The Tempest of Exodus

The Case of Climate Change-induced Displacement in Bangladesh and International Negotiations

উন্নয়ন অন্বেষণ
Unnayan Onneshan
The Innovators
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This research is an output of Climate Change, Biodiversity and DRR Unit of the Unnayan Onneshan, a multidisciplinary research organisation based in Dhaka, Bangladesh. The technical paper is prepared by ***Rashed Al Mahmud Titumir, Md. Humayain Kabir and Mohammed Abdul Baten.*** This paper is formatted by **Shahid Md. Adnan and A.Z.M Saleh**.

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Discussion Paper

Draft version for comments and discussion

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EXECUTIVE SUMMARY

Analysing existing available data, Unnayan Onneshan has revealed a worrying picture of forced migration due to some hydro-meteorological hazards namely floods, cyclones, droughts, river bank erosion in Bangladesh

The climate induced forced migration is on the rise, with alarming proportion, though human migration is not new. Coupled with a number of hydrological, geological and socio-economic factors the impacts of climate change have resulted in increased poverty, death, loss of property and more importantly forced migration in Bangladesh. Analysing existing available data, Unnayan Onneshan has revealed a worrying picture of forced migration due to some hydro-meteorological hazards namely floods, cyclones, droughts, river bank erosion in Bangladesh. The study found that on an average 2.5 million people displaced permanently in every major floods. Even though cyclone hits this delta on a regular interval, but the frequency and intensity has increased many folds in recent times along with increased damages. Within last 5 years, cyclone Sidr displaced 650,000 people; about 20,000 people were displaced by cyclone Bijli; and another 842,000 by Aila (Akter, 2009; Kumar et.al. 2010). Riverbank erosion also causes loss of thousands of hectares of agricultural land; loss of homes and property; death and injury; and disruption of economic production, education, communications and sanitation facilities.

Taking into account flood, cyclone, riverbank erosion and drought cumulatively climate change induced migration in Bangladesh may reach 22.37 million, 48.28 million and 95.72 million by 2020, 2030 and 2040 respectively

The number of displaced population in Bangladesh, due to climate change, if radical actions are not taken, will continue. The present study has also endeavored to project future displacement for the year 2040 based on existing data, and used flood data since 1986, cyclone data since 1970, drought data since 1949 and river bank erosion data since 1982. The study has projected that due to flood 5.25 million, 11.02 million, 23.16 million people may be displaced by 2020, 2030 and 2040 respectively. Likewise, 1.58 million, 6.46 million and 26.39 million may be displaced due to cyclone by 2020, 2030 and 2040 respectively. In addition, due to riverbank erosion, 11.62 million, 26.15 million and 40.67 million may be displaced by 2020, 2030 and 2040 respectively. Similarly, 3.92 million, 4.64 million and 5.5 million may be displaced due to drought by 2020, 2030 and 2040 respectively. Taking into account flood, cyclone, riverbank erosion and drought cumulatively climate change induced migration in Bangladesh may reach 22.37 million, 48.28 million and 95.72 million by 2020, 2030 and 2040 respectively. However, the figure

projected here is hypothetical and based on previous trend, which may change in respect to other factors like education, economy, and infrastructure.

Migration is an outcome of number of factors that include both push (environmental degradation, internal conflict, population increase etc) and pull factors (higher income, living standard, better education etc). Push factors are mainly responsible for forced migration and the impacts are incremental since eventually it results in poor living, conflict and environmental degradation in the new areas where people migrate. Intergovernmental Panel on Climate Change (IPCC) identified human migration as the greatest single impact of climate change since shoreline erosion, coastal flooding, and agricultural disruption may displace millions of people.

Push factors are mainly responsible for forced migration and the impacts are incremental since eventually it results in poor living, conflict and environmental degradation in the new areas where people migrate

The forced human migration, both temporary and permanently, is one of the most alarming consequences of climate change of today and coming decades. The upsurge in migration, caused by environmental degradation and climate change, is unprecedented, yet the world is still mired only in 'expression of intent' in the climate change negotiations, at the cost of the people's lives and livelihood, particularly the poor and the marginalized, who have no contribution in changing the climate.

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Despite strong scientific evidence of climate change, establishing a liner and causative relationship between anthropogenic climate change and migration has been difficult to date due to its association with other charged political and economic factors. Many terms and concepts such as environmental or climate change migrants, environmentally induced or forced migration, ecological or environmental refugee or climate change refugee, and environmental displacement are used in literature that may create space for debate but does not necessarily limits the importance of the issue.

The United Nations High Commissioner for Refugees (UNHCR) is reluctant to use the word "climate refugee" as it infringes upon the legal definition they use to protect refugees of war and conflict. Existing legal frameworks such as the 1951 Geneva Convention Relating to the Status of Refugees, and the 'UNHCR Guiding Principles on Internal Displacement' provide insufficient protection for climate change refugees. Another difficulty of defining climate-induced migration arises from lack of clear methodology of isolating environmental factors from other drivers of migration. However, on the basis of push and pull factors, climate change induced displacements can be distinguished

from traditional migrants as they primarily respond to push factors at their place of origin.

Climate induced migration has been able to draw attention and is also reflected in some policy documents, though insufficiently

In recent times, climate induced migration has been able to draw attention and is also reflected in some policy documents, though insufficiently. For instance, in Bangladesh, Coastal Zone Policy (CZP, 2005), National Adaptation Programme of Action (NAPA, 2005), and Bangladesh Climate Change Strategy and Action Plan (BCCSAP, 2009) are three recent policy documents that have documented the issue of climate-induced migration in different ways. Beside this, 'UNHCR Guiding Principles on Internal Displacement', different activities of International Organization for Migration (IOM) also recognized this issue. Of late, 'Cancun Agreements' in 2010, also addressed climate-induced migration and acknowledged the need for addressing the movement of people as a result of climate change in its paragraph 14 (f).

Based on historical responsibility and carbon emission status and existing population density, the UNFCCC can formulate a legally binding instrument to determine the quotas for UNP

The study suggests that either UNFCCC or UNHCR should formulate a clear definition and guiding principles for the climate migrants immediately. Incorporation of climate-induced migration in existing polices both nationally and internationally is time-tested demand. More practically, it would be rationale to declare climate migrants as Universal Natural Person (UNP) and relocate them according to their preference under the authority of UNFCCC. In this regard, based on historical responsibility and carbon emission status and existing population density, the UNFCCC can formulate a legally binding instrument to determine the quotas for UNP.

1. INTRODUCTION

The climate induced forced migration is on the rise, with alarming proportion, though human migration is not new. The United Nations Framework Convention on Climate Change (UNFCCC) in its Cancun Conference in 2010 recognized the gravity of such consequential outcome and called for an immediate and substantive action. The international scientific body on climate change acknowledged by governments across the world, the Intergovernmental Panel on Climate Change (IPCC) also identified human migration as the greatest single impact of climate change since shoreline erosion, coastal flooding, and agricultural disruption may displace millions of people. A combination of exposure to natural hazards, poverty-related vulnerabilities, and capacity for resilience determines which regions and societies are most likely to suffer from the negative impacts of climate change.

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The upsurge in migration caused by environmental degradation and climate change is unprecedented, yet the world is still mired only in 'expression of intent' in the climate change negotiations, at the cost of the people's lives and livelihood, particularly the poor and the marginalized, who have no contribution in changing the climate. Moreover, the failure in abatement of increased migration itself may contribute to further environmental degradation and vulnerability, even though migration represents a coping mechanism and survival strategy (Morton *et al.* 2008).

The International Organization for Migration – IOM (2010) identifies four ways by which climate change affect the movement of people

The recent scientific evidences on climate-induced migration have given birth to many terms and concepts such as environmental or climate change migrants, environmentally induced or forced migration, ecological or environmental refugees or climate change refugees, and environmental displacement (Warner and Ehrhart, 2009). Generally, environmental migrants or climate migrants are understood to be those individuals, communities and societies who choose, or are forced, to migrate as a result of damaging environmental and climatic factors. These broad and diverse groups range from people forced to flee disasters such as flooding to impoverished farmers abandoning degraded land and migrating to urban centers in search of alternative livelihoods (Morton *et al.,* 2008).

The recent scientific evidences on climate-induced migration have given birth to many terms and concepts such as environmental or climate change migrants, environmentally induced or forced migration, ecological or environmental refugees or climate change refugees, and environmental displacement

The International Organization for Migration – IOM (2010) identifies four ways by which climate change affect the movement of people: 1) the intensification of natural disasters – both sudden and slow-onset - leading to increased displacement and migration; 2) the adverse consequences of increased warming, climate variability and of other effects of climate change for livelihoods, public health, food security and water availability; 3) rising sea levels that make coastal areas uninhabitable; and 4) competition over scarce natural resources potentially leading to growing tensions and even conflict and, in turn, displacement.

Both the climatic and non-climatic drivers are responsible to growing mass of migrants worldwide. In case of climate drivers, *climate processes* such as sea-level rise, salinization of agricultural land, desertification and growing water scarcity, and *climate events* such as flooding, storms etc are forcing human to migrate. But various non-climate drivers, such as government policy, population growth and community-level resilience to natural disaster, are also important (Brown, 2008a). The speed of migration and the number of migrated people depend on severity of the disasters and social and economic strength of addressing the disasters in respective areas.

In the worst case, one meter sea level rise could inundate 18 percent of Bangladesh's total land, directly impacting 11 percent of the country's population (

The consequences of climate change including associated outcome in the form of migration are most severe for the developing world, particularly in Asian mega deltas, which have greater exposure and sensitivity to climate change, but equipped with limited adaptive capacity. Bangladesh, being a densely populated delta, is one of the worst victims of climate-induced disasters in the world. Most often the country becomes the attention of international media for natural disasters.

Estimations of the number of climate change displaced differ considerably between a total of 50 million in 2010 according to the UNFCCC (2007) to 250 million in 2050 of Myers (2005). For instance, in case of Bangladesh, along with other extreme weather events like flooding and tropical cyclone, sea level rise is an impending threat to the coastal areas in the country, which has long and densely populated coastlines with many low-lying remote islands. In the worst case, one metre sea level rise could inundate 18 percent of Bangladesh's total land, directly impacting 11 percent of the country's

population (Karim *et. al.,* 1999). Salt water intrusion from sea level rise in low-lying agricultural plains, along with other hazards, could lead to 40 percent decrease in food grain production and increase forced migration to the urban slum areas. Estimates show that with just a 1 to 2^0C increase in temperature would force physical dislocation of more than 35 million people in Bangladesh (Karim, *et al.,* 1999).

The forced climate migrants fall through the cracks of international refugee and immigration policy—and there is considerable resistance to the idea of expanding the definition of "refugees" to incorporate climate "refugees"

The climate induced forced migration exerts threat to development in many ways, amongst others, through increased pressure on carrying capacities of urban infrastructure, basic services such as health and education, risk of conflicts, debilitating social indicators among migrants themselves, and thereby putting pressure on the economic growth momentum of a country.

There has been a collective, and rather successful, attempt to ignore the scale of the problem by the international community. The forced climate migrants fall through the cracks of international refugee and immigration policy—and there is considerable resistance to the idea of expanding the definition of "refugees" to incorporate climate "refugees". Meanwhile, large-scale migration is not taken into account in national adaptation strategies, which tend to see migration as a "failure of adaptation." Neither there is any decisive discussion in the other two pillars of the UNFCCC negotiations, namely finance and technology. So far there is no "home" for climate migrants in the international community, both literally and figuratively.

Establishing a liner and causative relationship between anthropogenic climate change and migration has been difficult to date due to its association with other charged political and economic factors

This paper, therefore, seeks to explore the status of climate change induced migration in Bangladesh, national and international policy response to address the matter, and discusses the gaps with a view to suggesting elements for addressing the issue.

2. CLIMATE CHANGE INDUCED MIGRATION: DISCOURSES VERSUS REALITY

Despite strong scientific evidence of climate change, establishing a liner and causative relationship between anthropogenic climate change and migration has been difficult to date due to its association with other charged political and economic factors.

The United Nations High Commissioner for Refugees (UNHCR) is not interested to use the word "climate refugee" as it infringes upon the legal definition they use to protect refugees of war and conflict. In fact, the current mandate of

UNHCR on refugees covers only individual who flee their countries because of state-led persecution based on race, religion, political opinion, or ethnicity. In spite of developing countries like Bangladesh that are currently facing climate changes and resultant displacements, as of now, no universal recognition of climate change refugees exists nor is there a universal framework in place to protect them. Existing legal frameworks such as the 1951 Geneva Convention Relating to the Status of Refugees, and the 'UNHCR Guiding Principles on Internal Displacement' provide insufficient protection for climate change refugees (Biermann and Boas, 2009; Williams, 2008).

Another debate relates to whether this group of population needs special protection or existing legal frameworks are sufficient to provide protection

Another difficulty of defining climate-induced migration arises from lack of clear methodology of isolating environmental factors from other drivers of migration. Yet another problem emanates from identifying forced versus voluntary migration (Dun and Gemenne, 2008). In response to the growing debate on defining environmental migrants, International Organizations for Migration (IOM, 2007) proposes a definition, "Environmental Migrants are persons or group of persons, who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living condition, are obliged to leave their habitual homes or chose to do so, either temporarily or permanently, and who move either within their country or abroad."

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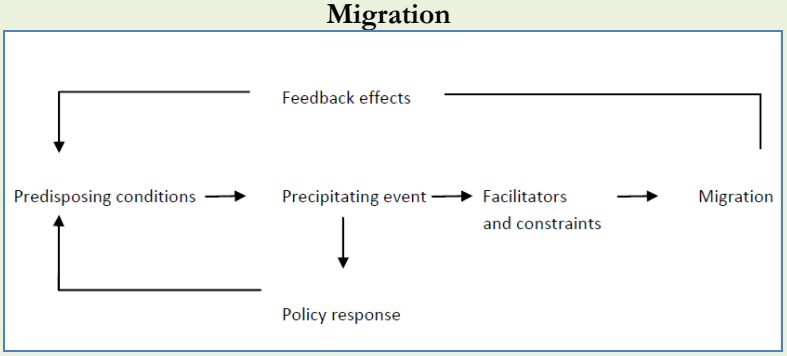
Another debate relates to whether this group of population needs special protection or existing legal frameworks are sufficient to provide protection (Kirsch-Wood et al., 2008). The grassroots groups and movements are identifying these displaced people as climate refugees and are advocating for the expansion of the definition of a refugee in the 1951 Refugee Convention in order to include them while others call for the adoption of new instruments to provide them with protection similar to that provided for refugees. The argument for reservation of using the concept of 'environmental or climate refugee' and their refugee like protection is such that the ideas serve only to confuse the traditional concept of a refugee and play into the hands of those governments who wish to classify all as economic migrants and thereby avoid their obligation to provide refugee protection (Stavropoulou, 2008). Another problem cited by these arguments is that categorization of these environmentally displaced people as 'refugee' is that the category 'refugee' in current context largely relies on crossing

an internationally recognized boarder, but most of the environmentally displaced people stay within their own country's territory as 'internally displaced person' (IDP) (Brown, 2008b).

On the basis of push and pull factors, the "maximalists" claim that climate change refugees can be distinguished from traditional migrants as they primarily respond to push factors at their place of origin

On the basis of push and pull factors, the "maximalists" claim that climate change refugees can be distinguished from traditional migrants as they primarily respond to push factors at their place of origin (Hugo, 1996). They distinguish three causes of migration namely: predisposing conditions which refer to the biophysical environment, the population pressure on natural resources and the nature of exploitation; natural disasters that cause reactionary migration; and facilitators and constraints of migration such as social networks, means of transportation, and government policies (DRC, 2008) (figure 1). The "minimalists", on the other hand, argues that people decide to migrate for multiple reasons ranging from man-made to natural causes (Black, 2001; Hugo, 1996). As they suggest, push factors relate to the place of origin such as conflict, political instability, lack of access to resources and a lack of economic opportunities while pull factors narrate the place of destination like demand for employment, higher wages, political stability and access to resources, and intervening factors similar to constraints and facilitators of migration (DRC, 2008). The minimalists thus claim that climate change can be seen as just one of many factors that influence people's decision to migrate (Black, 2001

Figure 1: A Simple Model of Environmentally Induced Migration



Source: Adapted from Richmond, 1993

Whatever the status of consensus on defining climate induced displaced population, the number of displaced people is increasing in geometric order due to increased frequency of natural disasters

Whatever the status of consensus on defining climate induced displaced population, the number of displaced people is increasing in geometric order due to increased frequency of natural disasters. Various analysts have tried to put numbers on the past and the future climate migrants. For example, Jacobson (1988) estimated up to 10 million 'environmental refugees' and warned that due to climate change the number of environmental refugee would be six times higher than the political refugee at the end of 21st century. Myers (1997)

estimated that there would be 200 million climate migrants by 2050, which was 25 million in mid-1990s. The current climate change trend is signaling for a worse future than what has been anticipated. For example, within the last five years, hundreds of thousands people were displaced only in South and South-East Asia by natural disasters namely Cyclone *SIDR* and *Aila* in Bangladesh, *Nargis* in Myanmar, flood in Pakistan and Thailand, indicating the overwhelming vulnerability of these countries to the climate change.

Witnessing the increasing trend of displacement Myers reviewed his previous estimation and warned that the number of environmentally displaced people could reach as high as 250 million (Myers, 2005)

Specifications of the causation of migration, types of migration and concrete terminologies are important not only to advance knowledge on human migration but also to establish the link between climate refugees and the overall climate change debate

It is clear that climate change induces both the increased temporary displacement and the long-term migration. Therefore, specifications of the causation of migration, types of migration and concrete terminologies are important not only to advance knowledge on human migration but also to establish the link between climate refugees and the overall climate change debate on liability, responsibility and compensation mechanisms (Biermann and Boas 2009; Williams, 2008). At intervention level, an accurate definition of this displacement category is also essential to relocate or resettle these displaced people.

3. STATUS OF CLIMATE CHANGE INDUCED MIGRATION IN BANGLADESH

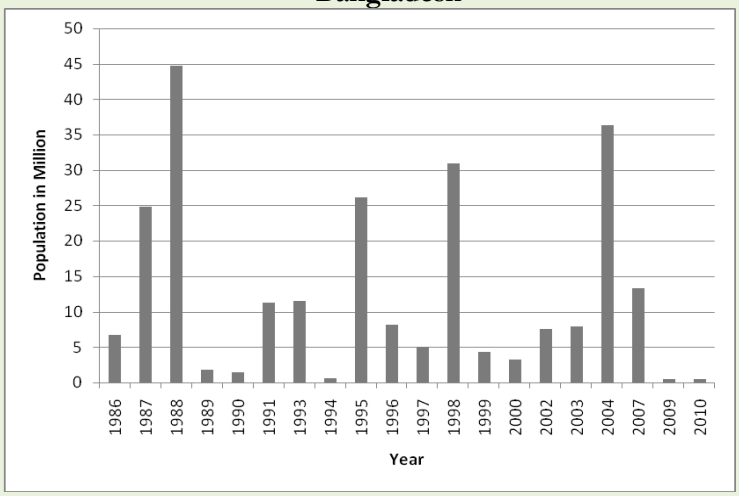
Bangladesh is one of the most vulnerable countries to climate change due to a number of hydrological, geological and socio-economic factors. Apparently, impacts of climate change are visible in Bangladesh in the form of extreme temperature, erratic rainfall, and increased number of intensified floods, cyclones, droughts, prevalence of rough weather in the Bay, aggravated by poverty-related vulnerabilities and poor infrastructure. Bangladesh experienced the lowest temperature (5°C in the three northern districts) during January 2007 out of the recorded 38 years (DMB, 2010). Over 100,000 people were affected, and the death toll due to cold-related diseases reached over 130. Crop production was also affected. Extreme high temperature in 14 years (42.08°C in Jessore) was recorded on 27 April 2009 (DMB, 2010). Intense rainfall in a short spell of time, described as a climate change impact in the IPCC report, has been occurring in Bangladesh. There was 333mm of rainfall in Dhaka on 28 July 2009.

Bangladesh is one of the most vulnerable countries to climate change due to a number of hydrological, geological and socio-economic factors

3.1 Flood

An increased number of severe floods hit Bangladesh in the last decade. Recurring floods occurred in 2002, 2003, 2004, and twice in 2007 (July-August and September).

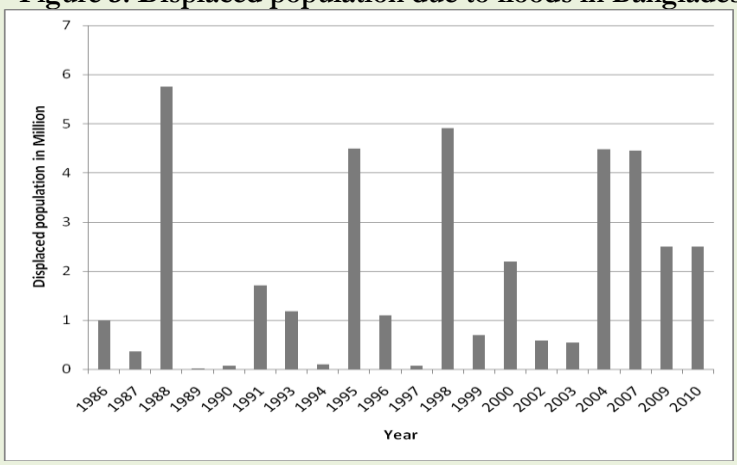
Figure 2: Affected population due to major floods in Bangladesh



Source: Disaster Management Bureau (DMB), 2012

An increased number of severe floods hit Bangladesh in the last decade. Recurring floods occurred in 2002, 2003, 2004, and twice in 2007 (July-August and September).

Figure 3: Displaced population due to floods in Bangladesh



Source: Disaster Management Bureau (DMB), 2012

In the Southern part of the Bangladesh, regular coastal flooding due to sea level rise and increased cyclones results are regarded as the major drivers of climate-induced migration. Tidal floods (as a result of sea-level rise) have affected 236 sub-districts in the coastal areas of Bangladesh in 2011 (DS, 2012). The number of flood affected and displaced people vary in terms of intensity and duration of the flood. Major floods like 1988, 1998, 2004 and 2007 displaced on an average 4.5 million people (Figure 3). A number of them temporarily migrated and returned to their territory after flood recession.

Nevertheless, the number of permanent migrants is on the rise, which not only migrates, following loss of all belongings to floods, but also struggles to find any option to maintain their subsistence livelihood in the wake of consecutive floods.

3.2 Cyclone

The coastal zone of Bangladesh hosts over 35 million people, who are exposed to cyclones, storm surges, rough seas, salinity intrusion and permanent inundation due to rising of sea level. There are 72 offshore islands with an area of 4,200 square km where over three million people are extremely vulnerable (IOM, 2010). According to official records, cyclone Sidr displaced 650,000 people; about 20,000 people were displaced by cyclone Bijli; and another 842,000 by Aila (Akter, 2009; Kumar *et.al.,* 2010) (Figures 4 and 5).

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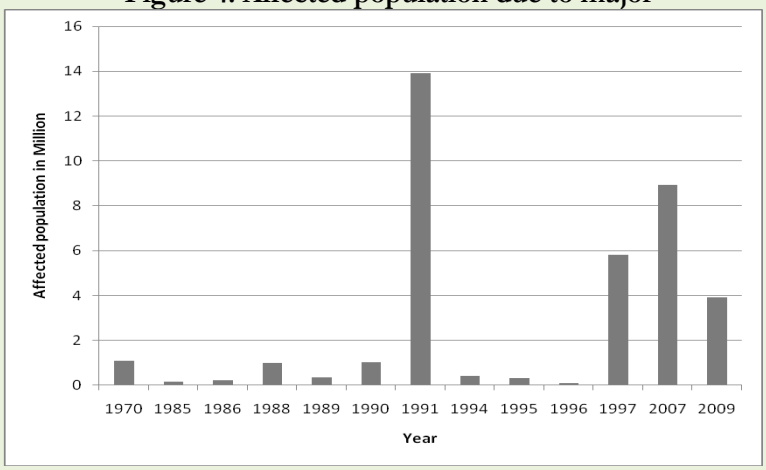
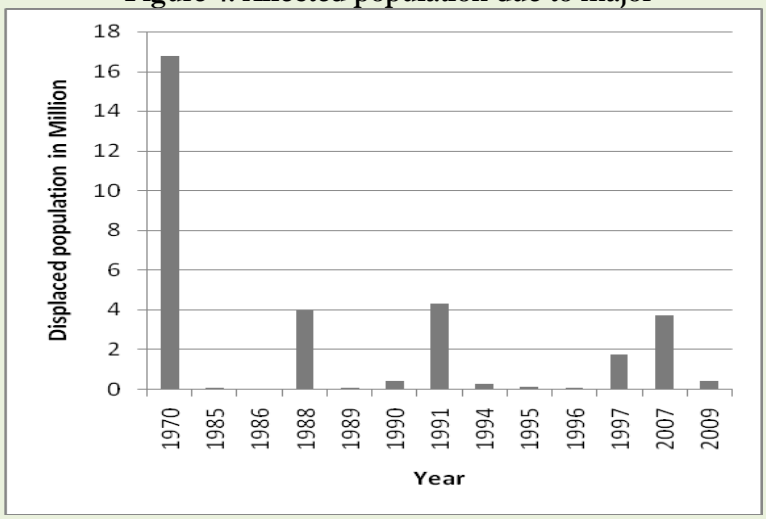
Figure 4: Affected population due to major



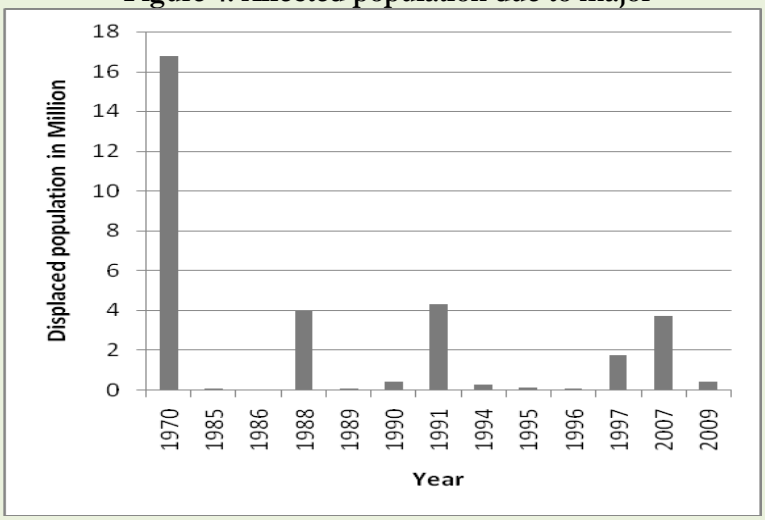
Source: Disaster Management Bureau (DMB), 2012

Figure 4: Affected population due to major



Source: Disaster Management Bureau (DMB), 2012

Figure 4: Affected population due to major



Source: Disaster Management Bureau (DMB), 2012

3.3 River Bank Erosion

Satellite image and population studies have revealed a total loss of 0.6 percent of Bangladesh's land between 1982 and 1992 as well as about 730'000 people were displaced due to riverbank erosion

River bank erosion is a serious concern for many northern districts in Bangladesh, which causes, inter alia, loss of thousands of hectares of agricultural land, loss of homes and property, death and injury, and disruption of economic production, education, communications and sanitation facilities. Riverbank erosion accounts for one of the environmental problems, aggravating internal migration from northern region of Bangladesh (Box 1). Satellite image and population studies have revealed a total loss of 0.6 percent of Bangladesh's land between 1982 and 1992 as well as about 730'000 people were displaced due to riverbank erosion (cited in Shamsuddoha, 2007). Even though erosion and accretion are considered as normal phenomenon in river morphology, but satellite image of Ganges-Brahmaputra-Mehgna Rivers showed that about 106,300 hectares of land were lost between 1982 and 1992, whereas the amount of accreted land was only 19,300 hectares. So, the net annual loss was 8,700 hectares during this period. It has been estimated that about one million people become directly or indirectly affected by riverbank erosion every year (IFRCS, 2001). The Irrigation Support Project For Asia and The Near East (ISPAN), using satellite images and population data, found that a total of 728,439 people were displaced from their original homestead by riverbank erosion during 1981 and 1993 (MoWR, 1995). The Disaster Management Bureau (DMB) of the government estimates that every year approximately 500,000 people are displaced due to riverbank erosion (DMB, 2012). Using available data, the current research estimates that total number of displacement might be 40 million by the year 2040 (Figure 6).

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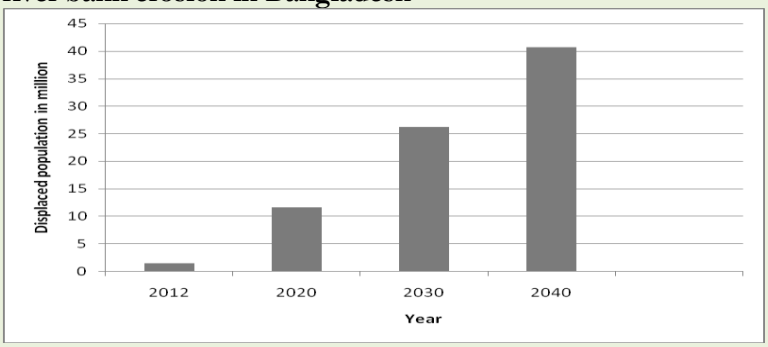
Figure 6: Present and future population displacement due to river bank erosion in Bangladesh



Source: Authors' estimation, based upon data collected from Ministry of Water Resources (MoWR), 1995; DS, 2012

Riverbank erosion accounts for one of the environmental problems, aggravating internal migration from northern region of Bangladesh

Box 1: Evidence of climate induced migration in Bangladesh: A micro-level estimation of three areas

To estimate the climate induced migration, the Unnayan Onneshan conducted a study in three geographical areas namely Kazipur of Sirajgonj district, Sundargonj upazila of Gaibandha district and Gosairhat upazila of Sahriatpur district in 2011 using GIS and Remote Sensing techniques. The study focused on three climate impacts such as riverbank erosion, drought and salinity intrusion. River bank erosion is a fast variable, salinity intrusion is a moderately fast variable and drought is a slow variable. Using GIS and Remote Sensing technology, the study overlapped existing maps with those maps of 70s and tried to estimate number of displaced people in relation to land area coverage under different climatic impacts such as riverbank erosion, drought and sea level rise. Moreover, available data from secondary sources were used to estimate the current trend as well as future migrants.

In Kazipur Upazila of Sirajganj district 21,961 people were migrated permanently in 2011 due to riverbank erosion, which was 9.35 percent of the total population of that area. Northern part of Bangladesh is affected by seasonal drought and therefore migration in this area is also influenced by seasonality. Geographical location, lack of irrigation facilities and the shifting of temperature are the causes for increasingly dry, and lose of, moisture in northern part of Bangladesh and drought occurs during the month of March to May and October. Through NVDI analysis, the study estimates that the rate of seasonal or temporal migration was 1988 in 2011, which is 10 percent of the total population in the Sundargonj upazila of Gaibandha district.

Till today impact of sea level rise at interior coast is minimal, but with the increased rate of sea level rise the interior coast will be affected by salinity in near future and cause migration. Salinity in interior coast also helps to understand how adversely the regular coasts are affected by sea level rise. The study therefore used IPCC scenarios to estimate the number of migrants in interior coast, who are likely to migrate due to disruption in agriculture. According to B1 and B2 scenario of IPCC, Gosairhat Upazila of Shariatpur district is less likely to be affected by sea level rise induced salinity intrusion by the year 2100. However, A2 and A1F1 scenario show that 39.43 percent and 67.52 percent of the land area of Gosairhat Upazila will be affected by salinity intrusion by 2100; consequently, 55,226 and 94,518 people may have to be migrated permanently due to loss of crop and crisis in fresh water and these people are 39.49 percent and 67.48 percent of the total population respectively.

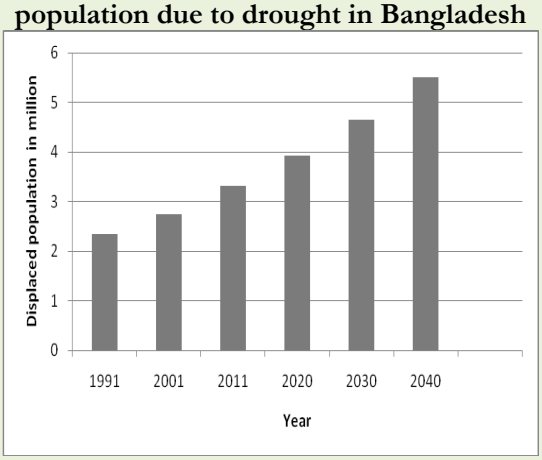
Source: (Mollah, Baten and Titumir, 2011).

3.4 Drought

With increased fluctuation in temperature and precipitation, Bangladesh is at higher risk owing to droughts. Drought also acts as an important driver of climate-induced migration in Bangladesh. Between 1949 and 1991, 24 droughts are recorded in Bangladesh. Very severe droughts hit the country in 1951, 1957, 1958, 1961, 1972, 1975, 1979, 1981, 1982, 1984 and 1989. Past droughts have typically affected about 47% area of the country and 53 percent of the population (WARPO, 2005). As drought is a slow onset climatic event, migration due to drought is difficult to segregate. Most often, other factors like crop failure, less productivity, income insecurity are identified as drivers for migration whereas drought is the inherent cause. Existing data reveals that approximately 2.2 percent of the population is affected in each drought. Assuming such rate of impact, it is estimated that total 5.5 million people might be displaced or forced to migrate by the year 2040 due to drought and associated factors (Figure 7).

Approximately 2.2 percent of the population is affected in each drought. Assuming such rate of impact, it is estimated that total 5.5 million people might be displaced or forced to migrate by the year 2040 due to drought and associated factors

Figure 7: Future climate change induced displaceed population due to drought in Bangladesh



3.92 million, 4.64 million, and 5.5 million may be displaced due to drought in 2020, 2030, and 2040 respectively

Source: Authors' estimation, based upon data collected from Water Resources Planning Organization (WARPO), 2005

4. PROJECTION OF DISPLACED PEOPLE IN BANGLADESH

The number of displacement in Bangladesh, due to climate change, is on rise and is assumed to continue. Based upon the available data sets, the current study estimates that due to flood 5.25 million, 11.02 million, and 23.16 million might be displaced by 2020, 2030, and 2040 respectively (Figure -8). Assuming the current occurrence of cyclone and the historical trend, the cyclone related displacement, if adequate intervention is not put in place, may stand at 1.58 million, 6.46 million, and 26.39 million in 2020, 2030, and 2040 respectively (Figure - 9). The business usual scenario, based upon historical trend suggest that river bank erosion may lead

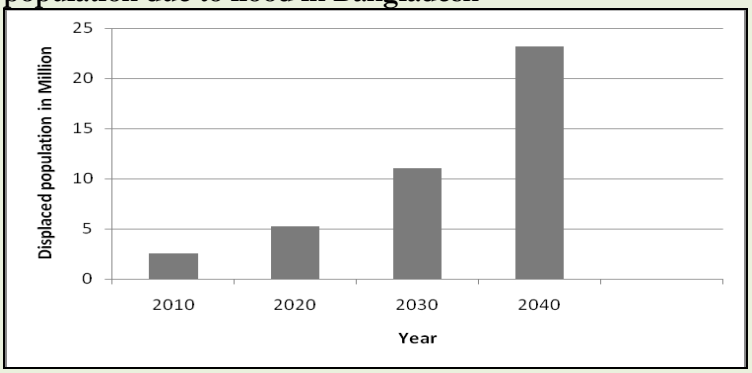
The number of displacement in Bangladesh, due to climate change, is on rise and is assumed to continue

11.62 million, 26.15 million, and 40.67 million people displaced in 2020, 2030, and 2040 respectively (Figure -10). Similarly, if the trends cannot be reversed, 3.92 million, 4.64 million, and 5.5 million may be displaced due to drought in 2020, 2030, and 2040 respectively (Figure - 7). Taking into account flood, cyclone, riverbank erosion and drought, assuming historical trend and no effective preventive actions for the reversal of trends, total climate change induced migration in Bangladesh could reach 22.37 million, 48.28 million, and 95.72 million in 2020, 2030, and 2040 respectively (Figure 11). The figures projected here is suggestive and based on previous trend. Moreover, some of the data used here are collected from secondary sources, whose authenticity cannot be ascertained. In some cases more than one driver is responsible for same number of migration.

Taking into account flood, cyclone, riverbank erosion and drought, assuming historical trend and no effective preventive actions for the reversal of trends, total climate change induced migration in Bangladesh could reach 22.37 million, 48.28 million, and 95.72 million in 2020, 2030, and 2040 respectively

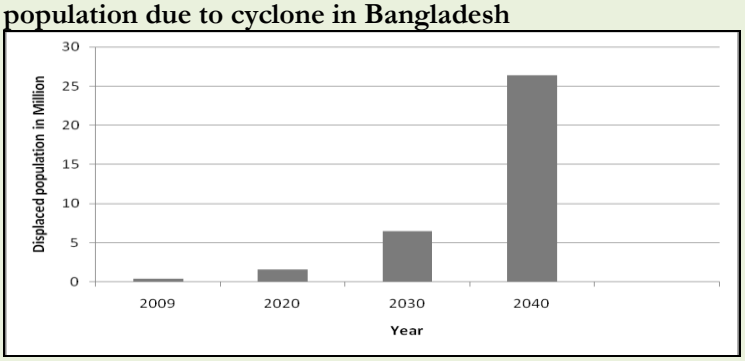
For instance, in most cases flood and riverbank erosion occur simultaneously, which result in displacements. The real number of displacement may vary depending upon nature of disasters and future interventions.

Figure 8: Future climate change induced displaceed population due to flood in Bangladesh



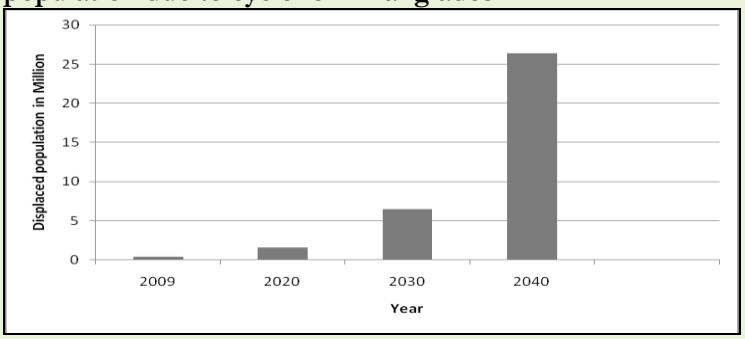
Source: Authors" projection based on the data collected from Disaster Management Bureau, (DMB) since 1986 to 2010

Figure 9: Future climate change induced displaceed population due to cyclone in Bangladesh



Source: Authros' projection based upon the data collected from Disaster Management Bureau, (DMB)from 1970 to 2009

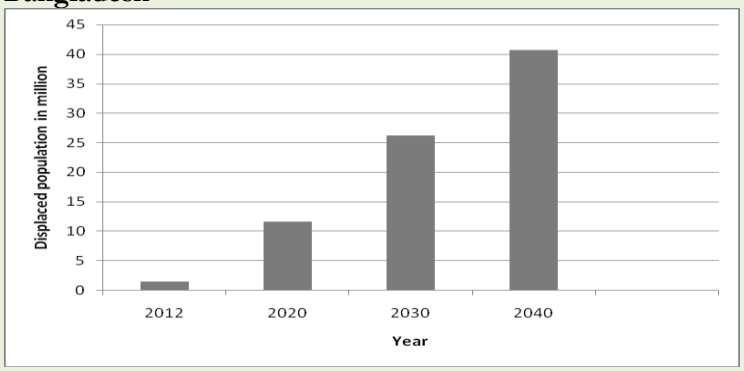
Figure 9: Future climate change induced displaceed population due to cyclone in Bangladesh



Source: Authros' projection based upon the data collected from Disaster Management Bureau, (DMB) from 1970 to 2009

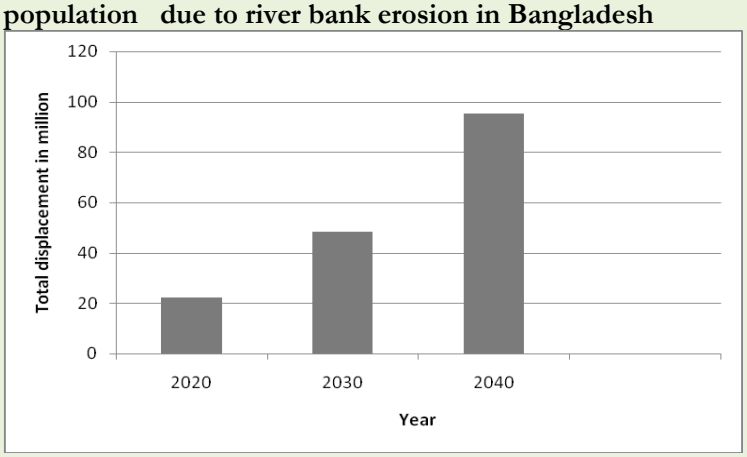
Figure 10: Total climate change induced displaced population in future due to major climate induced disasters in Bangladesh

Based upon historical trend, river bank erosion may lead 11.62 million, 26.15 million, and 40.67 million people displaced in 2020, 2030, and 2040 respectively



Source: Authors' projection based upon data of Disaster Solution, 2012

Figure 11: Future climate change induced displaced population due to river bank erosion in Bangladesh



Source: Authors' projection based upon total displaced people of flood, cyclone, river bank erosion and drought due to climate change

The dearth of local research and available data on the (prospective) number of climate change refugees in Bangladesh differ considerably between predictions and estimations following a major disaster (IOM, 2010). Norman Meyers (1994) has studied over 2000 sources and assume that 15 million people will be displaced in Bangladesh in a business- as-usual situation by 2050 (Myers, 1994). Brown (2004) claims that a mere one meter rise in sea-level would inundate half of Bangladesh's rice land that may result in migration of 40 million people. Akter (2009) studied historical trends in the occurrence of cyclones, floods, riverbank erosion and droughts in Bangladesh and resultant displacements, and subsequently calculated that future displacement might be approximately 49 million, 63 million and 78 million people in 2010, 2015 and 2020 respectively.

Coastal Zone Policy (CZP, 2005), National Adaptation Programme of Action (NAPA, 2005), and Bangladesh Climate Change Strategy and Action Plan (BCCSAP, 2009) have mentioned the issue of climate-induced migration

5. POLICY RESPONSE FOR CLIMATE MIGRATION IN BANGLADESH

Given the visibility of the climate-induced migration, some policy documents reflect the issue, though insufficiently. For instance, Coastal Zone Policy (CZP, 2005), National Adaptation Programme of Action (NAPA, 2005), and Bangladesh Climate Change Strategy and Action Plan (BCCSAP, 2009) have mentioned the issue of climate-induced migration. Although the issue of "climate change refugees" is never explicitly mentioned in the CZP, the relationship between climate change and vulnerability of the coastal zone is cited:

The level of the well being of households has direct correlation with exogenous phenomena influencing them. Disasters like cyclone, drainage congestion, land erosion and drought that take toll on life and property and depletion of natural resource base that supports particularly the poor. Majority households are vulnerable to climate change. In the coastal zone, agriculture continues to be a major source of employment, which is seasonal in nature (MoWR, 2005).

The Bangladesh National Adaptation Programme of Action (NAPA) assesses climate change and possibilities for adaptation within a framework of economic development and poverty reduction (MoEF, 2005). Throughout the NAPA, "climate change refugees" was never mentioned as a compound terminology, contrary to the CZP, "migration" is mentioned twice as a concern related to climate change.

The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) was drafted in 2008 and revised in 2009. The BCSSAP sets out six key areas of action including food security, social protection and health; comprehensive disaster management; infrastructure; research and knowledge management; mitigation and low-carbon development; and capacity building and institutional strengthening (MoEF, 2009). A big difference with the NAPA, however, is the specific mentioning of "environmental refugees". A number of phrases refer directly to them:

- In the worst case scenario, unless existing coastal polders are strengthened and new ones build, sea level rise could result in the displacement of millions of people – „environmental refugees" - from coastal regions, and have huge adverse impacts on the livelihoods and long-term health of a large proportion of the population (MoEF, 2009).
- Increased river bank erosion and saline water intrusion in coastal areas are likely to displace hundreds of thousands of people who will be forced to migrate, often to slums in Dhaka and other big cities. If sea level rise is higher than currently expected and coastal polders are not strengthened and/or new ones build, six to eight million people could be displaced by 2050 and would have to be resettled
- Resettlement of environmental refugees invoking the free movement of natural persons must be monitored and adequate institutional support is to be provided.
- Build the capacity for education and training of environmental refugees to ease and facilitate their migration to other countries and integration in new societies (MoEF, 2009).

Causes of migration are identified as saline intrusion, increased frequency and intensity of cyclones and storms, and increase in riverbank erosion

The term *"environmental refugee"* thus re-appears on a number of occasions and the rules of boundary have become clearer and even estimations of their numbers are being given. Causes of migration are identified as saline intrusion, increased frequency and intensity of cyclones and storms, and increase in riverbank erosion (MoEF, 2009). But, for a densely populated country like Bangladesh any further concentration of people in the same "safe" areas through out-migration within the country is problem ridden.

The most important institution for the protection of refugees is the '1951 Geneva Convention Relating to the Status of Refugees' and 'the 1967 Protocol Relating to the Status of Refugees'

6. INTERNATIONAL POLICY RESPONSE TO CLIMATE MIGRANTS

The intransigence by the developed countries on an adaptation regime, let alone to develop a mechanism to deal with the forced climate-induced migration, is a grave cause of concern. As of now, the most important institution for the protection of refugees is the '1951 Geneva Convention Relating to the Status of Refugees' and 'the 1967 Protocol Relating to the Status of Refugees' (Biermann and Boas, 2009; Williams, 2008). As the Convention was drafted in the

aftermath of the Second World War, two requirements have to be met before being considered a refugee: first, there must be a *"well-founded fear of being persecuted"* and second, persecutions should be based on *"race, religion, nationality, membership of a particular social group or political conviction"* (UN General Assembly, 1951). Clearly there is no provision for climate change refugees and the Convention is restricted to those people who cross state borders, which is too restrictive for the problem at hand (Williams, 2008).

Another legal framework is the 'UNHCR Guiding Principles on Internal Displacement' which was drafted in 1998 for the 'UN Commission on Human Rights' (UNHCR) to provide internally displaced persons (IDPs) with an appropriate framework for protection and assistance.

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Persons or groups of persons who have been forced or obligated to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalised violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognised State border (UNHCR, 1998).

This definition clearly entails climate change refugees. However, this legal framework too has shortcomings as the responsibility to protect internally displaced persons lies with the national authorities while climate change is a global problem with international liabilities. Additionally, the IDP framework has a non-binding legal status and implementation follows from national willingness. Finally, this definition excludes those environmental refugees crossing state borders, again too narrow an approach for the issue (Williams, 2008).

The policy response of the UNHCR to climate change induced human mobility has been mainly focused on integrating disaster risk reduction into country programmes and creating better coordination between stakeholders to prepare for, and respond to, emergencies

The policy response of the UNHCR to climate change induced human mobility has been mainly focused on integrating disaster risk reduction into country programmes and creating better coordination between stakeholders to prepare for, and respond to, emergencies (including natural disasters). Besides, assisting and protecting refugees and IDPs fleeing natural disaster; advocacy for the rights and needs of persons is within its mandate; partnership with other UN agencies and coordination of various bodies to raise awareness about the humanitarian and human rights implications of climate change are also given priority.

Although in some ways climate induced displacement is cited by the UNHCR, but it avoids the term "refugee" thereby effectively avoiding responsibility and solutions specifically aimed at "climate change refugees".

Another international body, the International Organization for Migration (IOM) has addressed the topic, yet there is a growing consensus among the IOM and the UNHCR, that the use of the term "environmental refugee" should be avoided because it is "misleading and could potentially undermine the international legal regime for the protection of refugees" (IOM, 2010). The IOM's policy response to climate change induced human mobility is mainly focused on delivering humanitarian aid in the aftermath of disasters, disaster risk reduction and community stabilization to prevent further forced migration.

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The Climate Conferences organized by the UNFCCC also discussed the climate induced migration and displacement several times (Table - 3). Very recently, 'Cancun Agreements' in 2010 also taken climate induced migration on board. Ad Hoc Working Group on Long-term Cooperative Action (AWG-LCA) under the United Nations Framework Convention on Climate Change (UNFCCC), in Cancun on 11 December 2010, acknowledges the need for addressing the movement of people as a result of climate change (paragraph 14 (f)):

14. Invites all Parties to enhance action on adaptation under the Cancun Adaptation Framework, taking into account their common but differentiated responsibilities and respective capabilities, and specific national and regional development priorities, objectives and circumstances, by undertaking, inter alia, the following: (f) Measures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at national, regional and international levels.

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Table 3: Outcome of climate conference relating to climate induced migration and displacement

Climate Conference	UNFCCC climate negotiation	Policy oriented activities by UN, applied research and civil society
COP 13 (Adaptation and humanitarian concern enters into discussions)	Dec 2007: Bali Action Plan establishes the Ad Hoc Working Group on Long term Cooperative Action highlights adaptation and vulnerability to extreme events and long term impacts	Mid 2008: IASC Task Force on Climate Change becomes active in articulating humanitarian concerns Aug 2008: UNU working on EACH-FOR research, writes first submission to UNFCCC on Climate change, displacement and migration Autumn 2008: IASC establishes Task Force Sub-Group on Climate change, migration and displacement to explore issue
COP 14 (December 2008, Research and mandate organizations help bring migration and displacement to process)	December 2008: Migration and displacement first mentioned in UNFCCC assembly text (precursor to draft negotiating draft)	Jan 2009: AWG-LCA, IASC submission on 'Guiding principles on Climate change related migration and displacement (NRC) Feb 2008: AWG-LCA, IASC Joint submission on 'Climate change related migration and displacement' (NRC, IOM, UNHCR, UNU, RSG on the HR of IDPs) June 2009: OCHA/IDMC study on methodology to monitor disaster related displacement in the context of climate change June 2009: EACH-FOR completed and findings reported to UNFCCC delegates in policy brief
COP 15, Copenhagen (Draft paragraphs on migration and displacement in negotiations texts, increasing policy discussions	December 2009: Migration and displacement text assumes nearly final form in Copenhagen	Dec 2009: Joint side event with the principals of UNHCR, IOM, UNU and NRC. Jun-Oct 2010: Observer and Party articulation of continuum on migration and displacement in the context of adaptation
COP 16, Cancun (Cancun Adaptation Framework features para 14 (f) on migration and displacement	Dec 2010: Cancun Adaptation Framework contains para 14(f) on migration and displacement Feb-Nov 2011: Articulation of adaptation committee, SBI Work Program on Loss and Damage, other adaptation functions and approaches	June 2011: 60th Anniversary of the 1951Geneva Convention, further articulation on guiding principles and empirical research

Source: Compiled from Warnar, 2011

7. RECOMMENDATIONS

The findings clearly indicate that huge populations are already being displaced. It is assumed that the frequency and the severity of these occurrences will increase due to the effects of climate change. Population displacement is increasingly becoming a national major security issue, while the effects of climate change will continue to threaten people's lives and property significantly. However, there is a lack of actions to effectively address the problem of the environmentally displaced people.

Bangladesh, as the worst victim of climate change and bearer of huge displacements, can call for an operational framework for climate migration in the Eighteenth Conference of Parties in Doha.

Bangladesh, as the worst victim of climate change and bearer of huge displacements, can call for an operational framework for climate migration in the Eighteenth Conference of Parties in Doha. Much has been talked regarding the issue, and the trend of debate does not signal for an immediate consensus. But little or no time has been left for those who are already displaced. They need immediate rehabilitation, no matter whatever the status of debate on terminology. In this regard, climate induced population displacement can be considered as one of the key topics among others (e.g. adaptation, technology development and transfer, financing and loss and damage issue) in the upcoming climate conference.

It would be rationale to declare climate migrants as Universal Natural Person (UNP) and relocate them according to their preference under the authority of UNFCCC. Based on historical responsibility, carbon emission status and existing population density, the UNFCCC can formulate

As multiple factors are responsible for migration, wherein climate change is the most pressing, especially in terms of massive scale of migration, a criteria needs to be considered for creating a framework for climate-induced migration. With regard to *terminology*, two distinctions are important. The first is amongst 'refugee' or 'migrants' and 'displaced persons," which indicate whether or not they are granted protection by existing legal frameworks and institutions. Secondly, the distinction between 'climate change' and 'environmental' indicates the reason of migration (man-made or natural hazards, or both). The term 'refugee' has strong political implications for protection in many cultures. Some asserts that the term should be used with care (Docherty and Giannini, 2009) while others defy this, arguing that calling these people mere "displaced persons" would downplay the hardships they endure (Biermann and Boas, 2009). According to this perspective, it would be rationale to declare climate migrants as Universal Natural Person (UNP) and relocate them according to their preference under the authority of UNFCCC. Based on historical responsibility, carbon emission status and existing population density, the UNFCCC can

formulate a legally binding instrument to determine the quotas for UNP.

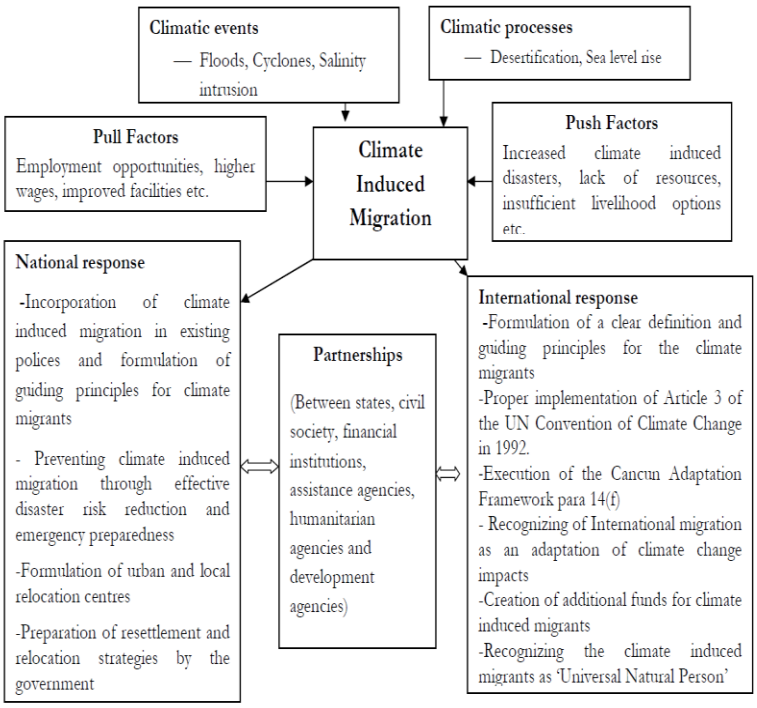

Figure 2: Suggested framework for climate change induced migration

References

Akter, T. 2009, *Climate change and flow of environmental displacement in Bangladesh,* Unnayan Onneshan-The Innovators, Dhaka, Bangladesh.

Biermann, F.and Boas, I. 2009, *Preparing for a warmer world: Towards a global governance system to protect climate refugees,* Paper presented at 2009annual convention of the International Studies Association. New York, USA 15-18 February 2009.

Black, R. 2001, *Environmental refugees: myth or reality?* Working paper no 34, March 2011, Brighton: University of Sussex.

Bronen, R.2008, *Alaskan communities rights and resilience* In: Couldrey, M. &Herson, M. (eds) Forced Migration Review, Issue 31, Refugee Studies Centre, University of Oxford, UK.

Brown, O. 2008a, *The numbers game*, In: Couldrey, M. and Herson, M. (eds) Forced Migration Review, Issue 31, Refugee Studies Centre, University of Oxford, UK.

Brown, O. 2008b, *Migration and Climate Change*, International Organizations for Migration, Geneva, Switzerland

Choudhury G. A. (Ed.) 2011, *Climate Change Challenges in Bangladesh*, Center for Environmental and Geographic Information Services, pp. 145.

Development Research Centre on Migration, Globalisation and Poverty, 2008.*Migration and climate change: How will climate shifts affect migration trends?* [briefing] September 2008. Sussex: Development Research Centre on Migration, Globalisation and Poverty.

Docherty, B. and Giannini, T. 2009,*Confronting a rising tide: a proposal for a convention on climate change refugees,* Harvard Environmental Law Review, 33, p.349-403.

Disaster Management Bureau, (DMB). 2012, Past Disaster Information, Available at: http://www.dmb.gov.bd/pastdisaster [Accessed on 06 November, 2012]

Disaster Management Bureau (DMB).2010, *National Disaster Management Plan*, Ministry of Food and Disaster Management, Government of the People's Republic of Bangladesh.

Displacement Solutions (DS). 2012, *Climate Displacement in Bangladesh, The Need for Urgent Housing, Land and Property (HLP) Rights Solutions,* pp 43.

Dun, O. and Gemenne, F. 2008, *Defining 'environmental migration'* In: Couldrey, M. &Herson, M. (eds) Forced Migration Review, Issue 31, Refugee Studies Centre, University of Oxford, UK.

Hall, N. 2010, *Climate Change and Institutional Change in UNHCR*, In: Department of International Relations University of Oxford, *Conference paper for UNU-EHS Summer Academy on Protecting Environmental Migration: Creating New Policy and Institutional Frameworks.* Hohenkammer, Germany. Bonn: UNU-EHS.

Hugo, G. 1996, *Environmental concerns and international migration*, International Migration Review, vol.30, no.1, pp.105-131.

International Federation of Red Cross and Red Crescent Societies, (IFRCS). 2001, *World Disasters Report: Focus on Recovery,* Available at:

http://www.ifrc.org/Global/Publications/disasters/WDR/21400_WDR2001.pdf [Accessed on 11 November, 2012]

International Organization for Migration, (IOM). 2007, Discussion Note, *"Migration and the Environment"*, International Organization for Migration,Geneva, Available at: http://www.iom.int/jahia/webdav/shared/shared/mainsite/about_iom/en/council/94/MC_NF_288.pdf

Internal Displacement Monitoring Centre, 2011,*Displacement due to Natural Hazard-induced Disasters: Global Estimates for 2009 and 2010*. [online] Available at: <http://www.internal-displacement.org/8025708F004BE3B1/(httpInfoFiles)/15D7ACEC7ED1836EC12578A700 2B9B8A/$file/IDMC_natural-disasters_2009-2010.pdf> [Accessed on September, 2012].

International Organization of Migration(IOM).2010, *Assessing the Evidence: environment, climate change and migration in Bangladesh* [online]. Available at<http://publications.iom.int/bookstore/free/environment_climate_change_bangladesh.pdf > [Accessed 12 September 2012].

Karim, Z., S. G. Hussain, and A. U. Ahmed. 1999, *Climate Change Vulnerability of Crop Agriculture*, In: Vulnerability and Adaptation to Climate Change for Bangladesh, eds. S. Huq, Z. Karim, M. Asaduzzaman, and F. Mahtab. Kluwer Academic Publishers.

Kirsch-Wood, J., Korreborg, J and Linde, Anne-Marie.2008, *What Humanitarians need to do,* In: Couldrey, M. and Herson, M. (eds) Forced Migration Review, Issue 31, Refugee Studies Centre, University of Oxford, UK.

Kumar, U., Baten, M., Al-Masud, A., Osman, K., and Rahman, M.2010, *Cyclone Aila: One Year on*. Dhaka: UnnayanOnneshan.

Kushol, R., Kumar, U. and Mehedi, H. 2009, *Cyclone Aila*, Initial Assessment Report, with focus on Khulna district, UnnayanOnneshan, Humanity Watch and NijeraKori, Dhaka.

Martin, S.2010, *Climate Change and Migration*. Washington: German Marshall Fund of the United States.

McLeman, R.2006, *Global warming's huddled masses*, The Ottawa Citizen, 23 November.

Ministry of Environment and Forest.2005, *National Action Plan of Adaptation,* Government of People's Republic of Bangladesh.

Ministry of Water Resources, (MoWR).1995, *The Dynamic Physical and Human Environment of Riverine Charlands: BRAHMAPUTRA-JAM UNA,* Available at: http://pdf.usaid.gov/pdf_docs/PNABW817.pdf [Accessed on 07 November, 2012]

Ministry of Environment and Forest.2009, *Bangladesh Climate Change Strategy and Action Plan,* The Government of the People's Republic of Bangladesh

Ministry of Water Resources.2005, *Coastal Zone Policy,* Government of Peoples Republic of Bangladesh

Morton, A., Boncour, P., and Leczko, F., 2008, *Human security policy challenges,* In: Couldrey, M. &Herson, M. (eds) Forced Migration Review, Issue 31, Refugee Studies Centre, University of Oxford, UK.

Mollah, T. H., Baten, M. A. and Titumir, R. A. M., 2011, *Accounting Climate Induced Migration in Bangladesh: An Exploratory GIS Based Study,* Unnayan Onneshan- The Innovators, Dhaka, Bangladesh.

Myers, N. 1997, *Environmental refugees,* Popul. Environ. *Vol.*19, pp.167–182.

Myers, N., 2005, *Environmental refugees: An emergent security issue*, 13th Economic Forum, Prague

Myers, N. 2002, *Environmental Refugees: a growing phenomenon of the 21st century*, Philosophical Transactions of the Royal society, London, UK.vol. 357, pp.609-613.

Shamsuddoha, M. and Chowdhury, R. K. 2007, *Environmental Refugees in Bangladesh*, Campaign Brief 5

Stavropoulou, M. 2008, *Drowned in definitions?* Refugee Studies Centre, University of Oxford, UK.

Steiner, A.2008, Forwarding at Forced Migration Review Refugee Studies Centre, University of Oxford, UK.

UN General Assembly, 1951,*Convention Relating to the Status of Refugees*, United Nations, Treaty Series, vol. 189, p. 137. Available at: <http://www.unhcr.org/refworld/docid/3be01b964.html> [Accessed 29 January 2011].

UNHCR.1998, *Guiding Principles on Internal Displacement*, E/CN.4/1998/53/Add.2, 22 July 1998. Available at: <http://www.unhcr.org/refworld/docid/3c3da07f7.html> [Accessed 29 January 2011].

Warner, K. and Ehrhart, C. 2009, *In search of shelter, mapping the effects of climate change on human migration and displacement*, UNU-EHS, CARE.

Warner, K. 2011, *Climate and environmental change, human migration and displacement: Recent policy developments and research gaps,* United Nations University – Institute for Environment and Human Security (UNU-EHS)

WARPO.2005, National Adaptation Program of Action (NAPA): Water, Coastal Areas, Natural Disaster and Health Sector, Water Resources Planning Organization (WARPO), Dhaka.

Williams, A. 2008, *Turning the tide: Recognizing climate change refugees in international law,* Law and Policy, *vol.*30.No.4, pp.502-526.

Wood, G. 1985, *The politics of development policy labeling,* Development and Change, London, Sage, vol.16, No.3, pp.347-373.