Climate Change Induced Disasters and Displacement Pattern in Coastal Area of Bangladesh

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Abstract

The main goal of the study is to explore the climate change induced disasters and displacement pattern in the coastal areas of Bangladesh. The study mainly based on primary data based. Primary data have been obtained through the quantitative along with qualitative sources. Qualitative data are attained through Participant Observation, Key Informant Interview (KII) and Focus Group Discussion (FGD) methods. Quantitative data have been acquired through the field study consisting of a questionnaire survey. The data have been interpreted by the Statistical Package for the Social Science (SPSS-20). For statistical interpretation, the null hypotheses (Ho) have been adopted and Chi square (X^2) test has been performed after cross tabulation. The study outcomes show that the relationship between climate induced disaster and the coastal people displacement is significant (the null hypothesis - *Ho* is rejected). The hypothesis is also referred that cyclone or storm surge and bank erosion are the leading triggers for the displacement of coastal people from their places of origin.Moreover, five types of drivers have been identified, which are: loss of life, homes, housing, stored resources and land respectively. As a result, displaced people changed their inhabitants many times during their lifetime, eventually they are displaced.Most of the times, the cities of Cox's Bazar and Khulna are the final destination of displaced people.Although sudden onset events appeared in Kutubdia area and slow onset events was seen in Dacope area. The study findings strongly recommended that trying to build afforestation cum coastal embankment/polder; to setup local raw materials based small scale industry; to ensure civilian rightsand

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humanitarian assistances; to distributekhas lands; and to establish community based rehabilitation programme for displaced people;are to be included to every ongoing safety net programme.This will prevent the displacement stigma in thecoastal areas of Bangladesh.

Keywords: *Climate Change, Coastal Area, Climate Induced disaster, Drivers, Pattern of Displacement and Resilience.*

Introduction

Bangladesh is widely recognized to be the worst victim of climate change and affected by salinity intrusion, destabilization of rivers, increase in extreme weather events, submergence of a large part of the country and spread of diseases and epidemics (Islam, 2009). It has been ranked as one of the world's most disaster-prone countries, with 97.1% of its land area and 97.7% of its population at risk from multiple hazards (UNICEF, 2011). However, climate induced changes such as extreme cyclone, devastating tidal surges, severe floods, treacherous river erosion, excessive rainfall, thunderstorm and overwhelming salinity intrusions occurring more frequently and unpredictably in the coastal regions of Bangladesh (Salequzzaman, et al., 2009; Ahmed, *et al.*, 2007). Besides, climate induced disasters like cyclone, tidal surge, flash flood, coastal erosion and trans-regression, heavy rainfall, salinity, and thunderstorms are frequent, recurrent and much familiar disasters for coastal people in the Southern coastal belt of Bangladesh (Ali *et al.*, 2015). As a result, firstly, the effects of warming and drying in some regions will reduce agricultural potential and undermine 'ecosystem services' such as the availability of clean water and fertile soil. Secondly, heavy precipitation will cause flash or river floods in tropical regions. And finally, sea-level rise will permanently destroy extensive and highly productive low-lying coastal areas that are home to millions of people who will have to relocate permanently (Morton *et al.* 2008). In the present situation, the coastal zone of Bangladesh hosts over 35 million of people who are exposed to cyclones, storm surges, rough seas, salinity intrusion, and permanent inundation due torising sea level. It was also found that almost 60 Lakh peoplewere displaced

from their home and land due to climate change in Bangladesh (Displacement Solutions, 2012). Although no specific study has been foundto relate between climatic induced disasters and displacement pattern in the coastal area of Bangladesh, the present study has been investigating the climate induced disasters and displacement pattern in the coastal area of Bangladesh.

Coastal Geography and Environment of Bangladesh

The coastal belt of Bangladesh is unique in this monotonous topography, shoreline geometry, coastal dynamics and biodiversity. Geomorphologically which is characterized by funnel shaped, vast networks of rivers, strong tidal and wind action, and enormous river discharge laden with bed and suspended sediment (Islam, 2001). The coast of Bangladesh is approximately 710 km long, (Snead, 1985) as estimated by measuring the distance around the Bay of Bengal between the Indian and Myanmar borders. If the length of the tidal estuarine coast is considered, the total shoreline of Bangladesh may be thousands of kilometers long. However, Nazem and Mahboob, (1992), Citing from Pramanik (1983), Anwar (1993), Shamunnay (1997) and Ali (1999) describes that the coastal areas of Bangladesh is broadly divided into three regions; (1) The Eastern Region (2) The Central Region (3) The Western Region, (Map-1).The western part, also known as the Ganges tidal plain, comprises the semi-active delta and is crisscrossed by numerous channels and creeks. The topography is very low and flat. The Southwestern part of the region is covered by the largest mangrove forest of the world, called the Sundarban. The central region is the most active one, and continuous processes of accretion and erosion are going on here. The very active Meghna River estuary lies in the region. The combined flow of three mighty rivers-the Ganges, the Brahmaputra, and the Meghna (commonly known as the GBM river system and ranking as one of the largest river systems in the world) discharges under the name of Meghna into the Northeastern corner of the Bay of Bengal. This estuarial region has seen the most disastrous effects of tropical cyclones and storm surges in the world and is very vulnerable to such

calamities. The Eastern region, being covered by hilly areas, is more stable, and it has one of the longest beaches in the world (Ali, 1999 and Islam, 2001).The present study has been conducted in two different coastal regions in Bangladesh, namely Western and Eastern coastal region respectively.
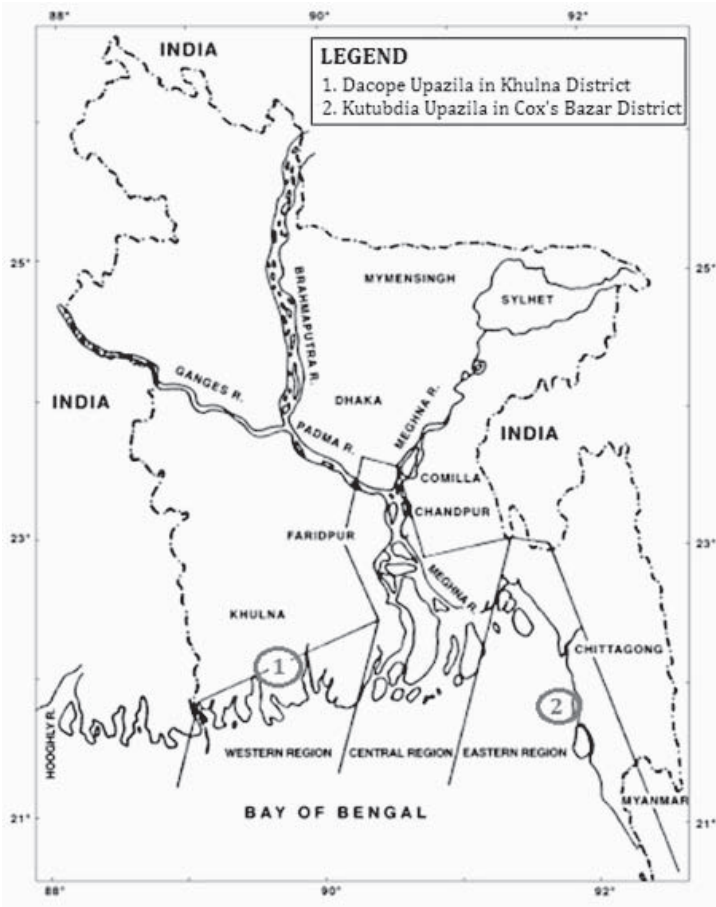
Source: Ali, 1999

Materials and Methods

Research Hypothesis

The research mainly focuses on the exploring about the climate

from their home and land due to climate change in Bangladesh (Displacement Solutions, 2012). Although no specific study has been foundto relate between climatic induced disasters and displacement pattern in the coastal area of Bangladesh, the present study has been investigating the climate induced disasters and displacement pattern in the coastal area of Bangladesh.

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p = assumes proportion in the target population estimated to have a particular characteristic (0.50);

q = proportion of the estimation of population (1-p = 0.50);

d = allowable maximum error in estimating a population proportion (0.05) respectively.

Besides, the simple random sampling technique has been adapted for successfully operating 410 questionnaires at a household's level of the displaced people. The representative sample size has been distributed on the statistical way with the help of following formula;

Random sampling, $Nj = (\dfrac{n}{N})\ Ni$

Where, Nj = represents the sample size; N = total population size, (N = ni + nii + niii +……+ nn); Ni = population size of the study area and n= desired sample size separately.

Table 1: Distribution of population in the Two Selected Study Areas

Upazila	Household	Representative sample size	Study locations	Number of sample size
Kutubdia	22587	149	Origin (In area)	100
			Destination (Out of origin)	90
Dacope	36597	242	Origin (In area)	200
			Destination (Out of origin)	20
Total	**59184**	**390**		**410**

Source: District Statistics, 2011 (Cox's Bazar & Khulna); Population Census, 2011

Meaningful data were edited, coded, classified and tabulated in the sequential manner. Qualitative data have been examined with the help of two theories such as 'Grounded theory' and 'Narrative Analysis', besides quantitative data are interpreted with the help of two analyses such as 'Statistical analysis' and 'Analytical analysis' respectively. Moreover, statistical and analytical analysis of the study

are done with the help of statistical techniques, especially Statistical Package for The Social Science (SPSS: version-20) and various statistical tools such as tables, charts, graphs, diagrams, figures, and photographs etc.

Chi Square (X^2) Test

For statistical analysis of probability sampling or justification of hypothesis, the research has carefully applied chi-square test. Thefollowing equation has been used for determination of the chi-square test.

$$X^2 \sum \frac{(O - E)^2}{E}$$

Where, O denotes the total number of observation or sample size or observation value and E denotes the expected value.

For statistical interpretation, the null hypothesis (Ho) were adopted for determining the relationship between 'climate change induced disasters and displacement of coastal people in the coastal areas of Bangladesh. In addition to that, the age structure of the respondents is an essential variable for articulation and explanations of the problem, particularly climate change related issues, because the 30 to 40 years'average weather conditions are representing the climate state in any area. So, the study strictly considered respondentsfrom people who are 30-year old.

Results and Discussion

Climate Induced Disaster in the Coastal Area of Bangladesh

Flood, cyclone or storm surge, tornado, drought, coastal erosion or trans-regression, rainfall anomalies (heavy shower or shortage of rainfall), salinity intrusion, thunderstorm and diseases are some common climate change induced disasters in Bangladesh. In thecoastal areas, people are familiar with flood (tidal and flash) cyclone or storm surges, coastal erosion or trans-regression, heavyrainfall, salinity intrusion, thunderstorm and diseases.

[2.] Representative sample size has been selected by Islam, 2014

The study found that total seven types of climate change induced disasters have been recurrent in the coastal area of Bangladesh which depends on the coastal regions (table 2). Most of the coastal people argued that cyclone and storm surge and bank erosion are the main climate change induced disasters in Coastal Bangladesh. These disasters are familiar, recurrent and more destructive than the other five disasters. Moreover, the coastal people believe that cyclone, storm surges, and bank erosion are the main triggering force behind displacement.

Table 2: Causes of Displacement

Causes of Displacement	Study Area-I (Kutubdia)		Study Area-II (Dacope)	
	Frequency	*Percentage*	*Frequency*	*Percentage*
Flood	72	15.82	63	12.52
Cyclone and Storm surge	131	28.79	165	32.80
Bank Erosion	115	25.27	201	39.96
Salinity	34	7.47	62	12.32
Tidal Fluctuation	53	11.64	7	1.39
Sea Level Rise	48	10.54	5	1.0
Changing Precipitation behavior	2	0.42	--	--
Total	**455**	**100.0**	**503**	**100.0**

N.B: Multiple Answer Considered

Correlation between Climate Change and Displacement in Coastal Areas

Kutubdia Upazila (also an island) was severely affected by floods in 1988 and cyclone in 1991. During those disasters, every person was temporarily displaced and significant portion went to other places permanently.

Besides, every year, coastal erosion is reducing the size of this island and displacing people on a frequent basis. On the other hand, Dacope area was affected by cyclone Sidr in November 2007 and cyclone Aila in 2009, which displaced almost all the people of Suterkhali and Kamerkhola Union and regular salinity intrusion and coastal erosion squeezing livelihood options of Dacope people; as a result, they are

moving frequently.The following table tried to explore the relation between climate change and coastal people displacement in both study areas. In order to analyze the data more strictly, an attempt has been made to statistically interpret the relationship between climate change and coastal people displacementin both areas of study. Regarding this aspect, a null hypothesis is, *Ho: there is no association between climate change and people displacement.*

Table 3: Relationship between Climate Change and Displacementin the Areas of Study

1st Variable	2nd Variable	Study Area- I (Kutubdia) Chi-square (X^2)					Study Area-II (Dacope) Chi-square (X^2)				
		Cal value	Tab value	Result	df	Sig.*	Cal value	Tab value	Result	df	Sig.*
Displacement of Local People	Flood	1.6252	9.488	-7.862	4	NS	1.8342	9.488	-7.653	4	NS
	Cyclone or Storm surge	77.1562	9.488	67.668	4	S	79.1562	9.488	66.69	4	S
	Bank Erosion (river and sea)	97.805	9.488	88.317	4	S	93.805	9.488	84.317	4	S
	Salinization	1.6252	9.488	-7.862	4	NS	1.5222	9.488	-7.965	4	NS
	Governmental development Activities	Required response didn't detect					Required response didn't detect				
	Tidal Fluctuation	1.6252	9.488	-7.862	4	NS	1.5222	9.488	-7.965	4	NS
	Sea Level Rise (SLR)	1.6252	9.488	-7.862	4	NS	1.5222	9.488	-7.965	4	NS
	Increase Temperature	Required response didn't detect					Required response didn't detect				
	Changing pattern of Temperature	Required response didn't detect					Required response didn't detect				
	Land captured by local powerful man	Required response didn't detect					Required response didn't detect				

*S= Significant, *NS = Not Significant, df = degree of freedom, significance at the level of 0.05

Chi square (X^2) test has been performed after cross tabulation. Table 3 shows the results with the levels of significance for the chi-square (X^2) test. It utterlyrejecting the null hypothesis:"there is no association between climate change and displacement in both study areas". The chi-square (X^2) test results indicate that there is a significant difference between climate change and people's displacementin in bothareas of study. Table 3 illustrates that cyclone or storm surge and bank erosion (river and sea) are significant [Hypothesis (Ho) = Cal value Tab value = Significant] in both study areas. As a result, the null hypothesis (Ho) is rejected and the alternative hypothesis ($H1$) are accepted. Besides, flood, tidal fluctuation and Sea Level Rise (SLR) disasters are non-significant [Hypothesis (Ho) = Cal value Tab value = Non-significant] in both study areas. As a result, the null hypothesis (Ho) isaccepted and the alternative hypothesis ($H1$) is rejected. Besides, governmental development activities, increasing temperature, changing pattern of temperature, and lands captured by local influential personsare failed to be interpreted for not being detected by the respondents.

The null hypothesis is rejected and the alternative hypotheses are accepted and significant in both study areas. Climate change induced disasters have accelerated the displacement of villagers from their home. Besides, geographical location, absence of climate resilient housing, livelihood, improper rehabilitation, and inadequate relief program has also accelerated the severity of these disasters in study areas. As a result, respondents considered and responded on the recurrent nature of disasters, which are more devastating among disasters in their locality. Focusing hypothesis is significant because people are displaced from their home due to climate change induced disasters, particularly cyclone/storm surge and bank erosion.

From FGD and KII, it has been found that most houses are broken by cyclone and, each year, coastal erosion along the coast line in Kutubdia is reducing the size of this island; for example, Kudiear Tak Ward of Ali Akbar Dail Union in Kutubdia Island is already disappearing by the erosion of Bay of Bengal and Tabaler Chara is

totally visible. However, western side of Kawer bill, South and North Durong in Kutubdia island areas are also vulnerable to bank erosion. In Dacope area, in Khulna,the entireupazila is vulnerable to climate induced disasters, especially Bank erosion and salinity intrusion. Two unions in particular - Kamerkhola and Suterkhali among nine unions are very much vulnerable. Nolian, Kalabogi, KalabogiKawer Para, Jullanto Para, Bari Badd and Kali Nagor at Suterkhali Union and BitaBanga and ChotoJallia Khali at Kamerkhola Union are the most vulnerable areas in Dacope Upazila. There is no permanent coastal embankment or Polder, so saline water enters through broken polder even during the low tide. But, villagers have been displaced since Cyclone Sidr in November 2007 and further in cyclone Aila in 2009.

Climate Change Induced Drivers in Coastal Area of Bangladesh

From literature review, it has been found that climate change may create two types of vulnerability for human beings: one is climate induced disaster and the other is climate induced losses in entire coastal areas of Bangladesh. Table 4 illustrates the climate change induced drivers in the coastal areas of Bangladesh.

Table 4: Climate Induced Drivers

	Study Area-I (Kutubdia)		Study Area-II (Dacope)	
	Frequency	*Percentage*	*Frequency*	*Percentage*
Loss life (family member)	71	10.8	--	--
Loss of houses	180	27.4	211	34.8
Loss of plinth land	139	21.1	184	30.3
Loss of stored resources	121	18.5	105	17.4
Loss of land	145	22.2	106	17.5
Total	**656**	**100.0**	**606**	**100.0**

N.B: Multiple Answer Considered

Displaced people lost their houses, stored resources and land in both study areas, even in Kutubdia Island 10.8% displaced people lost their family members (Table 4). Cyclone/storm surge and bank erosion were significant in both study areas. However, every disaster

hampered the life and livelihood, but the cyclone/ storm surge and bank erosion are most devastating among them. Furthermore, the Kutubdia Island area is more susceptible to climate change induced disasters because the Kutubdia Island has been gradually eroding.

For this reason, villagers are losing their livelihood. Alternatively, Dacope area is better than Kutubdia area because Dacope area is situated behind theSundarban Forest. This forest is the natural protection for the inhabitants of Dacope with Khulna Division. Climate change induced victims not onlylose their life, but their house, land properties, and stored resources as well.

Times of Losing Household

Bangladesh is widely recognized to be the worst victim of climate change and affected by salinity intrusion, destabilization of rivers, increasing extreme weather events, submergence of a large part of the country, and spread of diseases and epidemics (Islam, 2009. According to the Guardian, UK (29 January, 2013). The existing situation is very much susceptible, because the present study area is too much vulnerable to recurrent climate change induced disasters in Bangladesh.Table 4 illustrates that the main driver of climate change induced disasters is loss of house and household. It is the prime driver for displacement. Figure 1 interprets that the time of losses of the household of the displacement people in the coastal areas of Bangladesh.
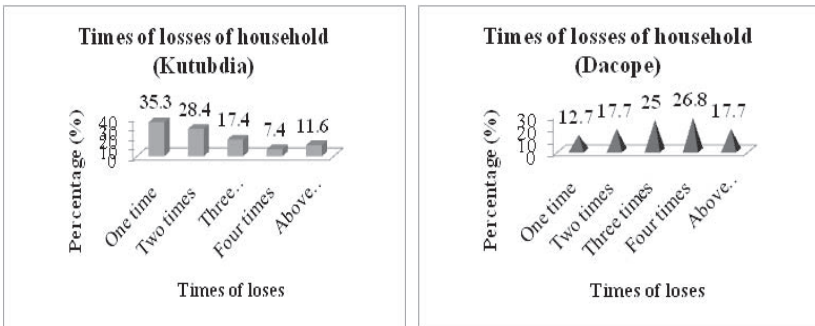

Figure 1: Times Loss of Households

In Kutubdia Upazila, nearly 35.3% villagers have lost their household for one time, besides 11.6% villagers lost their household more thanfive times. Conversely, in Dacope areas, displacement stigma is occurring frequently than Kutubdia Upazila because villagers have lost their household time to time. Maximum villagers have lost their households like 25% at three times, 27% four times, and 18% five times respectively. The qualitative survey prescribed that Tabaler char under Ali Akbar Dail union and Western side of North Dhurang lost their homestead above five times and these areas are more vulnerable to coastal bank erosion and cyclone. Besides, villagers of Suterkhali union were displaced more than five times from their homestead particularly, Nolian, Kalabogi, KalabogiKawer Para, Jullanto Para, Bari Badd and Kali Nagor and ChotoJallia Khali at Kamerkhola union of Dacope Upazila.

Patterns of Displacement of Displaced People

After displacement form their original place, displaced people tried to remain in their own village in their own Upazila of their own district, particularly as long as they have alternative land and livelihood options to survive or no scope to move to other places. Table 5 explores that pattern of displacement of displaced people from their livelihood.

Table 5: Pattern of Displacement of Displaced People

	Study Area-I (Kutubdia)		Study Area-II (Dacope)	
	Frequency	*Percentage*	*Frequency*	*Percentage*
Own village	124	51.02	197	87.94
Own Upazila	80	32.92	18	8.03
Own District	23	9.46	2	1.0
Total	**243**	**100.0**	**224**	**100.0**

N.B: Multiple Answer Considered

The study shows that most of the villagers were displaced from their own villages in both areas (51% in Kutubdia Upazila and 87% in Dacope Upazila). Besides, most of them were displaced from their own Upazila and finally from their own district.

Current Destination of Displaced People after Displacement

Three types of destination have been identified, such as own district, outer district and out of the country (table 6). Table 6 demonstrates that most of the displacedpeople found their destination in their own district (89% in Kutubdia Upazila and 57% in Dacope Upazila) in both study areas. In Kutubdia Upazila, nearly 10% displaced people found their destination in outer districts,which is 40% in case of Dacope Upazila. It is significant that 2.59% displaced people going to India were those who were displaced from Dacope Upazila.

Table 6: Destination of Displaced People after Displacement

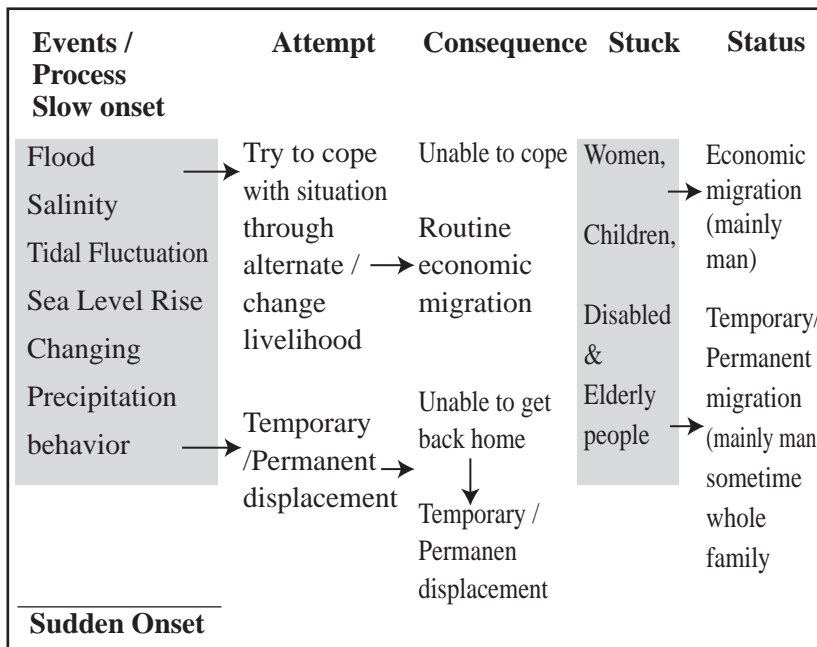|	Study Area-I (Kutubdia)		Study Area-II (Dacope)	
	Frequency	*Percentage*	*Frequency*	*Percentage*
Own district	170	89.47	154	57.03
Outer district	20	10.52	109	40.37
Out of country			7	2.59
Total	**190**	**100.0**	**270**	**100.0**

Table 6 demonstrates that most of the displaced persons find their destination in their own district (89% in Kutubdia Upazila and 57% in Dacope Upazila) in both areas of study. In Kutubdia Upazila, nearly 10% displaced people found their destination in outer district and 40% was in Dacope Upazila. It is significant that 2.59% displaced people going to India were those who were displaced from Dacope Upazila. In the study area-1 (Kutubdia Upazila), choice of majority of the displaced people is Cox's Bazar and its adjacent Upazilas like Cox's Bazar Sadar Upazila (Including Char Para, Kutubdia Para, Shometi Para, Kolatoli Moor, Muhuari Para), Chakaria Upazila (Including Rong Mohol, Cha Bagan, Haider Nashi, Reserve Bazar and Hasinapara at Dulhazara) and Pekua Upazila (Including Malumgat, Mognamaghat) as their destination point. The outer district including Chittagong city corporation area containing Bondor Tilla, Beri Badh, Near Shah Amanat Bridge, Oxygen and Halishahar and nearby Upazilas of Chittagong district as Banshkhali, Anowara and Patiya Upazila. But most of the displaced people remained in their own union/villages after displacement in Dacope

area. However, a number of displaced people from Dacope area already moved to different parts of Bangladesh, particularly to nearby districts, and to Dhaka and Chittagong Hill Tracts (CHTs) areas. Even a few people already migrated to a neighboring country (India). During the survey in the destination point (Khulna Metropolitan city), displaced people stated that as NGO's relief programs are continuing in Dacope Upazila, especially in Kamerkhola and Suterkhali areas, so displaced people did not go to other places from these areas to avail these services even though they are residing on Polders (embankments) on temporary basis.

Displacement Processes

As Islam and Shamsuddoha, 2017, shows that people are displaced from their root in two events such as slow onset and sudden onset. The current study also explores the same condition: two types of events those are imposed to displacement of villagers from their localities. The current study has explored that flood, cyclone or storm surge, bank erosion, salinity, tidal fluctuation, sea level rise, and precipitation anomalies are the common and familiar disaster in the coastal belt of Bangladesh. In addition to that, cyclone or storm surge and bank erosion are more susceptible, recurrent, destructive and are the main driversof displacement of coastal people from their origin. Slow onset events have executed thedisplacement of coastal people. After displacement, displaced people try to cope with the situation through alternative to change their livelihood. This situation is similar at non-susceptible zones in Kutubdia and Dacope Upazila. As a result, displaced people are unable to cope or routine economic migration. At that time displaced people, particularly women, children, people with disability and elderly people were stuck due to the uneven or unexpected situation in coastal areas. Finally, displaced people, especially man or young people are migrated to the adjacent Upazilas or districts for economic purposes. On the other hand, sudden onset events have accelerated temporary or permanent displacement of villagers from their origin. In this situation, they have no options to receive any alternativesto change their livelihood.

This condition is visualized and existent innearby coastal habitats in every study area. As a result, displaced people being unable to get back home become displaced. At that time displaced people, mainly men or sometimes whole family rehabilitated at neighboring Upazilas or districts as a legal or an illegal slum or squatter dwellers.

Events / Process Slow onset	Attempt	Consequence	Stuck	Status
Flood Salinity Tidal Fluctuation Sea Level Rise Changing Precipitation behavior	Try to cope with situation through alternate / change livelihood	Unable to cope Routine economic migration	Women, Children, Disabled & Elderly people	Economic migration (mainly man)
	Temporary /Permanent displacement	Unable to get back home Temporary / Permanen displacement		Temporary/ Permanent migration (mainly man sometime whole family)
Sudden Onset				

(*Source: The framework has been adopted after Islam and Shamsuddoha, 2017*)

Figure 2: Processes of Displacement

Conclusion and Recommendations

Environmental and climate factors have a long impact on migration flows, as people have historically left places with harsh or deteriorating conditions (IOM, 2016). Over the last two decades, the number of recorded natural disasters has doubled from some 200 to over 400 per year. As a result, climate induceddisplacement has been accelerated and triggered by sudden onset of disasters; but economic and social factors like resource availability, social networks and

livelihood opportunities are factors determining whether migration occurs (Martin *et al.*, 2013). Besides, one of the most dramatic impacts is forced movement of people throughout Bangladesh as a result of losing their homes, lands, property, and livelihoods due to the impact of climate change. Seventy percent (70%) of land of Barisal and Khulna divisions is affected by different degree of salinity, which reduces agricultural productivity (Rahman and Ahsan, 2001).In this circumstance, the following recommendations have been proposed based on the above study findings and discussions through KIIs and FGDs outcomes along with considering the opinions of different stakeholders, especially experts, researchers, academicians, planners, local government representatives, related government high level officials and relevant agencies, journalists, local public representatives and so on.These recommendations would help to properly manage displacement issues in the coastal areas of Bangladesh.

Long Term

Coastal embankment/Polder should be built or repaired by triangular concrete with stone block, and initiatives should be takenagainst coastal deforestation by mangrove or saline resistance tree planting along the embankment. A local joint monitoring team should also be created for monitoring deforestation and embankment.

Local raw material based small industry should be established. It may ensure the alternate livelihood and reduce the displacement pattern of the displaced from their original areas. For example, In the Kutubdia Island, building salt industry or salt refinery factory, cold storage for preserving fish resources, because salt production fields and fishing are available. Besides, 'Sundorban Mangrove forest' is adjacent to Dacope area, where various types of raw materials like honey, wood, fish, bamboo are available for building candle industry, wood business, cold store for fish preservation, paper industry and so on.

Government should ensure eight rights of displaced people - mainly humanitarian assistance (emergency period), adequate housing and shelter, land, food, water and adequate sanitation, education for school children, health care facilities, freedom of movement, and right to choose their residential location and relocate.

A policy on the protection of climate induced displaced people should be developed and implemented by the government complying with the international rights, convention, and national rights based laws and policies that ensure the effective protection of climate displaced communities in Bangladesh.

The Government should ensure that suitable Khas land is made available for the relocation of climate displaced communities, with the provision of non-agriculture khas land, including through reviewing and improving the existing khas land distribution policies and programs for the distribution of Khas land to landless displaced persons in Bangladesh.

The local level rehabilitation program can control the migration of displaced people to the slum in the urban areas, where people live without basic needs and rights. So government should take Initiative at the local level by ensuring alternative livelihood scopes. NGOs can also supplement this process through developing innovative projects.

Short Term

Governmental personnel's should give psychological assistance to displaced people with good behaviors.

Local governmental authority should include displaced people in every ongoing safety net program, particularly Old Age Allowance (OAA), Vulnerable Group Feeding (VGF), legal aid, Test Relief (TR), Gratuitous Relief (GR), Food for Work (FFW), Food for Money (FFM), Welfare trust for physical disabilities and so on.

Basic needs or necessary goods, such asdry food, drinking water, warm cloth, mosquito nets, and medicines like oral saline, halogen tablet, should be provided during emergency period.

Providing house building materials in an emergency period, or tent and temporary camp on highland areas.

Giving allowances, tube well, cattle, good seeds and fishing net and so on during the post-disaster period.

Acknowledgements

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