since Sociology usually seeks to investigate the question 'why' of social phenomena, different types of methodologies need to be adopted for different types of investigations.

As a researcher, I feel the selection of a research method depends on subjected matter and the purpose of the research in which we are interested to work on. It is not the researcher's choice that will decide the method of research in which method of research; rather it is the purpose and area of the research that will decide which method fits it best and which method it needs to employ to fulfill the purpose of that research. "The relevance of a specific methodology rests upon the particular purpose and area of inquiry"

In accomplishing my research work, I went through an absolutely qualitative research that fits the subject matter as well as fulfill the purpose of my study. The aim of my study is to understand and realize the effectiveness of the role of NGOs in dealing with cyclone disaster induced vulnerability from the sociological point of view. So I think qualitative method is absolutely suitable for my study.

### **Theoretical Foundation of Qualitative Method:**

Phenomenology and Hermeneutics are very crucial to understand the theoretical foundation of qualitative research. Phenomenology asks us not to take the notion we have learned for granted, but to question them instead, to question our way of looking at and our way of being in the world. Edmund Husserl, who was first to use the term phenomenology, defined it as interest in those things that can be directly apprehended

by one's sense. It denies that we can ever know more about things that we experience directly through our sense.

Alfred Schutz, who introduced phenomenology in American sociology, puts the spotlight on the individual's own definition of the situation. Ethno-methodology founded by Harold Garfinkel and is rooted in phenomenology, has interest in how people make sense of everyday activities. It is defined as the members' method of making sense of their social world.

Hermeneutics means the theory of interpretation and states that we have to interpret the meaning of human behavior to understand. According to those in hermeneutic tradition, the study of human conduct is essentially quite different of studying events in nature.

### **Quantitative research:**

When one think of quantitative methods, she will probably have specific things in mind such as thinking of statistics, numbers, and so on.

Quantitative research is research that uses numerical analysis. In essence, this approach reduces the data into numbers. The researcher knows in advance what he/she is looking for and all aspects of the study are carefully designed before the data is collected. The objective of quantitative research is to develop and employ mathematical models, theories and/or hypotheses pertaining to phenomena.

The greatest strength of quantitative research is that it produces quantifiable, reliable data that are usually generalizable to some larger population. Quantitative analysis also allows researchers to test specific hypotheses, in contrast to qualitative research, which is more exploratory.

The following definition, taken from Aliaga and Gunderson (2000), describes what we mean by quantitative research methods very well:

Quantitative research is 'Explaining phenomena by collecting numerical data that are analyzed using mathematically based methods (in particular statistics)'.

In quantitative research, we collect numerical data. This is closely connected to the final part of the definition: analysis using mathematically based methods. In order to be able to use mathematically based methods, our data have to be in numerical form. This is not the case for qualitative research. Qualitative data are not necessarily or usually numerical, and therefore cannot be analyzed by using statistics.

### **Characteristics of Quantitative Research**

In quantitative research, your goal is to determine the relationship between one thing (an independent variable) and another (a dependent or outcome variable) in a population. Quantitative research designs are either **descriptive** (subjects usually measured once) or **experimental** (subjects measured before and after a treatment). A descriptive study establishes only associations between variables. An experiment establishes causality.

Quantitative research deals in numbers, logic and the objective, focusing on logic, numbers, and unchanging static data and detailed, convergent reasoning rather than divergent reasoning.

#### **Main characteristics are:**

- The data is usually gathered using more structured research instruments.
- The results are based on larger sample sizes that are representative of the population.
- The research study can usually be replicated or repeated, given its high reliability.
- Researcher has a clearly defined research question to which objective answers are sought.
- All aspects of the study are carefully designed before data is collected.
- Data are in the form of numbers and statistics.
- Project can be used to generalize concepts more widely, predict future results, or investigate causal relationships.
- Researcher uses tools, such as questionnaires or equipment to collect numerical data.

The overarching aim of a quantitative research study is to classify features, count them, and construct statistical models in an attempt to explain what is observed.

**Things to keep in mind when reporting the results of a study using quantitative methods:**

1. Explain the data collected and their statistical treatment as well as all relevant results in relation to the research problem you are investigating. Interpretation of results is not appropriate in this section.
2. Report unanticipated events that occurred during your data collection. Explain how the actual analysis differs from the planned analysis. Explain your handling of missing data.
3. Explain the techniques you used to "clean" your data set.
4. Choose a minimally sufficient statistical procedure; provide a rationale for its use and a reference for it. Specify any computer programs used.
5. Describe the assumptions for each procedure and the steps you took to ensure that they were not violated.
6. When using inferential statistics, provide the descriptive statistics, confidence intervals, and sample sizes for each variable as well as the value of the test statistic, its direction, the degrees of freedom, and the significance level (report the actual p value).
7. Avoid inferring causality, particularly in nonrandomized designs or without further experimentation.
8. Use tables to provide exact values; use figures to convey global effects. Keep figures small in size; include graphic representations of confidence intervals whenever possible.
9. Always tell the reader what to look for in tables and figures.

**Sampling:**

In this study sample size is 40 and it is a purposive sampling. Among them 30 are Sidr victims and another 10 are NGO staff.

### **Research Question:**

Structured checklist was used during data collection. It has two individual part one for victims and another for NGO staff

### **Objectives of the Study:**

1. To Explore the NGO's role instant and long terms such as relief, rehabilitation programs for cyclone affected people specially 'Sidr'.
2. To identify the role of CARE and BRAC Bangladesh in cyclone disaster management especially with response, recovery and rehabilitation, with special focuses on gender.
3. To assess the problems faced by NGOs in cyclone disaster management.

### **Data Collection techniques and data sources:**

Both qualitative and quantitative research approaches were applied for the study. Data were collected based on primary source by –

1. Key informants' interview
2. Case studies
3. In-depth Interview
4. Focus group discussion
5. Observation

Secondary sources are-

1. Extensive literature review
2. Analyzing reports
3. Documents of Patuakhali zila office
4. Report from local NGO office.

These are the main sources and technique of data collection

### **Data Processing and Analysis:**

After completion of field work research, data processed in accordance with the outline laid down for the purpose at the time of formulating the research proposal. When the

data was processed and drafted, they were analyzed and summarized mainly in descriptive ways as in done in qualitative study.

### **Preparation before Field Study:**

Before going to field, researcher needs to prepare a lot of things to conduct a field study. I went through existing literatures that I reviewed for clear understanding of what to do and what needs to keep in mind before asking question. I went through several research methodology books where I studied the techniques and strategies of data collection process. I went through several unpublished research works similar to my research area. By doing so, I took a rough idea from their data collection techniques, way of gaining access, way of negotiation with target group and problems faced during field work. I prepared an interview guideline with some questions that address my research problems. To make it comprehensive, I visited several websites of different universities to gather ample information to prepare interview guideline. I found so many issues that gave me a clear idea about what I should do as well as what I should not during field work.

### **Negotiation and Gaining Access:**

Negotiation occurs with each new member until a stable relationship develops to gain access (Neuman, 1997:353). As the site of this research work is a rural area and all the respondents are farmer, it is not so easy to negotiate and gain access. I make different plan to contact respondents. I spent ample time with my respondent in their natural setup and sometimes I offered tea to them (if the place is near with any tea stall). In the start of negotiation, I explained the objective of my research project very clearly and honesty to each of the respondents and placed a request to participate in an interview.

### **Field Notes:**

Field notes are very important part of a research work. I noticed much more issues which somehow was not discussed in detail or remain absent in conversation. I took a close look of each respondent. After conducting each interview, I maintained a field note where I wrote about attitude, body language, appearance, dress pattern and fiscal



expression of respondent during interview. These things would allow me to have a holistic idea about the respondents' socio-economic condition.

**Limitations of the study:**

There were some limitations in my study and those are given bellow:

1. I had to complete my advanced research thesis in very short time. On the other hand I had to continue my others academic activities. And my study area is about 317km away from Dhaka city. So I was not able to go to study area frequently. I had to go to study area during my academic vacations. This limitation also impacted on collecting necessary materials.
2. Time frame for such an important research work is too narrow to take a longer representative sample size for the in-depth study.
3. There is no any budget from the university to conduct such a research, so I had to complete the study with limited expense.
4. Due to the resource constraint, I could not employ research assistants.
5. Most of NGOs have already closed their Sidr related projects. So that I could not get sufficient information as well. Due to this limitation I had to depend on secondary source like internet, journals, newspaper etc.
6. I had to translate the participant's answers as the interviews and FDS were conducted in Bangla and they used local words and terms in some cases. So here I may have missed to translate some local words to English exactly.

## ***Chapter 4-Theoretical Framework***

### **Sociological understanding of disaster:**

Climate extremes are natural processes, but response to such events depends on the societal factors. Much of the early disaster thinking belonged to the physical sciences whereas social science knowledge was limited. As such, disasters are considered as natural phenomena. Cannon

(2000) points out that:

“Much of the conventional work on disasters has been dominated by ‘hard science’ and has been a product of the prominence that natural phenomena have acquired in the disaster causation process. But this ‘physicalist’ approach is also a result of the social construction of disasters as events that demonstrate human condition as subordinate to nature. Within such a framework, there is the inherent danger that people are perceived as victims rather than being part of socio-economic systems that allocate risk differently to various types of people.”

In response to the limitations of the physical science understanding of disaster, social scientists have conceptualized research from different perspectives. Sociologists have been prominent in the earliest social scientific efforts in disaster research (Quarantelli 1978:2) and the sociological perception of disaster is close to Dunlap and Catton’s (1979) seminal work in the field of environmental sociology. These scholars argue that social and natural processes must be viewed in an interactive and relational manner. In line with this argument, sociologists emphasize the interaction between social and natural processes in understanding disaster. The first social and behavioral study of a disaster was conducted by sociologist Samuel Henry Prince and Pitirim Sorokin. Prince’s famous study on the Halifax explosion was carried out in 1920 and Sorokin in his book, *Man and Society in Calamity* (1943), made some theoretical sociological statements about certain aspects of calamity. Later on, scholars like Quarantelli, Dynes and Kreps advanced the sociological perspective of disaster. They see disaster as a social

process. They argue that disasters are social constructions, meaning that they are the results of the social, political, and economic environment, and not only caused by the 'natural environment'. In this vein, Rodriguez et al. (2006: xvii) suggest that disasters are inherently a social phenomenon and that the source of disasters is rooted in the social structure or social system. This view is similar to the social vulnerability approach to disaster which emphasizes the social construction of vulnerability (Wisner et al. 2004, Cannon 2000, Hewitt 1997). The vulnerability approach to disaster is grounded in political ecology rather than in a sociological framework (Quarantelli 1994). However, vulnerability analysis shares some common ground with the sociological perspective of disaster as it considers a broad range of social, economic and political factors that shape disasters. Focus is on societies' inability to manage the outcomes of natural events. A natural hazard is a 'triggering' event that interacts with the social and economic environment, and particularly affects a part of population that is highly vulnerable (Quarantelli 1990 cited in Bolin 2006:114). From this vantage point, disasters are not seen as "acts of nature" but as consequences of the actions or inactions of a particular community or society (Rodriguez and Russell 2006:194). Disaster is therefore a disruption of society which is only partially and incidentally related to the physical damages (Dynes, 1985; Rodriguez et al. 2006: xiii). This view of disaster is related to the sociological perspective as the role and impact of social stratification, inequality and development on a population's vulnerability to disasters are central to the sociological analysis. According to Oliver-smith 1998 (cited in Rodriguez and Russell 2006:196), disaster is a combination of a "destructive agent" and a vulnerable group, resulting in societal disruption. Social science knowledge on coping with disaster is newly developed. Disaster researchers have examined the social organization of response and relief efforts and the underlying organizational and political cultures of disaster planning and response policies (Quarantelli et al. 2006:21). The aim of this dissertation is to explore the coping strategies that the people in the studied community applied to sustain their livelihoods. The capacity to respond to and cope with such hazards is strategically embedded in overall relations to natural, technological and social environments (Hewitt 1997:151). The social environment of a society differs according to the social structures and cultural frameworks. These societal factors determine disaster mitigation, recovery

and reconstruction measures undertaken. The sociological perspective plays a pivotal role in understanding the social structure, i.e., the interaction between individuals, groups and organizations. This viewpoint is therefore important in understanding what causes a disaster and how people respond to hazards since this always occurs in a social setting. This research will use a sociological lens to see the NGO's response to cyclone damages.

Researcher has chosen to work with several theorists in this study. This can be seen as combining three theoretical concepts in an applicable framework. The combined concepts are vulnerability and livelihood, sustainable development, chaos and the role of NGOs in cyclone disaster management.

### **Vulnerability:**

The vulnerability analysis is generally inspired by the theoretical notion of vulnerability. The relationship between the theoretical framework and the analysis is especially outspoken in the second part of the analysis as it is structured by Ellis' five capitals and the results and conclusion found in the vulnerability analysis. Vulnerability is always mentioned as central concept in the whole tradition of working with disaster vulnerability and can be said to be the origin of theoretical concepts applied in social disaster related research (Jesse c. Ribot, 1995 cited in Monir, 2010).

The concept of vulnerability and livelihood was introduced within the discourse on natural hazard and disaster in the 1970s by Sen, O'keefe and Wisner (Sen, et al, 1989). The focus on natural occurrences was pushed aside in favor of a focus on socio-economic conditions as the causes for natural disasters. They found that the loss of lives was increasing in line with the increasing of occurrence of disasters and that the losses of lives concentrated in least developed countries where the vulnerability was increasing. Especially Amartya Sen, the Indian economist and philosopher, stands out in this relation. Sen laid the ground stones for analyzing the causes of vulnerability in the 1980s in Bangladesh where he worked with hunger famine. Sen made for those powers. Their everyday conditions are hence bad even in the absence of climate stress (Ribot, 2010

cited in Monir, 2010). Women, minorities and other marginalized populations are especially vulnerable as they are sharing many of the living-circumstances of the poor.

Blaikie et al. recognize that vulnerability to hazard and risk not only affects one's ability to cope with such a disaster, but also affect a person's means for mitigation (pre-disaster events) and recovery (post-disaster events).

In recent years there has been a welcome growth in the literature on disasters that recognizes the significance of people's vulnerability to hazards, rather than retaining a narrow focus on the hazards themselves (Blaikie et al, 1994;). If we accept the equation that Disaster = Hazard + Vulnerable people, then we clearly need to know as much about hazards. More can that; we need to know a great deal more about the interaction of hazards and people's vulnerability.

It is crucial to recognize that vulnerability is balanced by peoples' capabilities and resilience, and but if they are perceived only or mainly as victims then the problem of what causes vulnerability may be evaded.

Vulnerability analysis is developed from a range of socio-economic approaches to hazards and that we could call 'the disaster of everyday life' (Blaikie et al, 1994; Canon 1994). Vulnerability analysis begins with the crucial acceptance that vulnerability is often part of the normal, becoming apparent and obvious to some only with the impact of a hazard. It overlaps with and is derived from other perspectives including (among others) Amartya Sen's work on famine and entitlements (see e. g. Dreze and Sen, 1994). It is vital to recognize that vulnerability should be seated as a condition of people that derives from their political-economic position.

The assumption that 'natural' disasters are inherently and predominantly natural phenomena has ended to exclude the social science from consideration in much of the spending that is done in disaster preparedness. This is despite the fact that over the last twenty years a considerable literature on disasters has emerged from human Geography, Sociology, Anthropology and (to a lesser extent) Economics. For many years, social science has contributed to policy formation for disaster (especially in the Third World)

through the activities of many Non-Government Organizations (NGOs). The initial development of vulnerability analysis is then rooted in social science, and in a sense has constituted a political economy of disasters to the analysis of devastating events that are normally associated with natural hazards. At its most simplistic, vulnerability analysis asserts that for there to be a disaster there has to be not only a natural hazard, but also a vulnerable population. Much of the conversation work on disasters has been dominated by 'hard science', and has been a product of the prominence that natural phenomena have acquired in the disaster causation process. But this 'physicalist' approach is also a result of the social construction of disasters as events that demonstrate the human condition as co-ordinate to nature. Within such a framework, there is the inherent danger that people are received as victims rather than being part of socio-economic systems that allocate risk inherently to various types of people. People therefore often become treated as 'clients' in the process of disaster mitigation and preparedness and as passive onlookers in a process in which science and technology do things to them and for them, rather than with them.

### **Vulnerability in the context of disaster:**

It is useful to determine that vulnerability is a many-sided and complex subject and as a term contextualized in different ways. A starting point for defining the concept in this thesis in this thesis is Frank's definition of vulnerability as 'a high degree of exposure to risk, shocks and stress', (Ellis, 2000 p. 62). This definition includes a dual aspect of external and internal factors; an external threat to livelihoods due to natural disaster like cyclone and internal coping capabilities determined in different factors. Vulnerability can thus be said to represent a conceptual cluster for research of humans and environment.

As disaster management research often is constructed by scientists from different research traditions and it may be problematic with competing and different perceptions of vulnerability as a scientific term, and it is therefore essential to use a common operationalization. The following chapter will therefore present vulnerability as a concept in disaster management.

### **Sustainable Development Approach and NGOs:**

In this thesis researcher examines the NGOs' role related with disaster, whether NGOs play sustainable role to reduce socio-economic and climate change related vulnerability of local people or not. The main aim of most of the NGOs is to establish sustainable development. Here disaster induced natural hazards stand as an obstacle to establish sustainable development where most of the target people live in vulnerable situation. In this perspective researcher trying to define sustainable development in different point of view and she is going to examine the role of NGOs.

The concept of sustainable development also takes a longer time dimension, as it is supposed to achieve longest satisfaction of human needs and improvement of quality of life (Allen, 1980 cited in Anderson, 2000). Goodland and Lodoc (1987) go a step further and bring in explicitly the issue of futurity. According to them:

“Sustainable development is (here) defined as a pattern of social and structural economic transformation (i. e. development) which optimizes the economic and social benefits available in the present, without jeopardizing the likely potential for similar benefits in the future”.

Markandya and Prace (1988) talk of sustainable development in the context of natural resources e.g. trees, soil quality and water (excluding exhaustible) and environments and emphasis that-

“The use of these inputs to the development process should be sustainable through time”

The definition of sustainable development given so far may appear economical and an emphasis on social dimensions may be warranted, especially, if it is to be applied in a third world country context. Barbier (1987), does, reflect that concern when he says:

“The primary object is reducing the absolute poverty of the world's poor through providing lasting and secure livelihoods that minimize resource depletion, environmental degradation, cultural disruption and social instability”.

Sustainable development also define as-

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment & Development, 1987:43)

United Nation Conference on Environment and Development (UNCED) presented Brundtland Report (1987: 49) identify some components of sustainable development which was absent in traditional development model-

1. Resource storage and management
2. New usage of technology and risk management
3. To take any decision environment and economy should determine jointly.
4. A sustainable view about population should identify.

Sustainable development includes ‘grass root’ approach instead of ‘top-down’ approach of traditional development process. (Ghai & Vivan, 1992) .

In this perspective researcher showed that poor people are the most vulnerable due to disaster and the fundamental aim of most of the NGOs is to reduce socio-economic vulnerabilities among the poor community.

### **Chaos Theory:**

The third objective of this study is ‘to assess the problems faced by NGOs in cyclone disaster management’. Chaos prevents a stable strategy of problem solving. Klaus Mainzer, 1994. To the uninitiated, chaos theory often lurks as a mathematical and scientific hinterland, of value only to a small cadre of theorists. Yet, a vast number of applied disciplines are now exploring chaos theory as a means for understanding and building systems that utilize the potentialities of this new approach. From neuroscience (Bower, 1988), to cardiology (Garfinkel, et. al., 1992) to business (Priesmeyer, 1992; Goldstein, 1989 cited in L. Douglas Kiel ) and public management (Kiel, 1993; 1994) researchers are developing a new intellectual paradigm that offers the insights of chaos



theory as a new vision for understanding various aspects of our world. In short, a new paradigm of social and human dynamics is emerging.

This new appreciation for chaos has led to an understanding of both the nonlinearity of the world in which we live and of the functional aspects of instability as a means for adapting to new situations. Chaos is one possible result of the dynamics of nonlinear systems. Nonlinearity refers to behavior in which the relationships between variables in a system are dynamic and disproportionate. In nonlinear systems small changes or small errors can have big effects. And, in nonlinear systems outcomes are subject to high levels of uncertainty and unpredictability. In nonlinear systems behavior is erratic and filled with surprises. Our world is filled with nonlinearity.

Disaster and emergency situations epitomize the nonlinearity of human events. These are events in which the relationship among relevant variables is churning. Even in our desire to create order and control the situation, events often seem to churn one step ahead of our best efforts. Heinz Pagels (1988, p.56) noted that, "life is nonlinear. And so is everything else of interest." Clearly, what makes disaster situations particularly interesting and challenging is the inherent nonlinearity in such events.

The best way to understand how disaster and emergency events are nonlinear systems is to compare the behavior of such systems with that of linear or simple systems. In linear systems the relationships between relevant variables is stable. In linear systems the relationship between cause and effect is smooth and proportionate. In short, linear systems respond to big changes in a big and proportionate manner and linear systems respond to small changes in an equally small and proportionate way.

If disaster and emergency response processes were linear system we could predict the number of fatalities or the amount of resources and personnel required to bring order to chaos. We could predict how long reconstitution of the previous environment would take. We could make statements such as an 8.5 earthquake centered on Ventura Avenue would kill exactly X number of people. We often make these linear estimates because we are limited by linear tools for prediction and response.

But when we look at real disasters do we see such prediction, such simplicity, or such linearity? The potential for nonlinearity and erratic behavior to occur in complex human environments emphasizes the overly simplistic assumptions we often make about system behavior and real outcomes. In 1992, the city of Chicago suffered a devastating downtown flood due to a failure in the city's tunnel wall. Only later was it discovered that a private contractor tried to report the failure but no city authority responded to the report. A crack that could have been remedied for \$10,000 eventually cost taxpayers, the city, and business an estimated 1.7 billion dollars (Roeser, 1992 cited in L. Douglas Kiel). The nonlinear and explosive effect of a seemingly small crack led to real disaster. In disaster and emergency services management the outcomes of our errors, oversights, and even our best intentions may only, much later, result in real and unexpected surprises.

## ***Chapter 5- Findings***

### **The role of NGOs related with cyclone disaster management:**

NGOs are organizations registered under various laws .NGOs work on a variety of areas like humanitarian assistance, sector based development interventions and sustainable development. NGOs play important roles in different stages of the Disaster Management Cycle.

Volunteerism and social service has deep roots in Bangladesh for some noble cause like rural development, construction of social assets and public infrastructure and amenities, etc. In post-Independent Bangladesh, the Non-Governmental Organizations (NGOs) have been providing support in critical sectors like health, education, water supply and sanitation, shelter and infrastructure, restoration of livelihoods, food security and nutrition, environment, etc. Given Bangladesh's multi-hazard risk and vulnerability to natural and man-made disasters, NGOs have been playing a significant role in providing humanitarian assistance to disaster-affected people in most of the severe disasters by participating in providing relief to disaster affected communities.

In the recent past, the role of NGOs in disaster management (DM) has started changing from providing post-disaster relief to strengthening pre-disaster preparedness and mitigation through capacity building, public awareness campaigns, mock exercises, workshops and conferences, etc. NGOs have also started to collaborate with corporate entities in Public-Private Partnership (PPP) projects and Corporate Social Responsibility (CSR) initiatives in the field of DM at State, District and Upzila levels. Till recently, the work of NGOs in the field of DM has been mostly sporadic, reactive, and responsive and driven in local level compulsions in the geographic areas where they are implementing development projects and very often they faced enormous challenges in coordinating with the government machinery and even among NGOs themselves.

Recently most rapid frequency and unbelievable destruction of cyclone in Bangladesh make me eager to study on this subject. To make clear view about the place of NGOs in

Cyclone disaster management, I was tried to reach in most root level people who are actually the target group of NGOs and also to person of NGO for getting pure result. To do so I observed these people from different side like interviewing, discuss with them or sometimes by listening their discussion. And this effort gets a result, which I am going to present-

### **1. NGOs in cyclone disaster management focusing cyclone 1970 prior to Bangladesh**

In spite of its wealth of natural resources, East Pakistan also had its share of sufferings. Different studies show that there were ten tidal waves in the coastal areas of Noakhali between 1960 and 1970. Floods and cyclone were common and the disparity between the poorest and those who benefited from the natural wealth increased with each calamity. Both governmental efforts towards cyclone disaster management were significantly maintained (Edwards 1999). However, prior to Bangladesh the contribution of international NGOs was most significant compared to national NGOs especially to cyclone disaster management as a very few national NGOs were existed. The United Nations donated \$2.1 million in food and cash, whilst UNICEF began a drive to raise a further million (Halloran 1970). UNICEF helped to re-establish water supplies in the wake of the storm, repairing over 11,000 wells in the months following the storm (UNICEF 2006). UN Secretary-General U than made appeals for aid for the victims of the cyclone and the civil war in August, in two separate relief programs. He said only about \$4 million had been contributed towards immediate needs, well short of the target of \$29.2 million. By the end of November, the league of Red Cross Societies had collected \$3.5 million to supply aid to the victims of the disaster (McKinley 1979)

The World Bank estimated that it would cost \$185 million to reconstruct the area devastated by the storm. The Bank drew up a comprehensive recovery plan for the Pakistani government. The plan included restoring housing, water supplies and infrastructure to their pre-storm state. It was designed to combine with a much larger ongoing flood-control and development program. The Bank provided \$25 million of credit to help rebuild the East Pakistan economy and to protective shelters in the region. This was first time that the IDA had provided credit for reconstruction. By the start of

December, nearly \$40 million had been raised for the relief efforts by the governments of 41 countries, organizations and private groups.

On November 20, 1970 the United Nations General Assembly passed a resolution that both expressed its sympathy to the Pakistani government and called on the UN specialized agencies and governmental and non-governmental organizations to help Pakistan with both its short-term relief and long-term reconstruction and development. This developed into a cyclone Preparedness Program in 1972, which is today run by the Government of Bangladesh and the Bangladesh Red Crescent Society. The program's objectives are to raise public awareness of the risks of cyclones and provide training to emergency personnel in the coastal regions of Bangladesh (CPP 2007).

CARE established an office in Dhaka in 1962. In 1970 CARE sent relief to the victims of the cyclone tidal wave which hit coastal areas in East Pakistan on 12-13 November, 1970 (Hailey 1999). By January 1971, CARE had reached an agreement to construct 24,000 cement brick houses at a cost of about \$1.2 million (1971 USD, \$6.1 million 2007 USD). The Catholic agency CARITAS Pakistan had a branch in East Pakistan from 1967 but following the cyclone it was renamed Chittagong Organization for Relief and Rehabilitation (CORR) in November 1970. It reorganized and became a national organization called Christian Organization for Relief and Rehabilitation in January 1971 with several Cyclone rehabilitation projects.

These early history of CARE and CARITAS illustrate how the Cyclone of 1970, followed by the collapse of the democratic process and the slide into the Liberation War of Bangladesh changed the economic and social circumstances of Bangladesh and brought into the international consciousness a picture of a nation in crisis. They are also indicative of the way NGOs adapted to the changing environment in which they found themselves.

## 2. NGOs in cyclone disaster management focusing cyclone 1991 in Bangladesh

From its birth as an independent nation in 1971, Bangladesh became a site for Non-Government Organizations. Initially focused on relief and rehabilitation activities following the War of Liberation and succeeding natural calamities, international and local NGOs turned their efforts to longer term development in the absence of state capacity to deliver welfare (Abed 1989).

The suffering of the Bengali people due to a combination the cyclone of 1970 and the political havoc that lead to the emergence of Bangladesh as an independent nation following liberation war from March to December 1971 prompted a massive response in multilateral, bilateral and non-government aid. In addition to the outside humanitarian organizations which responded, many local organizations were created to care for orphans and widows and assist the many refugees (Ahmed 2000) returning from neighboring India after the war ended. BRAC, the largest NGOs in Bangladesh today, was formed in 1972 as the Bangladesh Rural Advancement Committee. Its early objective was to deliver relief and rehabilitation programs for refugees returning from India to resettle in Bangladesh (BRAC 2004). The Lutheran World Federation is typical of the many international NGOs which provided assistance with relief and rehabilitation.

During the first years of Bangladesh's independence in December 1971, humanitarian agencies and media coverage were focused on the apparently overwhelming needs of a mainly rural population living on the edge of subsistence in a 'disaster prone' environment while the national infrastructure was still being reconstructed from the destruction of guerrilla warfare during the struggle for independence (Wood 1994).

A few Bangladeshi NGOs grew very substantially in the early 1990s with the help of 'large-scale donor support'. Most of them were involved with relief and rehabilitation activities to face cyclone disaster in 1991 (Fernando 2003). NGOs' contribution to cyclone disaster management in 1991 was significant as the donors responded. The number of NGOs involved increased rapidly and the amount of international aid that came to NGOs was about US \$200 million in 1991 to face especially cyclone disaster (Stiles 2002). In the 30 years after the 1970 cyclone, over 20 cyclone shelters were

constructed in the coastal regions of Bangladesh in cooperation with both government at different levels and NGOs. When the next destructive cyclone approached the country in 1991, volunteers from the Cyclone Preparedness Program warned people of the cyclone two to three days before it struck land. Over 350,000 people fled their homes to shelters and other brick structures, whilst others sought high ground. While the 1991 storm, partly because of the warnings sent out by the Cyclone Preparedness Program (WB 2006). However, the 1991 storm was significantly more destructive, causing 1.5 billion dollars in damage (inflation-adjusted: 480 million).

NIRAPAD is an open coalition working in Bangladesh which was set up in 1997 in cooperation with CARE to bring information and strengthen the abilities of development organization and community to reduce disaster risk (Nobusue 2002). CARE Bangladesh along with its disaster management partner NGOs established the coalition. All 21 members under the coalition have been working in the high risk areas of Bangladesh since long to reduce the risk of disaster on livelihood security of vulnerable household. And, each of the member organization has included disaster management as an integral component of their ongoing development program and earmark resources in their annual budget.

A strategic plan was developed for NIRAPAD by its member organizations. The constitution and strategic plan clearly states the vision, mission, activities and management procedure of the network. NIRAPAD has an eight member steering committee that takes all the important decision to function it. NIRAPAD coordinator acts as Chief Executive Officer of the organization and by designation member secretary of the steering committee.

From the beginning, member organizations of NIRAPAD have subscribed to building a common fund. The member organizations continue to the fund on a yearly basis. However, future plan of NIRAPAD is to develop strategic partnership with different organization and institute, who have expertise in disaster sector. Also it is initiated to develop different training modules for developing expertise in DDR (disaster risk reduction) with a special focus in climate change and to build ability to organize training program regarding disaster management for increasing resource base of the organization.

However, the government, NGOs, people and friends around the world worked together in minimizing the impact of the calamity through preparedness as mitigation measure as well as coping with the aftermath. The government and non-government organizations (NGOs) worked in a coordinated manner to bring relief to suffering people (Blair 2005 cited in Sarkar, 2009). The task was too great and scope remained for improving the situation. Based on different studies and documents it was found that the role of NGOs in disaster management in Bangladesh was significant. The study (ADB 1999) showed that about 20% of the assistance to emergency response, recovery, and rehabilitation during 1970 cyclone disaster was ensured by NGOs both national and internationals and it was more than 40% in 1991 cyclone disasters. Presently, NGOs are giving emphasis to work on preventive measures as a strategy of disaster risk reduction.

#### **About Sidr Victims:**

Respondents of this study are mainly coastal village people. Most of them are illiterate. Their economic condition is so miserable. But some respondents are local or other NGO staff and they are educated. Following table shows 67.5% are illiterate and all of them are Sidr victims. This education level also has an influence on their view about NGOs' role on disaster management.

Table 5: Education Level

Education level	Number	Percentage
Illiterate	27	67.5
Primary	6	15
SSC	2	5
HSC	3	7.5
Higher	2	5
Total	40	100



### Preparation of NGOs for upcoming cyclone sidr:

Any disaster especially for cyclone, warning works as the bases of its management. Geographic location, the unique natural setting of the country and its tropical monsoon climate modify and regulate the climate condition and make the country more vulnerable to cyclones and storm surges. Despite being poor and vulnerable to a range of natural hazards, Bangladesh has made significant progress in disaster warning system in recent years confirm that the lower-than-expected death toll and damage caused by different cyclones in Bangladesh was the result of timely cyclone forecasting and dissemination of warnings, as well as the evacuation of vulnerable people living in cyclone-prone areas.

Table 6: Distribution of households based on numbers of people who listen to cyclone warnings

<b>Listening pattern</b>	<b>Number</b>	<b>%</b>
Rarely	56	28.3
Sometimes	42	21.2
Often	50	25.3
Very Often	23	11.6
Always	27	13.6
Total	198	100

Disaster warning is considered as a linear process of communication between warning-issuing organizations and recipients of the warnings. Irrespective of hazards, the main objective of warning is to reduce disaster impacts through enabling people to take precautionary measures. Therefore, the success of warnings depends on appropriate hazard detection, information dissemination, and responses by affected people. In addition to a variety of socioeconomic factors may also determine the human response to warning. A number of efforts have been made to document such factors during hurricanes, floods, and several other disasters. At the time of Sidr we see strong warning not only from national level but also from international level. At last 5/6 days before these warning comes. So, different organizations get this time for preparation for this upcoming destruction.

Following this above line almost every NGO try to preparation as their instant ability. Some are discussed-

As one of the largest international NGO of Bangladesh, BRAC was able to immediately access US\$1 million of our own resources for the relief effort. BRAC mainly emphasize on man power. It gets prepared a large number of volunteer for coming disaster. And these volunteer work restlessly for a long time. According to one BRAC staff-

“BARC staffs have been working on overdrive since the night of the cyclone, notwithstanding the traumatic experience they underwent themselves with their families, and they are devoting twenty hours a day to the relief effort. I know staffs that have only slept six to seven hours in the last five days.”

After getting warning BRAC sent their medical team in coastal area with as much as instrument. Also manage food and drinking water for the victim.

“One local sub-district commissioner said that BRAC is a permanent in the villages. With BRAC, the villagers feel that they won’t be abandoned and many of the staff have been stationed there for more than two years. It is not as if our people are going to give the food and then go away- they have learned to trust us which helps when we are giving them instructions about water sanitation and health issues.”

Save the Children was prepared for the category 4 storm, Tropical Cyclone Sidr which landed in Bangladesh on Thursday, November 15, 2007. We supported a large-scale evacuation of children and families before the storm and deployed staff and equipment, including rescue boats, to the area and arranged for food and water purification supplies to be sent to the at-risk areas in anticipation of our emergency response. These preparations saved tens of thousands of lives – in 1991, a cyclone of a similar strength killed 140,000 people.

CARE staffs in Bangladesh have been working for the past three years in two areas of preparedness:

**Community-based preparedness:**

- a) Worked alongside vulnerable communities/upazilas in the coastal areas to develop and build the capacity of community emergency response structures, such as Upazila Disaster Management Committees in collaboration with the relevant governmental disaster management agencies, local authorities, NGOs and Cyclone Preparedness (CPP) volunteers.
- b) Managed cyclone awareness field simulations for over 10,000 community members, including women and children, in several vulnerable Upazilas, some of which were recently were recently affected by Cyclone Sidr.
- c) Conducted cyclone preparedness activities that included: assessing approximately 500 Cyclone Preparedness Program to gauge the status of equipment and capacity; Training over 600 search and rescue units.
- d) Educated community members on typical disaster seasons, appropriate emergency preparedness and response activities and the order in which to do them, and early warning systems, especially as it applied to livelihoods.

**Country Office Preparedness**

- I. Drafted a programmatic and operational emergency preparedness plan
- II. Developed and/or strengthened emergency response and preparedness plans and capacities of partners
- III. Implemented organizational emergency structures with clear roles and responsibilities for staff, for preparedness and response stages
- IV. Identified staff, equipment, and material needs for specific contingencies
- V. Prepositioned lifesaving materials for emergency response team in various locations
- VI. Institutionalized early warning systems and communication procedures Over 40,000 Red Crescent volunteers were deployed to order residents in the 15 affected provinces into special cyclone and flood shelter.

Over 40,000 Red Crescent volunteers were deployed to order residents in the 15 affected provinces into special cyclone and flood shelter.

### **Sidr Effects of patuakhali**

Bangladesh dated with a nightmare as cyclone Sidr ripped through the south western coast on 15<sup>th</sup> November 2007, killing over 5000 people and demolishing houses, crops, vegetables and trees alike along its trail of devastation over an area of thousands of square kilometers.

The fierce cyclone “SIDR” is the worst storm in years. The cyclone has a diameter of about 500 kilometers with a wall of clouds about 200 kilometers tall. Code-named “SIDR”, the terrible tropical storm with a core of hurricane winds and packing a speed of up to 240 kph, passed through Barisal-Khulna belt from the Bay on the night.

Most of the people who lost their houses during super cyclone Sidr in southern districts of the country are still passing hard days amid problem of dwelling houses. According to Patuakhali district administration, 54,006 families comprising 2.25 lakh people in the district lost their houses due to the Sidr. Paddy cultivations in 2,48,694 out of 4,97,389 acres in patuakhali damages from hurricane Sidr. Vegetables and winter crops cultivated in 2,54,551 (51.4 per cent) out of 5,04,189 acres in Patuakhali damaged by Sidr.

According to the updated government estimate, 50 people found dead while the cyclone affected 3 hundred individuals of 60 thousand families in 2 upazilas Bauphal & Dashmina. Over Nine thousand houses have been damaged. More than 1500 cattle were found dead which worth BDT 15 million. Crops of more than one hundred thousand acres of land were totally damaged which was almost 100% of the total cultivated land. 35 educational institutions were ruined and more than 250 were partly damaged. The cultivated fish washed away that worth more than BDT 100 million. The affected people of islands and char areas are living under the open sky without food, water, shelter and medicine.

In my study area mostly all people is victim of Sidr. Most common losses are house destruction, lose of cattle, crop damage, lose of fishing materials (boat, net) lose or damage of living materials, die or lost of family member etc. All these are not occurred for everyone but all have bitter past about Sidr.

Table 7: Damages and Losses in Sidr

Damaged Sector	Frequency	Percentage
House	19	63.3
Cattle	25	83.3
Crop	15	50
Main Earning Material (Boat, Net, Van, etc)	9	30
Living materials(cloth, Utensil)	30	100
Die or lost of family member	8	26.6
Everything	4	13

In this table we see the damage and loss of respondent in Sidr. Here we see that almost all are affected by different side. 4 out of 30 lose everything (all above) and they are also included within above others. 8 people lose their family member, one among them lose 3 member 2 children and his wife.

### **Requirements and response:**

Coastal people are naturally strong and brave. They always live by fight with opposite nature. But sometimes fat do favor them and they fall on great trouble and need help from others. Cyclone Sidr is that type of disaster when whole coastal people wait for little relief goods.

In this part researcher includes a forward-looking approach and describes what should be done to restore the economy and rebuild the assets destroyed by the cyclone, including a scheme for reduction of disaster vulnerability and risk management. On the basis of the damage and loss assessment presented in Part A, financial needs to achieve full economic recovery – at the macroeconomic and individual household levels – and to rebuild the destroyed physical assets are estimated. Furthermore, needs for entering into vulnerability reduction and risk management are identified and quantified. Immediate or short term as well as medium and long-term requirements are estimated and presented.

### **National response**

After the storm, 18 Bangladesh Air Force helicopters and five Bangladesh Navy ships were immediately dispatched with food, medicine, and relief supplies for the hardest-hit areas. Bangladesh Red Crescent Society initially asked 400 million Taka (US\$5,807,594) to the international communities. As part of the Bangladesh cricket teams' tour in New Zealand, a charity Twenty20 match was held with all funds raised going to the victims. In addition, the International Cricket Council donated US\$250,000 to the funds at the start of the match. The Ministry of Food and Disaster Management allocated 4,000 metric tons of rice, 7,500 tents, 18,000 blankets, and 30 million Taka (US\$435,569) in relief grants. About 13,000 housing packages, consisting of iron sheets for roofing and family kits were prepared for immediate distribution. A special 350 million Taka (US\$5,081,645) fund for housing was established by November 22, 2007. At that time, 732 medical teams were deployed to the affected areas.

### **International response**

International community's had expanded their hands towards Bangladesh on this disaster. Below is a contribution list.

#### **UNICEF's response**

Immediately following the cyclone, UNICEF worked with Save the Children to establish 220 safe spaces where child victims received food and safe water and had access to psycho-social support and recreation.

UNICEF also provided a wide range of emergency supplies, including:

- Safe drinking water for over 100,000 families
- 1 million packets of oral rehydration solution to treat diarrhea
- 100,000 blankets, 30,000 tarpaulins and 40,000 plastic sheets
- 99,000 winter jackets for children aged five and below
- Family kits – containing clothes, cooking utensils and basic household items – for 32,000 families

Longer-term support for cyclone victims has included:

- Materials and support to build 42 transitional schools, which can be used as cyclone shelters during future storms
- Construction of almost 30,000 latrines
- Nutritional supplements for more than 140,000 children and over 50,000 women
- Cash transfers and social support for 2000 orphaned and vulnerable children and their foster families.

### **WFP:**

WFP Bangladesh launches the implementation of Cash for Work (CFW) activities to support 115,000 extreme poor beneficiaries in two districts severely affected by cyclone Sidr. The main objectives of the CFW are as follows:

- Create temporary employment of the vulnerable people and facilitate restoration of their livelihood;
- Provide cash to increase the household food consumption of food-insecure people in the area where rural markets are functioning;
- Rehabilitate and maintain community-based assets and infrastructure;

Under this activity, each participant will receive monthly Taka 2,000 for 20 days of work; the schemes are selected through community driven process so that it can bring

direct benefits to the vulnerable people. A total of USD 2 million, available from the contribution of European Commission, has been planned for CFW activity.

**Relief program in Patuakhali:**

Only 11,590 families got houses under the assistance program taken by different donor agencies and countries. The rest 42,416 families still shelter less in the Patuakhali district.

“Just after the Sidr last year, I got only Tk 5,000 as help from army men to rebuild our house. With the scanty amount, I made a low hut where I am living with my family,” Ansar Mira of Matibhanga village in Sadar upazila told this correspondent on Tuesday. Many other families who lost their houses due to the Sidr are still passing their days under huts, he added.

“We heard that the government is giving houses for Sidr victims but we are still deprived,” said Atahar Ali of the same village.

“We are passing hard days. During rains, our sorrows know no bounds as rain water easily enters our house,” said his wife Sufia Begum standing beside him.

The Sidr killed 22 people in the village, locals said. Only Tk 5,000 was given by the government to each family whose house was fully damage while families with partially damaged houses got Tk 2,000 to 3,000 each. About 5,000 dwelling houses at Charkhali village under Mirzagonj upazila in the district were damaged as Sidr hit the area. Muslim Aid, an international organisation, arranged houses for 2,450 of them.

“Muslim Aid made a house for me at a cost of Tk 90 thousand. But many villagers are yet to get such help,” Kalam Mridha of Charkhali village said.

When contacted Shamsul Haque, District Relief and Rehabilitation Officer (DRRO) in Patuakhali said, “We are trying our best to ensure shelter for every victim. Thirteen donor countries and agencies assured us of building 23,206 houses for Sidr victims in seven upazilas in the district.”

District administration distributed Tk 40.50 crore and 2,262 bundles of CI sheets among Sidr victims to repair their damaged houses but the allotment was far short of demand, said sources at District Relief and Rehabilitation Office.



Most of these coastal people do not know that they receive help from what organization, was it a NGO or others. A common type of receiving help is different food item. Some of them get cash specially a most common amount 5000tk. Following table show a list of help received by people.

Table 8: Help Received From Any NGO

Help Type	Number	Percentage
Loan	2	6.6
Cash	6	20
Food and water	26	86.6
House Building Materials	2	6.6
Cloth	0	0
Medicine or medical treatment	8	26.6
Agricultural materials	0	0

### 1. Role of NGOs focusing Care Bangladesh and BRAC in Cyclone focusing Sidr:

#### BRAC-

##### Relief and rehabilitation:

BRAC responded to the devastation caused by Sidr with relief, recovery, and rehabilitation activities in 30 upazilas (sub-districts) of 9 cyclone-Sidr affected districts of Southern Bangladesh ,

##### Needs assessment:

A need assessment survey was carried out by BRAC in December 2007, just after cyclone SIDR hit the Southern Bangladesh. The findings of the initial assessment were updated with the results of a second assessment conducted by BRAC in April/May 2008.

**Beneficiaries/target groups:**

The beneficiaries/target groups of the project were cyclone SIDR affected farmers, livestock rearers, fishermen, homestead owners, rickshaw van pullers, small business owners and day laborers. The selection were done using a positive discrimination towards families with women headed households, vulnerable children, disabled, elderly with no income earning households earners, ethnic minorities and other socially excluded groups. The total number of direct beneficiaries was estimated at 424,024 households. These include agricultural workers particularly women who will be provided employment for 730,981 person-days under “Cash for Work” program for infrastructural development or maintenance activities. The members of the targeted households are expected to benefit directly from the interventions aimed at the rehabilitation of their pre-SIDR livelihoods. The wider community is expected to benefit indirectly through the benefits of economic recovery and service provision. The groups of cyclone SIDR affected livelihoods were targeted for rehabilitation programs are rice farmers, maize farmers, vegetable farmers, betel leaf growers, nursery owners, livestock rearers, homestead owners, rickshaw van pullers, small business owners and day laborers. BRAC recruited all of the staff at different levels, and deployed both new and experienced staff to the respective offices in June 2008 as per contact of the project. BRAC has followed the recruitment policy and procedure of equal opportunity employment for the recruitment of the new staff.

**Relief and recovery activities:**

BRAC addressed the needs of devastated households by providing emergency food and dry food packages to about 185,000 families just after Sidr. Blanket and cloths were distributed among about 41,000 and 120,000 households respectively. Arrangement of safe water to about 70,000 households using water purification tablets, treatment to about 37,000 households, safe sanitation to about 22,000 households was ensured on emergency basis. As of October 2009, a total of 246 pond sand filters (PSF) were renovated and another 229 PSFs were newly constructed.

Under ground water through deep tubewell is one major source of safe drinking water. In the affected areas BRAC installed 200 deep tubewells. Nutrition supplement was ensured among about 85,000 families focusing child, pregnant, and lactating mothers. Employment was ensured for about 930,000 man-days under cash for work program. Besides, BRAC provided 1302 new houses and repaired 2645 houses as of October 2009.

### **Rehabilitation:**

In general, progress was steady in implementation of the different agricultural and non-agricultural components of the project.

### **Agriculture-based livelihoods rehabilitation**

#### **Rehabilitation: rice production:**

Following the selection of affected rice farmers in more or less contiguous blocks, the beneficiaries were provided, by installment, with seeds, fertilizers and tillage services for land preparation, irrigation and for other cultural activities up to the maximum of TK 5,000 per acre. Seeds and fertilizers were procured locally from reliable dealers, following BRAC procurement rules. Where suitable growing conditions prevail, the beneficiaries were provided the hybrid rice deeds, along with seeds of high yielding varieties of rice that farmers usually cultivate in some areas of the Sidr affected districts. Innovative methods and new crop varieties were experimented along with traditional rice farming practices since farmers responded to innovation during crisis, and BRAC's regular Microfinance program and the post-SIDR rehabilitation program implemented earlier. An agricultural intensification and diversification program with BRAC own fund was implemented to increase food production as well as to minimize the effect of rising food prices on household level food security. The project supplied agricultural equipment whose services were rented by beneficiaries under the present project. BRAC helped in land preparation activities to increase rice cultivation area in Aman season.

Payments for rice inputs was made to beneficiaries of 275 acres of lands in October 2009 and a cumulative of 70,098 acres (more than 100% of the target) was grown to rice up to the reporting month (October 2009).

**Rehabilitation:** Maize production

BRAC selected some farmers in the Sidr affected areas to introduce hybrid maize for human consumption as well as for poultry feed. The selected maize farmers were provided with seeds, tillage service for land preparation, irrigation and fertilizers to the maximum TK 5,000 per acre. The farmers procured fertilizers from locale dealers. BRAC started hybrid maize seed distribution from October 2008 and were able to fulfill the target by March 2009. Input supply such as seed and fertilizer, land preparation and irrigation supports were subsidized to plant hybrid maize to about 17,529 acres of land within February 2009, which was more than the target, 17,500 acres. But some farmers cultivated maize in March 2009 amounting 29 acres of land, included in the report as the achievement of March 2009.

**Rehabilitation:** Vegetable/fruit production

Generally the farmers cultivate various fruits and vegetables in the winter as a source of livelihood. In most cases these activities are conducted in the homestead areas by the landless and marginal landowning households, and the work is done by women members in between their domestic activities. Due to the catastrophic impact of the cyclone Sidr, the standing crops of bitter gourd, spinach, radish, carrots, okra, pumpkin, cauliflower, and cabbage were destroyed. The impact was felt severely by the marginal and small farmers who were struggling to survive.

To assist in rehabilitation, BRAC provided TK. 4,000 per acre to 16,546 beneficiaries for vegetable cultivation in October 2009 (Table 2.2) and cumulative of 194,988 marginal and small farmers up to the reporting period. The area coverage in October 2009 was 5,162 acres and cumulative coverage of about 31,213 acres of land (about 97.5% of the revised target) for growing seasonal vegetables since the start of the project. The grants were given to women, the reason being that women are the main

cultivators of vegetables and this will empower them in proper decision making and allocation of the funds. With this support, the farmers were able to prepare their land, purchase fertilizer and seeds. BRAC included the tribal groups residing in the patuakhali district for vegetable cultivation and hope that these efforts will in some ways relieve the vegetable farmers of their hardships..

**Rehabilitation: Betel leaf production**

Historically, it was found that the Hindu communities (Baroi) in the greater Barisal region engaged in cultivating betel leaves as a source of livelihood. The Muslims are not usually engaged in this activity. Betel leave farmers were also severely affected by cyclone Sidr. BRAC completed the target by august 2009. Most of the beneficiaries have already started selling betel leaf to recover pre-Sidr livelihoods.

**Replacement: lost goats**

Goat rearing is an integral part of many farming systems in Bangladesh. It provides meat, hide, milk and manure. It is an important source of income for the poor, and is often used as a form of savings by the landless and women farmers. The sale proceeds of goats help them tide over unforeseen crisis that demands immediate cash for example medical expenses. To support livelihood rehabilitation in these areas, BRAC provided 536 goats to 268 women in March 2009 with the cumulative figure of 4000 goats to 2,000 women, achieved 100% target by end of March 2009. Almost all the goats gave birth to 2-3 kids and it is considered as a quick rehabilitation component.

**Replacement: Lost cows**

Dairy farming was a major source of income for the poor men and women that were demolished by the devastating cyclone, Sidr. BRAC provided Taka 10,000 to each affected women for purchasing the cow and construction of the shed. The price of cow was higher than the amount of grant received by the women. Since grant was inadequate to purchase adult animal, BRAC provided heifers of 2.0-2.5 years of age that will take 1.5-2.0 years to give birth a calf and produce milk. Therefore, it will take time to generate income for the households through this activity. It was observed that the cows

purchased from the northern regions of Bangladesh suffered from diarrheal diseases drinking saline water and grass grown in salt affected soils. To overcome this unhealthy environment for the animals, BRAC decided to purchase the calves from the southern region to distribute among the beneficiaries under the current project for better adaptation of the animals with the local environment. In October 2009, BRAC provided 2,334 cows to women from low-income households and a cumulative of 15,894 cows (about 99% of the revised target) and cash for construction of cow shed. The cows were also given to those women who previously worked for the “cash for work” component. The women were very poor and have no alternative livelihoods after the completion of the cash for work activities. We provided them a cow each so that they can foresee a good future in absence of the rehabilitation program. BRAC is providing and will continue to provide artificial insemination (AI) through their AI program to all the supported cows. The cows were provided preventive cares and will be administered injections preventing common diseases and follow –up services under BRAC’s ongoing Poultry and Livestock Program in the locality. We observed that 5-10% of the cows gave births a calf and the beneficiaries were benefited having milk for their children. A portion of the milk is also sold by some beneficiaries to meet some essential requirements.

### **Seed: for fodder production**

The animal feed is very scarce in the coastal environments. Therefore, to sustain animal production (especially cow and goat) and to restore the livelihood of the rears, BRAC decided to provide the seeds of improved fodder to grow in the Sidr affected areas of the country. BRAG distributed 5,204 kg of fodder seeds in March 2009 with the cumulative value of 47,982 kg fodder among the farmers to produce animal feed in their lands. Although the total budget was the same, the amount of fodder seed distributed was more than the target. BRAG also distributed maize seed to cultivate as fodder crop. The price of maize was less than the sorghum fodder seed. For this reason BRAG were able to distribute more fodder seed than the original target (37,320). Many cow rears expressed their willingness to cultivate fodder for their milking cows.

**Replacement of destroyed fishing boats and nets**

The fishermen were greatly affected by the Sidr. They lost their boats and nets due to the devastating cyclone. BRAG decided to provide livelihood improvement support to the fishers like the crop farming. BRAG identified the victims and following the selection of affected small fisher groups, the leader of the group was given up to a maximum of Tk 20,000 to cover the manufacturing of a fishing boat and purchase of fishing nets and other accessories necessary for fishing. The fishers provided the matching support in the form of their own using female labor. The boats were made from locally available wood, harvested from trees fallen during the cyclone. BRAC provided 200 boats and nets to the Sidr affected fishers during July-October 2008. The fishers are already involved in fishing and their livelihood has recovered very early. The original target was fully achieved by October 2008. Later on we observed higher demand for the boat and net. Since this component is regarded as a quick livelihoods recovery, BRAC revised the target and planned to distribute 2,550 boats with net by end of the project. In October 2009, BRAC provided 635 boats and nets to the fishers with a cumulative of 2,550 boats, which is 100% of the target.

**Rehabilitation of social forestry**

In Sidr affected areas, the women work in their own small nurseries by cultivating seedlings in order to support their families. The money that is generated by selling these plants support acquiring basic necessities and accumulation of small savings by women members. The trees within the homestead also helped protecting the environment. SIDR dealt a heavy blow to social forestry and women's earnings from raising nurseries. BRAG gave a grant of Tk 4,000 per person to the affected women to prepare land, purchase fertilizer and seeds to grow their nurseries. In February 2009, BRAG was able to fulfill the target of small nurseries.

Some nursery owners will be able to sell saplings of fruit and timber trees during the ensuing monsoon, and within six to twelve months other nursery owners will be able to sell their plant seedlings, which in turn will support their families, creating a positive impact within the environment.

### **Replacement fallen trees in homesteads**

A huge number of households has experienced tree fall during cyclone SIDR. The cyclone destroyed homestead trees that served as sources of fruits, fire wood, protection, shelter and income, while having a positive impact on the local environment. BRAC selected the affected households and following the selection of a large number of affected homesteads, the beneficiaries received a number of good quality seedlings (fruit and timber) up to a maximum value of Tk 300 per household to replant the fallen trees. The seedlings were procured in bulk from local tree nurseries and BRAC nurseries following the BRAC procurement rules. Beneficiaries were to certain degree allowed to choose their preferred type of fruit or timber trees, avoiding thereby replanting problematic tree species in their homestead. Since the winter season is not an ideal time to tree plantation, we decided to rejuvenate the tree plantation program in April 2009 at the on-set of monsoon. In October 2009, BRAC provided money to 585 families for purchasing 10-14 saplings each to plant those in their homestead areas. The cumulative number of families provided saplings up to the month October 2009 was 200,023 and it was more than the target (200,000 families)

### **Non-agricultural-based livelihoods rehabilitation**

#### **Replacement destroyed rickshaw-vans**

BRAC tried to restore the livelihood of the poor rickshaw-van pullers whose rickshaw vans were destroyed during the SIDR. Following the selection of affected rickshaw van dependent households, the female members were provided with a new rickshaw van. the husband/son of the beneficiaries will 'rent' the rickshaw-van and has to pay the female 'owner' at least Tk 20-30 per day. Rickshaw- vans were procured locally from reliable manufacturers/dealers, following the BRAC procurement rules. In October 2009, BRAC provided 14 rickshaw-vans (Table 2.2) with a cumulative value of 5,000 rickshaw-vans (100% of the target-Figure 2.2) to wife/mother of the poor rickshaw-van pullers to rehabilitate their livelihood. Many beneficiaries have restored and some are trying to regain their pre-Sidr livelihoods with the income from the rickshaw-van. This



component also considered as one of the very quick livelihoods recovery support for the disaster victims.

### **Rehabilitate destroyed small businesses**

Small business, destroyed by the Sidr was replaced by BRAC as part of the livelihood improvement program of the SIDR victims. Following the selection of affected small business owners, the beneficiaries were provided with Tk 4,000 cash per beneficiary. Through an intense follow-up it was ensured that this amount was used to rebuild, reequip or re-stock the small business. BRAC completed the target of distribution of small business by end of August 2009. But still is monitoring the performance or activities of the beneficiaries so they can maximize their benefit.

### **Cash for work**

Cash for work was mobilized to replace or repair important community-level public social infrastructures, damaged by cyclone SIDR and possibly damaged further by the following monsoon season, in close coordination with local government officials. BRAC carried out the cash for work program with the objective of creating employment opportunities that would provide additional income for vulnerable households and restore the public rural infrastructures with an average wage of Tk. 100 per person per day. The beneficiaries of the “Cash for Work” component were mainly poor women affected by the cyclone SIDR. The monsoon and the rice cultivation hindered the activities under the cash for work program, restored fully in January 2009 after the harvest of rice and recession of water from the land surface. About 4,600 beneficiaries comprised of 460 groups (10 beneficiaries per group) were involved in cash for work in every month. Although BRAC fulfilled the target of cash for work program in August 2009, BRAC had to do some road repairing works (846 person-days) that partly damaged during monsoon and tidal surge.

### **Structural measures: core house and cyclone shelters**

As of 31 December 2008 BRAC completed 400 core house/shelters. Core shelter was designed by the department of Architecture of BRAC University, Bangladesh. The main features of the core shelter include a living room of 15 feet x 5 feet. The space provision complies with the SPHERE indicator of 3.5 square meters for initially covered area per person. The space provided can accommodate 6 persons according to the SPHERE standard. Total cost of one core shelter/house was around BDT 45,000 to 74,000. Most of the beneficiaries were satisfied with the core shelter. As per plan, BRAC constructed 17 cyclone shelters as of October 2009.

### **Outcome**

It was observed that in boat-net, rickshaw-van and in small business, the rehabilitation of the livelihoods to the pre-SIDR situation follows almost immediately after the reception of the grant/equipment. Cow and goat provide rehabilitation at late. Yet many beneficiaries who received cows and goats have had the kids from cow and goat, some of them have started selling milk after home consumption to rehabilitate their livelihoods. The components rice, maize, vegetables and betel leaf yielding short-term period rehabilitation. But for the homestead plantation, the impact will appear in the long-term period. Some of the important outcomes are discussed below:

#### **Rice:**

Rice is the main staple for the people of Bangladesh. The SIDR affected area was not different from this. But, the attack of SIDR destroyed every hope of people as well as lots of land of rice. For remedy, BRAC provided seeds, fertilizer, irrigation and tillage supports for rice cultivation through financial assistance. The seeds were higher yielding than the conventional one. As a consequence, 15,295 acres of land were cultivated by the farmers in the SIDR affected areas in Aman season, 2008. Rice harvesting provided a dramatically quick rehabilitation for the affected poor people.

**Vegetable:**

Most of the house premises are good places for vegetable cultivation. BRAC provided some funds and other supports to women for restoring their livelihoods through vegetable cultivation. The beneficiaries produced egg plant, bitter gourd, spinach, squash, radish, carrots, pumpkin, cauliflower and cabbage. These vegetables produce an early income which was helpful for them to restore their pre-Sidr livelihoods. They already earned Taka 7,000-25,000 per season by vegetable cultivation.

**Rickshaw-van:**

Rickshaw-van is a popular vehicle to transport goods and rural people especially in the southern part of Bangladesh. Cyclone Sidr destroyed many rickshaw-vans either by falling trees or by collapsing houses. Since all the rickshaw van pullers and landless and poor, they fall in trouble to run their family. BRAC came forward to help the distressed community. BRAC provided rickshaw-vans to the poor women. As women are unused to drive, their husband or son is driving the small vehicles. As a consequence, they are earning Taka 150 to 200 per day. From this they are saving Taka 25 to 50 daily. This saving will be used to repair and maintenance, sudden need or to other needful situation. This also provided a quick income for them. As soon as they get the vehicles, they started income generation.

**External cooperation:** An implementation device

BRAG coordinated very closely with the Bangladesh Government and local authorities in implementing its post-SIDR rehabilitation programmes. BRAG received strong support from local offices of the government particularly from the union parishad (lowest level of the local government body), office of the Upazila Nirbahi Officer and local offices of the Department of Agricultural Extension and Department of Livestock which was instrumental in mobilizing farmers to accept BRAG initiatives by attending community meetings and providing education. Local government officials ensured transparency in program implementation and proper targeting in the beneficiary selection process and countersigned the list of beneficiaries. Local government officials also participated in ceremonies during handing over of assets to the beneficiaries.

**Care Bangladesh:**

As we know that on 15 November 2007, Cyclone Sidr struck the southwest coast of Bangladesh and high winds and floods caused extensive damage to housing, roads, bridges, and other infrastructure. Electricity supplies and communications were knocked out, as roads and waterways were blocked. Drinking water was contaminated by debris and saline water from the storm surge, and sanitation infrastructure was destroyed. The cyclone caused 3,447 deaths and seriously affected about one million households. Estimated damages and losses were Tk 115.6 billion (US\$ 1.7 billion and mainly concentrated in the housing and productive sectors).

CARE Bangladesh (CARE-B) responded to the devastation caused by Sidr by planning and implementing the \$17.09 million Cyclone Sidr Response Programme to assist over 350,000 households to recover from the devastating effects of the cyclone. The Response Program comprised of \$10.37 million in funds and \$6.72 million in food items and was funded by 10 bi-lateral organizations and 2 UN agencies as well as numerous private donors and different parts of CARE's international organization. The main activities of the Response Program were the provision of food items (FI) and non-food items (NFI), repair and new water supplies and sanitation facilities, hygiene education, and livelihood activities including cash for work (CFW). The Program was implemented in parts of Barguna, Patuakhali and Bagerhat districts by partner nongovernmental organizations (PNGOs) and direct delivery.

**Significance and Suitability****Needs assessments:**

CARE-B developed their response strategy based on needs assessment prepared by CARE-B and PNGO staff and was designed with limited direct involvement of affected households. CARE-B along with most other nongovernment organizations concluded that the needs for relief (basic food and non food items, water and temporary shelter) were so apparent that involvement of communities was not necessary.

**Relief Phase:**

CARE-B addressed these needs of devastated households by providing FI and NFI packages as well as water. In Barguna CARE-B made an opportune early intervention by distributing 1100 MT of food and non-food items from their Chittagong warehouse. CARE-B subsequently distributed FI and NFI packages in both Barguna and Bagerhat, where they also made an appropriate early intervention by providing four water treatment plants. The FI and NFI packages were appropriate and well received although the nutritional value and contents of packages varied and did not always meet humanitarian action standards. CARE-B also entered into partnership with Dhaka Community Hospital to organize 570 health camps for people suffering from Sidr-related injuries or health problems. CARE-B also introduced a psycho-social program for the first time, and although the program took some time to set up, the feedback was positive.

**Recovery Phase:**

CARE-B provided about 1100 new houses in two upozilas of patuakhali district but did not develop a comprehensive strategy for all SIDR victim shelter needs and shelter still continues to be a major need. Similarly, the Program provided funds to clean and rehabilitate the ponds and to repair or provide new pond sand filters and hand tubewells, but access to safe water remains a major need in many of the Program's working areas. Sanitation needs were addressed by the provision of sanitary and hygiene kits; repair or provision of latrines and hygiene education. The sanitary and hygiene kits education were well received, as were the new latrines although beneficiaries were concerned about the quality and the design of the facilities. CARE-B implemented livelihood projects, the main components of which were cash for works (CFW) for road repairing, homestead gardening and homestead platform rising, and funds to support fishermen (TOD 2008). The cash for works activities were very appropriate as employment was a major need after the relief phase.

**Rehabilitation Phase:**

As there was a continuing need for improve water supplies and sanitation in Sidr-affected areas, the Program received additional funding for a new and larger WATSAN project to be implemented in Bagerhat during the rehabilitation phase. The new WATSAN project has the similar mix of activities to improve water supplies, sanitation, and hygiene awareness. In addition, CARE-B utilized funds to help the most vulnerable households in recovering their livelihoods and improving food security through cash for works, seed distribution and other input support.

**Connection:**

CARE-B's Strategy: The Sidr Response Strategy included three phases and worked mainly in Barguna (relief and recovery phases) and Bagerhat (relief, recovery and rehabilitation phases). CARE-B subsequently changed its strategy by delaying their exit from Barguna for two months because the PNGO needed the additional time to implement all activities it had committed to. The strategy for the Response Program followed a traditional approach to relief and recovery that was replaced by more participatory approaches. Action with CARE-B: CARE-B activated the Emergency Response Program Team (ERT) and the more experienced CARE-B staff in the Team led the response. CARE-B managed the Response Program mainly with locally recruited staff and with only limited inputs from international staff. The Assistant Country Director took overall responsibility for overseeing the CARE-B team that planned and implementation the Response Program. Issues that caused particular challenges for CARE-B during implementation included information and financial management, support for Sidr Field Offices, budget tracking and staffing. Any of the challenges would have been avoided by CARE-B having an up-to-date Emergency Preparedness plan (EPP). CIDA worked with CARE-B and introduced the Humanitarian Accountability Framework (HAF). The performance of the Response Program against many of the HAF benchmarks needed to be improved because the Program was not designed to take into account the HAF and staff was not trained on the HAF or the humanitarian action standards or guidelines. One suggestion is to have beneficiaries, or their representatives,

participate in assessments, implementation, monitoring and evaluation, and in decision-making on determining project activities throughout the Lifecycle of the Project. Working with partner non-governmental organizations (PNGOs): CARE implemented the Sidr Response Program through nine PNGOs, four of which were based in Barguna and five in Bagerhat. Two of the PNGOs, RIC and Prodipan, were long term partners of CARE-B. Three PNGOs, CODEC, SAP-BD and Uttaran, had previous experience of working with CARE and four PNGOs (RED, Sangkalpa, Trust and Rupantar) were new partners. The new partners were selected through a process of consultation considering their mission and vision, activities, gender policy and also their involvement with the community. All the PNGOs are regional NGOs with experience of working in the natural hazard-affected areas. However, none of the PNGOs had emergency preparedness plans and they were not prepared for the implement of the massive increase in expenditure required by the Response Program. CARE-B was not fully prepared for working with partners on emergency relief on the scale required. PNGOs viewed their partnership with CARE as valuable, useful and educative although the partnership did not work with two organizations. PNGO performance was constrained by several factors including high turnover of staff, limited experience of rigorous financial management and overstretched staff and other resources. The PNGOs did manage to meet many project outputs within the allocated budgets, although some of the quality of some outputs declined when market prices of key materials increased more than was expected. The PNGOs voiced several issues about their partnerships with CARE-B including the lack of involvement in preparation of budgets and programme design, strict procedural requirement, limited time for implementation of tasks and limited provision for overheads and office expanses. Monitoring of PNGO activities was a sensitive issue and, although PNGOs found that the monitoring helped to improve the quality of their work, they also found that some monitors were insensitive, inexperienced and poorly trained. Joint monitoring was tried but was unsuccessful due to lack of resources and management interest.

**Working with Union Parishads:**

Union parishad members helped the implementation of the Response Program by providing information and lists of vulnerable households but the potential capacity of the UP to contribute to the Response Program was not fully utilized and this led to duplication and faulty targeting. There is scope to improve the sustainability of the emergency response activities by increasing the involvement of union parishads

**Working with Communities:**

CARE-B needs to involve Sidr-affected communities. CARE-B needs to involve Sidr-affected communities more in the formulation of their Response Program, and, during implementation, community involvement was very limited. Communities are highly interested in long term impacts of activities as well as the need to meet short-term requirements. However, the long-term requirements for ensuring the sustainability of water supplies and sanitation activities were not fully considered during implementation.

**Coverage**

CARE-B focused its response activities in four of the most affected upazilas in Bagerhat and Barguna districts. CARE-B's focus on Bagerhat was in part because they previously worked on Bagerhat with two long-term PNGOs. The process of selecting specific areas within the selected upazilas was not straightforward and required negotiations with many actors as many government and non-government organizations were also trying to identify working areas. Within their working areas, CARE-B targeted the most vulnerable households for project inputs, by identifying households that met specific criteria such as women headed households and ethnic and religious minorities. There are no data to show how many households in CARE-Bs working areas qualified under each criterion or the percentage of qualifying households received relief packages from CARE-B.

Unintended consequences of the selection criteria included providing less vulnerable households with more nutritious food packages and excluding vulnerable households from some Program activities. Two targeting issues need future investigation: the consequences of providing relief to an 'average' household and the requirement for



women beneficiaries to collect relief goods. The distribution of relief and recovery activities was also widely variable.

### **Efficiency**

Analysis of the budgets indicates that about 8 percent of funds were used during the relief phase, while 71 percent were used during the recovery phase and 21 percent during the rehabilitation phase. Food items (FI) made up 47 percent of the total funds, non-food item about 5 percent, cash for works and livelihoods about 8 percent, WATSAN about 8 percent, shelter about 10 percent and multi-purpose cyclone shelters about 3 percent. The remaining funds, about 19 percent, were used to deliver the Program activities to the beneficiaries. The utilization of funds (or the burn rate) for 10 completed projects was on average about 90 percent. Until the end of May 2008, PNGOs utilized about 33 percent of the total Program spending, while 67 percent were utilized by CARE-B. CARE-B's spending includes the costs of delivering the overall Program including such items as preparing proposals, liaising with donors, monitoring, financial management, auditing etc. The pattern of expenditure indicates that a significant portion of project activities was delivered by direct delivery. Funds were carefully controlled in the field by imposing a rigorous financial management system and by setting up a separate monitoring system. The financial management and monitoring systems were successful in ensuring the soundness of Program implementation. Many UP chairmen and members remarked that they found the CARE-B system to be very transparent. Factors that strained the financial management systems included limited availability and fluctuating prices of items in local markets, high staff turnover, collection of VAT by PNGOs and shortage of vendors. CARE- B needs to prepare an operational guideline for working with PNGOs in emergencies. Partial monitoring of FI and NFI distribution started in December 2007. Extensive onsite monitoring and systematic analysis started in January 2008 with monitoring of the performance of distribution centers during the 2nd round of WFP food distribution. The main findings of that monitoring were that the distribution was generally satisfactory although there were some issues including centers being open after dark and for long hours, variation in the weight of rice in packages, and inadequate

toilet and water facilities for women. CARE-B worked with the PNGOs to improve the performance of distribution centers, and the results of the monitoring of the 3<sup>rd</sup> round distribution were better.

### **Effectiveness**

The Response Program achieved its goal by achieving or exceeding the targets during each phase including during the relief phase by distributing F1 to 67,252 households and NF1 to 57,252 households, providing safe water to 30,695 households, and providing medical treatment to 63,567 patients (Tod 2008). During the recovery phase, food packages distributed to 92,389 households and NF1 to 27,458 households. WATSAN projects, livelihoods and CFW are still being implemented, but the available data showed that by the end of May 2008, there were about 134,000 beneficiaries from WATSAN activities in Barguna and 11,280 beneficiaries in Bagerhat. During the Rehabilitation Phase, there was a target of 40,000 households benefiting, but targets were not given for specific activities. The Response Program made only one intervention designed to benefit a specific interest group that is the provision of boats and nets to fishermen, but the intervention had limited impact. There is an opportunity for CARE-B to provide this long-term support to the Program's relief and rehabilitation activities through PNGOs at a relatively low cost as the PNGOs are working in the field on other activities in both CARE-B upazilas in Bagerhat.

### **Coordination**

The UN was only partially successful in leading the donors' response to cyclone Sidr for several reasons including delays in preparing needs assessment and delays in establishing the cluster system for emergency response. The performance of the clusters was very variable, with the WASH Cluster being the most successful. The shelter cluster was much less dynamic, and took months to provide advice on suitable replacement of rural housing. Coordination between local non-government organizations and between international non-government organizations was weak.

## **Impact**

Communities in areas most affected by Sidr received support in their relief and recovery in many different ways and from many different donors, and it is not possible, except for a few activities, to separate out specific impacts from CARE-B's activities from the activities of all the other government, non-government and private organizations that were providing relief after Sidr. In addition, the Programme did not collect baseline data on which impact assessment could be based or undertake impact assessment during the relief and recovery phases. During the rehabilitation phase when impact monitoring received more attention, but, data are still being processed and analyzed. A notable feature of the post-Sidr period was the absence of epidemics of diarrhea and water-borne illness that often follow such disasters. The reasons for the limited outbreak of such diseases are due in part to the efforts to provide safe water quickly, combined with rapid distribution of relief food and basic shelter materials.

Other impacts of specific Response Program activities included raised awareness from hygiene education, rapid medical assistance for people wounded during Sidr or suffering from Sidr-related illnesses, complaint boxes at distribution centers, employment from CFW, added nutrition from homestead gardening, helping young people by distributing educational materials. In addition, CARE-B led by example in organizing and distributing food to Barguna within ten days after Sidr. This put pressure on other non-government organizations to expedite their relief activities. Negative impacts of Program activities included the demand employment through CFW exceeded what was available, homesteads without space for a garden were excluded, low rate of germination of vegetable seeds provided for homestead gardening during the 1<sup>st</sup> round distribution, cladding used for housing latrines may not last more than one monsoon season, and access to safe water and weather-proof shelter remain major needs in the Response Program areas.

Different NGOs take different program for disaster management. Emergency responses are not always structured but long term recovery programs are well organized. NGOs are always design a program for effective result but it depends on further process.

Considering different NGO's program focusing two above NGO for emergency and long term response of Sidr we will try to see the response of local people about the effectiveness of NGOs' program in reducing the loss of cyclone Sidr.

Table 9: NGOs role or programs are effective in reducing the loss for cyclone Sidr

<b>Sectors</b>	<b>Agree</b>	<b>Disagree</b>	<b>No Idea</b>
Economy	12	13	5
Health service	18	8	4
Infrastructure	12	15	3
Social	16	13	1

This table shows that among 30 people 13 are disagree about the effectiveness of the program of NGOs' and on the other hand 12 are agree in economic loss reduction. But most are agree with the effectiveness in health service and social development.

#### **4. Gender initiatives in SIDR response:**

Gender relations are the socially determined relations that differentiate male and female situations. People are born biologically female or male, but have to acquire a gender identity. Gender relations refer to the gender dimension of the social relations structuring the lives of individual men and women, such as the gender division of labor and the gender division of access to and control over resources. It is critical to understand the gender dimension in the development-disaster process in order to address root causes. Gender patterns, thus shape development patterns and social vulnerability to natural disasters, and are influenced in turn by both. When women and men confront routine or catastrophic disasters, their response tends to mirror their status, role and position in society. Most studies, for example, show that responsibilities follow traditional tasks in the home and household, and men taking leadership positions. Gender inequalities with respect to enjoyment of human rights, political and economic status, land ownership, housing conditions, exposure to violence, education and health in particular reproductive and sexual health, make women more vulnerable before, during and after disasters.

**CAREB's initiatives to promote Gender Equity in SIDR Response**

CARE's emergency response in Patuakhali and Borguna districts is highly appreciated both by the communities and local authorities. People are generally happy about the response packages received as well as about the process and management of distribution. Similarly, CARE is putting extra efforts to reach out to women, children and other vulnerable communities as they are often overlooked in such situations. Gender considerations will be included in all stages (from planning to evaluation) of the SIDR response process. The team found that CARE Bangladesh tried to follow a gender responsive approach in selecting beneficiaries and undertook affirmative actions to reach out to women in most of our working areas. However, local government and PNGOs were found in some cases to favor different groups (e.g. voters and members) in beneficiary selection. The following gender initiatives were undertaken during the SIDR response.

From planning to evaluation of the SIDR response process, CARE incorporated gender equity approaches. The deployed Gender Team orientated all staff of CARE as well as PNGOs involved in disaster response on Gender Equity approaches in disaster setting as well as code of conduct to prevent sexual harassment of program participants. The team also facilitated a process to ensure signing the agreement to prevent sexual harassment against participants.

**Monitoring and Evaluation:**

CARE Bangladesh has established a separate monitoring team to monitor communities effectively, which included gender specific questions for assessment. Also, Prodiapon included specific indicators to understand men and women's situation and our response in emergency.

**Recommendations:**

Rebuilding community life is a major challenge for everybody. Here are some recommendations to address those needs:

**Increase women's representation in the teams:**

Involve more women as volunteers, manager, and nurse in the distribution team, medical team, monitoring team and advocate for including female UP members in the distribution centers. Ensure at least three members team in one distribution centre and out of three involve at least one women who may be available to listen to women's complaints and issues, and to discipline the queue.

**Meeting essential requirements of women:**

In food item package, add some baby food item in next round distributions like suji and sugar. Under non food item sharee, lungi, blanket, winter clothes, dress material for the adolescent girls, cooking utensils, soap, blanket, winter clothes for babies and elderly women, mosquito net, ladies sweater are required. In each packet two sharees may be included so that the old one could be used for women's sanitary purpose.

**Including and excluded vulnerable:**

As CARE has completed the life saving first /second round distribution, now it is essential to revisit the existing beneficiaries lists and include the left out vulnerable who were not enlisted due to various reasons. This is needed to ensure that the most vulnerable are not left out.

**Psycho-social care to the children and women lost children and husband:**

The children who lost one or both parents or men and women who lost family member require psychological support to return to normal life. In that case, collaboration could be established with those who have already established this process. This support could be extended to the areas, where many people including children are suffering from psychological complications.

**Ensuring safety of female staff:**

The team manager has to take specific measures to ensure safety of the female staff those who are involved in operation and also women need minimum sanitation facilities.

**Selection of pregnant women and lactating mothers as beneficiaries of BRAC:**

Key beneficiary selection criteria of BRAC Bangladesh from gender consideration were: Families headed by separated, divorced or widowed women and children-headed families, poor families having pregnant/lactating mothers and children less than 5 years age. A total of 8886 (52% of the total) of the total) received BRAC's relief goods out of 17000 recipients. Women recipient dominated areas were Kamlapur, Bhuriea and Lohaliea union in Potuakhali and Mathbaria upazila and women were less targeted in Moregonj area. In Borguna, women were about 50% of those sighted in relief queues. It was reported that in some areas both men and women included as beneficiaries were either members of NGOs or relatives and known to the UP members .While the available data indicated that these NGOs beneficiaries were one sixth of the total recipients (ref: adjacent table), but interviews in the relief distribution line or in the community revealed most of them were identified as members of that NGO. In Moregonj, the local government did not include many female heads of households as they did not consider them as female headed according to their official definition of FHH. Although the distribution master rolls have sex disaggregated data these are not reflected in final face sheets/records and need to be.

**View of general coastal people about gender role of NGO in cyclone disaster management**

NGO and women both are well related, we always seen that NGOs are more concern about women. Majority of coastal women are familiar with NGO. But a great part among them is not satisfied of the role of NGO. They agree that NGO have some role but which is much little and a small number get this favor. Larger part remains out of it.

There is a chart about women's satisfaction on NGOs' role in Sidr program on gender focusing BRAC and CARE Bangladesh-

Table-10

person	Number (%)
Satisfied	6(20)
Not-satisfied	18(60)
Moderate	6(20)
Total	30(100)

### **Have experienced or noticed any difficulties in the time of receiving help from NGOs**

It is also a fact if victims face any difficulties (responsible NGO) to receive help from NGO. This following table shows a list of respondents' response about this -

Table 11: problem faced by victims on disaster management program of NGOs'

Problem	yes	no
Biasness	6	24
Corruption	1	29
Miss behavior	11	16
Lack of tolerance	14	19
Indiscipline	20	9
Others	2	28

24 among 30 say no about biasness of NGO but 6 others say yes, they explain their opinion that is 'mostly the local staff of NGOs show biasness'. Miss behavior, lack of tolerance and indiscipline are the most focused sector of respondent in this area. Here we see that most people are disagree with the problem but also some are agree which is totally unexpected



**Problem faced by NGOs in relief program:**

It was reported over the periods that NGOs faced some common problems during relief and rehabilitation programs to especially cyclonic disaster management. Most of NGOs who were involved with emergency response and recovery activities to cyclone Sidr disaster management mentioned some problems they faced. These are as follows:

- It was found that there was less opportunity to exchange views among development agencies to make effective plan and ensure maximum services to the affected people. Combined and integrated efforts needed to make the response and recovery activities faster and effective. To ensure this, common forum among NGOs, government at different levels, and other different development organizations should be maintained on regular basis to run the program well.
- Lack of co-ordination among different stakeholders during emergency response was one to major problems. Disaster management operation was greatly affected due to lack of proper coordination. Effective coordination among NGOs and government at different levels including different political organizations is needed to ensure maximum utilization of the limited resources
- During emergency period it was hard to maintain accurate jurisdiction of work among NGOs and other development agencies including government at different levels. In all situations, the role of each development agency should be clearly defined to ensure effective resource mobilization and thus, ensure proper service to the right person.
- Lack of trust and respect to NGOs involved with relief activities was another major constraint. In most cases, officers of civil and military administration suffered from ego-centric complexities. These created rigidity and hindered smooth functioning. So, mutual respect needed must for better, faster, and effective coverage.

- Disaster period is a most chaotic and indiscipline time, it becomes so difficult to handle large numbers of victims properly. Especially in the time of emergency, negative behave like lack of tolerance, try to getting more etc creates a troubled situation for NGO staff and sometimes fully hamper relief work.

The following table represent the result of a short interview of 30 Sidr victims and 10 NGO staff about above ideas of problem that faced by NGO in disaster management-

Table-12

<b>Category</b>	<b>Agree</b>	<b>Moderately Agree</b>	<b>Disagree</b>	<b>No Idea</b>	<b>Total</b>
General People	10	15	3	2	30
NGO Staff	7	3	0	0	10
Total	12	15	1	2	40

Based on different study findings, it is clear that the NGOs were focused in playing key roles in the immediate aftermath of disasters by extending assistance in emergency response, rescue and first aid, sanitation and hygiene, damage assessment and assistance to external agencies bringing relief materials. During the post disaster phase, the NGOs played important roles by providing technical and material support for safe construction, revival of educational institutions and restoration of means of livelihood and assist the government in monitoring the pace of implementation for various reconstruction and recovery programs. The involvement of NGOs in Sidr disaster management was highly significant. During Sidr disaster, NGOs were involved in search and rescue of the survivors to meet their basic needs including protection, shelter, safe drinking water, food, medical and social care, clothing and other basic necessities of life. Government of Bangladesh in cooperation with NGOs was able to include most of the affected households in Sidr rehabilitation activities. Presently, NGOs are giving emphasis to work on preventive measures as a strategy of disaster risk reduction. It is also true that some dissatisfaction still have. Actually NGOs worked in a troubled and dissatisfactory situation. Notwithstanding NGOs should give more concern on these weak sides.

However, to maximize the NGOs' contribution to disaster management needs effective response program through effective participation of the concerned stakeholders. NGOs' planning and methods to disaster management should be situational and reviewed from time to time as there is no any best and fixed method to handle the crisis for all the times. A wide variety of planning, method, and behavior might be appropriate to particular situation. Which would be the most appropriate planning, method, and behavior depends on situation. So, there should be a changing pattern of behavior in NGOs' strategic plan to maximize its contribution to disaster management.

## ***Chapter 6-Conclusion***

There seems to exist a widespread opinion that NGOs should and could play a more efficient and effective role as partner in the social and economic development of the country. However, it is far from clear how far such partnerships should go and how they should be structured. NGOs do have special capabilities that are essential for alleviating poverty and vulnerability of disaster. An important advantage is their efficiency and effectiveness in reaching out to the poor especially by channeling donor support towards them. Here we seen different adaptation and mitigation strategies including Agricultural alternative program, Drinking water and sanitation program, Income-generating activities, Infrastructure development program, Information dissemination and Disaster preparedness program and quick relief program which are undertaken by different NGOs to reduce socio-economic vulnerability of the poor and community as a whole. From the findings of this study, strategy end role of NGOs to reduce cyclone induced vulnerability are successful and most of the informants' opinions are very positive about the NGOs' role regarding cyclone disaster management. But the level of success and issues of sustainability of these programs is not beyond doubt. It becomes appeared by this study that some program especially long term does not work properly. Though the government departments and NGOs have similar development objectives but collaboration between them is not well developed. Although it can't be denied the fact that the NGOs play a significance role in cyclone disaster management in study area as a whole as the programs somehow help in recovery of the loss of unexpected sudden shock for frequent cyclone.

## **Annex-1**

### **Case study -01**

**Name: Rahima Akther**

Age: 35

Education: Illiterate

Marital Status: Married

Occupation: Housewife

Village: Lohaliea

Gender: Female

Religion: Islam

Rahima Akhter is a housewife. Her husband is a farmer. She had three children but one of them died by cyclone Sidr. When researcher informs her to talk about Sidr, she become emotional and cannot control her tear. Her husband has no land; they live in a house built in the land under the ownership of government, which situated in the bank of Lohaliea River. They live here from 16 years. So she has a long experience of cyclone disaster. In the day of Sidr she and her three children are in their house and her husband is in his sister's house which is in another village. They are alert about some cyclone by the mouth of common people. But they ignored it and don't take any preparation for coming disaster. Like other days after finishing dinner Rahima with her children go to sleep. Rahima is not sure it might be 10pm when she woke up and saw water river water entered her house and it upto her knee. With some minutes their house blows away by strong wind. They take shelter in nearby primary school building. But her eldest son who stay home more time to take some valuable things, died for this cyclone. Rahima got 2000tk from a NGO also some tents and food. She does not remember the exact date of getting these materials; she says it may be 8 or 10 days after Sidr. But she complains that it was a fight to entry name for relief. For this indiscipline situation Rahima Akhter blame the limited store of relief and huge number of victim. She thinks that NGOs is helpful especially in the time of disaster.

## Case study -02

**Name: MD. Anower Hossain**

Age: 40

Education: Class Five

Marital Status: Married

Occupation: Tomtom Driver

Village: Boro Beghai

Gender: Male

Religion: Islam

Anower Hossain is a tomtom (a vehicle) driver. He drives the tomtom of other. In 2007 he was the boatman, but now a bridge built over that canal. For this reason he changed his profession. In cyclone Sidr lost her wife and two children. Anower and his eldest son went to visit his in-law's home which is 10-12 km from their home. After knowing the news about cyclone he started back journey for home but it was too late, when he is in the mid way, the destruction of Sidr was started and he did not go forward for the highest speed of wind. He reached in home at 1am and within this time everything was ruined, his wife and two children was missing, also his house is totally destroyed. Next day he found the dead body of his wife and one child. And his only way of earning boat was washed away by Sidr. As relief or help he did not get anything without 10kg rice. But he barrowed 10000tk from ASHA (a NGO) before Sidr and after Sidr its return payment was stopped for 4 week.

### **Case study -03**

**Name: MD. Rubel**

Age: 16

Education: Class two

Marital Status: Unmarried

Occupation: Day labor (Agriculture based)

Village: Vaila

Gender: Male

Religion: Islam

Rubel was so much excited with his interview. He was 10 years old child at the time of Sidr. He lost his everything for Sidr, his mother and younger sister both with house everything. He lives with his maternal grant mother, who is from nearby another village. There was no one to live with Rubel. His father died three years before Sidr. Rubel his mother and younger sister were living together. Some cultivatable land and his mother's different home based works were the main source of livelihood. But the die of her fall Rubel in unstable situation. Then his grant mother came to him. Primarily he depends on his uncle's money. After some time his uncle arrange some money from Rubels' fathers land by borga system. When researcher asked him, why didn't he go with his uncle? He answered to save his land. When researcher asked about his education, grant mother started to answer and she blamed Rubel for it. Rubel also said 'it is not his fate to be educated, if that then god didn't take his mother from his life'. As help he was gotten 5000tk and different food. Some NGOs and local riches offered him to bear his education cost but he didn't accept because he does not like to study. Now he works in others land and gets money from his borga land. He thinks now he is not able enough to handle full cultivation, when he will then he didn't borga his land.

## **Case study -04**

**Name: Mariom Begum**

Age: 65

Education: Illiterate

Marital Status: Widow

Occupation: Bagger

Village: Vaila

Gender: Female

Religion: Islam

Mariom Begum lives in a house look like squire box. Its building materials are also unique plastic poly bag, son (a wooden element), old cloth and tin all these items are present in her house. Here she lives along. She had a house by tin but washed away by Sidr surge. Marioms' husband died 20 years ago and she have two daughters both of them are in their husband house. So she is along. Before died Mariom's husband sold whole land for his treatment. After him Mariom fall in a troubled condition, but she faced it, survives and built a small house in the land of govt. ownership in river bank. She got a goat from a govt. program and before Sidr she had 6 goat and some polity and she lost all of this in Sidr. She got 5000tk, 10kg rice and some dry food after Sidr. By this money she takes treatment and this money have not any influence to change her economic condition. Sidr does not leave anything without her. When Sidr strike Mariom immediately left her house for a safe place, on the way a heavy part of tree hit on her leg and broke it. She got only primary treatment free. She was suffering for it next 6 month.



## Case study -05

**Name: MD. Hasan Ahmed**

Age: 32

Education: Class Five

Marital Status: Married

Occupation: Fishing

Village: Chaltabunia

Gender: Male

Religion: Islam

Hasan Ahmed work in a large mechnized fishing boat of others. He goes sea with boat to fishing for 15 days to 3 month. His monthly income is almost 10000 to 12000tk. Before Sidr Hasan had a little boat and he fished nearby river. But Sidr destroyed it, also ruined his house. He has three children now two of them go to school and another is much little. Hasan's wife Shafali is housewife hut she is SSC. Sidr destroy their house, boat but they can save their goats. They do not get any help from any NGO. Two month later Sidr Safali gets a loan 15000tk from ASA. But they do not able to make effective this loan rather fall in a bad situation to arrange money for weekly 'kisti' (a timely return payment). Then Hasan decided to go to sea as fishing labor. And Shafali started some tutione. Now they haven't any loan and dreamed to a new boat. They think NGO is helpful but for our own fault of using loan fall us in a troubled condition. Asked them about further loan for boat but they said, they want to buy it with their own money not loan.

## Annex-2 Check List

### Part 1:

- i. Name:
- ii. Age:
- iii. Education:
- iv. Marital Status:
- v. Occupation:
- vi. Village:
- vii. Gender:
- viii. Religious Status:

### Part 2:

- What do you know about cyclone?
- Do you know about cyclone Sidr?
- What is your opinion regarding the causes of cyclone?
- How much were you affected by cyclone Sidr?
- What kind of difficulties have you faced in post cyclone period?
- What kinds of socio-economic change have you seen after cyclone Sidr? Like-
  - 1.Housing destruction,
  - 2.Loss of crop
  - 3.Lack of food
  - 4.Lack of cloth
  - 5.Loss of livelihood
  - 6.Others
- What were the sources of food & drinking water during & after cyclone Sidr?
- Have you seen any differences in gender role in the pre, during & post Sidr period?

Female	Male

- Have you taken any help from any NGOs after or during Sidr?
- What kind of help you receive from NGOs in the time of cyclone Sidr?
  - 1.Loan
  - 2.House building materials
  - 3.Food &water
  - 4.cloth
  - 5.Medicine or medical treatment
  - 6.Agricultural materials
  - 7.Others
- Have you seen any special program of NGOs related cyclone Sidr pre, post or during?
- Have you seen NGOs any work with special focuses on gender role in the time of Sidr?
- Have you experienced or noticed any difficulties in the time of receiving help from NGOs?Like-
  - 1.Biasness
  - 2.Corruption
  - 3.Miss behavior
  - 4.Lack of tolerance
  - 5.Indiscipline
  6. Others
- Have you notice any behaviors of victims that create problems for NGOs to provide proper help?
- How much NGOs role or programs are effective in reducing the loss for cyclone Sidr?
  - Like-1.Economic
  - 2.Health service
  - 3.Construction of infrastructure
  - 4.Others

## Reference

Abed, F. H., Chowdhury, A. M. R. (1989). *The role of NGOs in international health*. In M. Reich & E. Marui (Eds.), *International cooperation in health*. Dover, Mass.: Auburn House Publishing Company

ADB, (1991), *Disaster Mitigation in Asia and the Pacific, Asian Development Bank (ADB)*, Manila, Philippines.

Asian Development Bank. (1999). *A Study of NGOs: Bangladesh*. Manila, Philippines

ADAB- Association of Development Agencies Bangladesh, (2000), *Directory of NGOs Network in Bangladesh*; Dhaka, 2000

Adger, N. (1999), *Social Vulnerability to climate Change and Extremes in costal Vietnam*. *World Development*, Vol. 27, No. 2, pp. 249-269

Adger, N. and Kelly, M. (1999) *Social vulnerability to climate change and the architecture of entitlements. Mitigation and Adaptation Strategies for Global Change*, 4: 253-266.

Ahmad, M. M. (2001), *The State, Laws and Non-Governmental Organizations (NGOs) in Bangladesh*; *International Journal of Not for-Profit Law*, 3(3).

Ahmad M. and Rahman A. (2009), *Stimulating role of NGOs in Bangladesh*; Community Development Library, Dhaka.

Ahmad, M. (1999), *Bottom Up – NGO sector in Bangladesh*; Community Development Library, Dhaka.

Ahmad, M. (2002); *An introduction to the non-profit sector in Bangladesh*; Allavida, London.

Ahmad, M. (2003); *Coastal Livelihoods – situation and context*; PDO-ICZMP Working Paper WP015. June 2003. Water Resources Planning Organization, Ministry of Water Resources, Government of Bangladesh, Dhaka.

Ahmad Q.K. and Ahmed, A.U. (Eds), (2002), *Bangladesh: Citizens' Perspectives on Sustainable Development*; Bangladesh Unnayan Parishad (BUP), Dhaka, pp.225.

Ahamed S., Rahman M.M, Faisal M.A, (2012), *Reducing Cyclone Impacts in the Coastal Areas of Bangladesh: A Case Study of Kalapara Upazila*, Vol. 5, *Journal of Bangladesh Institute of Planners*

AKT ER N, AND TSUBOKI K. (2010), *Numerical Simulation of Cyclone Sidr Using a Cloud-Resolving Model: Characteristics and Formation Process of an Outer Rainband*. Nagoya University, Japan

Alam E. and Collins E. A, (2009), *Cyclone disaster vulnerability and response experiences in coastal Bangladesh*; Northumbria University, United Kingdom

Anon. (2003), *Federation of NGOs in Bangladesh launched*

Anderson, M.B.(2000), “*Vulnerability to Disaster and Sustainable Development: A General Framework for Assessing Vulnerability*.”Pp, 11-25 in R. Pielke, Jr. and R. Pielke Sr.,eds.Stroms (Vol. 1). London: Routledge.

Alam, M.E. (2003) ‘*Post cyclone adjustment process: basic needs perspective*’. *Oriental Geographer*; 47(2). pp. 47–60.

Banglapedia (2008) at [http://banglapedia.search.com.bd/HT/C\\_0397.htm](http://banglapedia.search.com.bd/HT/C_0397.htm)

BANGLADESH CENTRE FOR ADVANCED STUDIES, (2009), ‘Impacts of Cyclone Sidr (15 November 2007) on Water Supply and Sanitation Services in the coastal districts of Bangladesh’ Dhaka

Begum, A. (2004). *NGO Activities in Rural Bangladesh: Beneficiary perceptions about the impacts*.

Beresford P. and Bill Flinn, (2009), *POST-SIDR FAMILY SHELTER RECONSTRUCTION BANGLADESH*, UK Department for International Development (DFID)

Blair, H. (2005). *Civil society and pro-poor initiatives in rural Bangladesh: finding a workable strategy*. *World Development*, 33(6), 921-936.

Blaikie, P., T. Cannon, I. Davis, and B.Wisner. (1994), *At Risk: Natural Hazards, People’s Vulnerability, and Disasters*, London: Routledge.

BRAC. (2004). *BRAG: Annual Report*. Dhaka: BRAC.

BUET, (2008). ‘*Field Investigation on the Impact of Cyclone SIDR in the Coastal Region of Bangladesh*’ <[http://teacher.buet.ac.bd/akmsaifulislam/reports/SIDR\\_report](http://teacher.buet.ac.bd/akmsaifulislam/reports/SIDR_report)>retrived on December 10, 2010.

CARE Bangladesh, December 2007, *Rapid Gender Assessment of SIDR Response*.

Creswell, J. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (3rd ed.). Upper Saddle River, NJ: Pearson Education

Cannon, T. (1994) '*Vulnerability analysis and explanation of natural disasters*'. In A. Varley (ed) *Disasters, Development and Environment*. Wiley, Chichester. pp. 13–30

Center for Environmental and Geographic Information Services, (2007), *Effect of cyclone Sidr on the Sundarbans: A Preliminary Assessment*

International Telecommunication Union. (2007). *Cyclone Preparedness Programme* <http://www.itu.int/ITU>

Climate Change Cell, (2007). *Climate Change and Its Impacts on Bangladesh*, Dhaka, Bangladesh

Dasgupta S.2011, '*Cyclones in a Changing Climate: The Case of Bangladesh*'

Department of Environment Ministry of Environment and Forests ,Government of the People's Republic of Bangladesh (2005), '*Bangladesh: National Programme of Action for Protection of the Coastal and Marine Environment from Land-Based Activities*'

Edwards, M. (1999). *NGO Performance - What Breeds Success? New Evidence from South Asia*. World Development, 27(2), 361-374

Fernando, J. L., Devine, J. (2003). *The paradox of sustainability: Reflections on NGOs in Bangladesh*. Annals of the American Academy of Political and Social Science, 590(2), 227-242.

Garry, M. L. (1999). *A People's History of Development: 25 Years in Northern Bangladesh*. Dhaka: The University Press.

Government of Bangladesh, 2008, *Cyclone Sidr in Bangladesh: Damage, Loss, and Needs Assessment for Disaster Recovery and Reconstruction, Assisted by the International Development Community with Financial Support from the European Commission*.

Halloran, R. (1970). "*Pakistan Storm Relief a Vast Problem*". New York Times. 36.

Halley, J. (1999). *Ladybirds, missionaries and NGOs, Voluntary organizations and cooperatives in 50 years of development: a historical perspective on future challenges*. Public Administration and Development, 19(5), 467-485.

- Joint Typhoon Warning Center- JTWC (1970). "*Western North Pacific Tropical Storms 1970*" (PDF). Annual Typhoon Report 1970.
- Koehler G. A. (1995), *CHAOS THEORY AND DISASTER RESPONSE MANAGEMENT: LESSONS FOR MANAGING PERIODS OF EXTREME INSTABILITY*, University of Texas at Dallas
- Leaf, M. (1997). *Local control versus technocracy: The Bangladesh Flood Response Study*. Journal of International Affairs, 51(1), 179-200.
- MA Quaiyum Sarkar, 2009, *ASSESSING THE EFFORTS OF NGOs IN CYCLONE DISASTER MANAGEMENT IN BANGLADESH*, BRAC University.
- Myers N.1990, *Sustainable Development: The Role Of NGOs, University of Minnesota*.
- McKinley, J. (1979). *Death to Life: Bangladesh*. Dhaka: I Manuel Baptist Church.
- Ministry of Food and Disaster Management,2008, *CYCLONE SIDR Early Recovery Action Plan*,
- NASA (2008) *Hurricane Season 2007: SIDR (Indian)*
- Nasreen M. 2011, *Mapping Gender and DRR Interventions in Bangladesh*, Swiss Agency for Development and Cooperation (SDC)
- Nobusue, K. (2002). *Bangladesh: A large NGO sector support by foreign donors*.
- Palash S.H. and Shusmita H Khan, 2008, Report on "*Community Perspectives on Water and Sanitation WatSan towards 'Disaster Risk Reduction (DRR)*" Eminence Page 1 of 56
- S. Shigetomi (Ed.), *The State and NGOs: Perspective from Asia* (pp. 34-56).
- Rahman L.M and Mamun M. A.2011, *Survival Strategies of SIDR Affected People: A Study on Coastal Belt Of Bangladesh*, Jahangirnagar Planning Review, Vol-9, Jahangirnagar University. Pp-87-95.
- Schanberg, Sydney (1970-11-29). "*People Still Dying Because Of Inadequate Relief Job*". New York Times
- Sen, Amartya og Dreze, Jean (1989), *Hunger and Public Action*. Oxford: Clarendon Press,1989. WIDEN studies in Development Economies.
- S. Hasan & M. Lyons (Eds.), *Social Capital in Asian Sustainable Development Management* (pp. 101-112). Hauppauge, NY: Nova Science Publishers Inc
- Singapore: Institute of Southeast Asian Studies (ISEAS).

SMRC (1998), *The impact of tropical cyclones on the coastal regions of SAARC countries and their influence in the region*, SAARC Meteorological Research Center (SMRC), 1998.

Stiles, K. (2002). *International Support for NGOs in Bangladesh: Some Unintended Consequences*. *World Development*, 30(5), 835-846.

Tod, I (2008). *Independent evaluation of CARE-B's cyclone Sidr response programme*. Dhaka

UN, 2006, *NGOs & Disaster Risk Reduction: A Preliminary Review of Initiatives and Progress Made*, Background Paper for a Consultative Meeting on A “Global Network of NGOs for Community Resilience to Disasters”

UNDP, 2004, *A Global Report: Reducing Disaster Risk: A Challenge for Department*.

UNICEF (2006) "*Sixty Years for Children*". [http://www.unicef.org/publications/files/1946-2006\\_Sixty\\_Years\\_for\\_Children](http://www.unicef.org/publications/files/1946-2006_Sixty_Years_for_Children). Retrieved on 16 April 2006

Wood, G. D. (1994). *Bangladesh: whose ideas, whose interests?* Dhaka: University Press.

Wikipedia (2008) *Cyclone SIDR* at [http://en.wikipedia.org/wiki/Cyclone\\_SIDR](http://en.wikipedia.org/wiki/Cyclone_SIDR)

World Bank. (2006). *The economics and governance of Non Governmental Organizations (NGOs) in Bangladesh* (No. 11). Dhaka: World Bank.

WWW.bcas.net