

DISPLACEMENT
AND MIGRATION
FROM THE CLIMATE
HOT-SPOTS:
CAUSES AND
CONSEQUENCES



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DISPLACEMENT AND MIGRATION FROM THE CLIMATE HOT-SPOTS: CAUSES AND CONSEQUENCES

A study to understand causes and consequence of
climate induced displacement and migration in
Bangladesh

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Foreword



On behalf of the Ministry of Environment and Forest, Government of the People's Republic of Bangladesh, it is my pleasure to write this foreword for the report titled “ **Displacement and migration from the climate hot-spots in Bangladesh: Causes and Consequences**” which is an outcome of an investigative study implemented by Center For Participatory Research and Development and ActionAid Bangladesh.

The nexus of environment, climate change and migration is becoming an increasingly important issue as climate change is generally understood as the potential cause of mass migration especially from the areas where low-income and resource -dependent communities live in environments that are already exposed to risk factors. Though Bangladesh is widely quoted with the predictions of alarming numbers likely to be migrated as a consequence of climate change, but there are rather few empirical studies trying to investigate causes and consequences of human displacement and migration in any detail. The site-specific drivers of displacement and migration based on a grounded understanding on localized economic, social and environmental aspects local are yet to understand.

In this backdrop, the study report illustrates the ground causes of displacement and migration triggered by the impacts of climate change in the climate hot-spots. The scope of this report is also to influence national policies and suggest future actions to address the displacement and migration issue with a broader socio-political and environmental aspect.

I thank CPRD and ActionAid Bangladesh for undertaking study on such an important issue and their initiative to publish this report to raise greater understanding on this issue and for initiating an informed policy.

Mesbah ul Alam
Secretary
Ministry of Environment and Forests
The People's Republic of the Government of Bangladesh

Foreword

In an ever changing world we probably all feel like migrants. If we could migrate to idyllic places at our own pace and choice on our time it would be no matter for concern. However, more and more are having to migrate as they are displaced by environmental changes. In the vulnerable coastal areas and flood prone areas of Bangladesh many, now a days after wake up to find themselves in most vulnerable situation without a shelter and livelihood as they are of the receiving end of climatic changes and disasters.

In this backdrop it is critical to develop our understanding of displacement and migration as consequence of climate change. We need to try and follow deeper into the loss and damage as a result of climate change studying social, cultural, economic and political functions where possible. This study on displacement and migration from the climate hot spots in Bangladesh: Causes and Consequence is timely and in the right direction. It has the potential to generate information, raise awareness and enable undertaking evidence based policy advocacy. I congratulate the researchers and hope they share widely their findings across the country and beyond boundaries

Farah Kabir
Country Director
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Conceptual clarity on the definitions

Migrant

Migration or Migrant refer to individual who has changed their place of residence either 'by crossing an international border [international migration] or by moving within their country of origin to another region, district or municipality [internal migration]'. People are normally considered to be 'migrants' if they remain outside their original place of residence for a period of at least 3 months.

Displacement

Displacement is a particular form of migration, in which individuals are forced to move against their will. Where people are forced to move within their country of origin, this is referred to as internal displacement.

Environmental migrants

There is no international consensus on terminology about people who move in response to climate-related factors. International Organisation for Migration (IOM) has proposed a working definition of 'environmental migrants' as "persons or groups of persons who, for reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad."

Internally displaced persons

Persons or groups of persons who have been forced or obliged 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 generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border. This definition includes all those forcibly displaced within their country due to the effects of climate change.

Refugees

As per 1951 Refugee Convention, a refugee is a person who "owing to well-founded fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinions, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country, or who, not having a nationality and being outside of the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it."

EXECUTIVE SUMMARY

This report 'Displacement and migration from the climate hot-spots in Bangladesh: Causes and Consequences' is an outcome of an investigative study carried out in the climate hot-spots aimed to understand the ground causes and consequences of displacement and migration, especially those that are linked to impacts of climate change, and also consequence of such. The scope of this report is to create awareness among the policy makers, development practitioners, academicians and other stakeholders on the issue. The scope also extends to influence national policies through suggesting future action needs to address the displacement and migration issue with a broader socio-political, economical and environmental aspect. The report underscores the following key conclusions;

- Increase of both slow onset and sudden onset disaster events are reported in the study. Slow onsets are affecting new areas and the sudden onsets are becoming more frequent and intense. Prevalence of slow onset disasters is becoming more prominent which have direct casual relationship with the changes in the climatic factors.
- Both the slow onset and sudden onset disasters, are not common everywhere, rather becoming unique and dominant for a particular region. Likewise people in coastal areas, people of the river basin areas are found increasingly vulnerable to the impacts of climate change. The Northwest region, in addition to drought, is also experiencing other new and additional slow and sudden onsets like dense fog, flood and erratic rainfall.
- Usually, the sudden and dramatic onsets cause mass displacement, while slow onset disasters that have adverse impact on the environment, local ecosystem services and employment opportunities force people to routine economic migration first and then to permanent migration.

- Though displacement is always found to have been triggered by sudden onset disasters, economic and social factors like the availability of resource base, social networks and scope of livelihoods earning have been the deciding factors for migration.
- Chronic and long-term adverse effects of extreme weather event also force people to migrate, especially during the post disaster response and recovery, broadly that of the governance mechanism, fail to respond to the situation.
- People who are in relatively better position in social and human capital migrates in a planned way. Options for migration either planned or forced, for the women, children, elderly, disable and poorest of the poor are relatively less and they are likely to be trapped in vulnerable and unsafe locations.
- Displaced and trapped population persistently faces insecurity of food and other basic needs e.g. water, sanitation etc. They stay and starve, they stay and struggle with the exposed risk of natural
- In case of long distance and routine economic migrations people find their destination usually in large urban slums, which are basically 'urban poverty pockets', lacks of basic services.

DISPLACEMENT AND MIGRATION FROM THE CLIMATE HOT-SPOTS: CAUSES AND CONSEQUENCES

A study to understand causes and consequence of
climate induced displacement and migration in
Bangladesh

INTRODUCTION

Context

It has been estimated that there is the impending threat of displacement of more than 20 million people in the near future. The settlement of these environmental refugees will pose a serious problem for the densely populated Bangladesh

-Bangladesh Climate Change Strategy and Action Plan 2009

Migration or displacement is not a new issue for Bangladesh. People has been displaced and migrated for many various reasons that cover social, political, economical, and disaster incidents. History of Bangladesh suggests that people have been migrating from and to nearby places since the beginning. But the recent discourse of climate change suggests that Bangladesh will have to face the challenge of mass migration, external and internal due to climate change and the country is yet to be adequately prepared. The climate change induced extreme weather events, mainly hydro-metrological ones, will significantly affect displacement in three distinct ways in Bangladesh. First, the effects of warming and drying in some regions will reduce agriculture potentials and undermine 'ecosystem services' such as availability of clean water and fertile soil. Second, heavy precipitation and resulting flash or river floods in tropical regions. And finally, sea level rise will permanently destroy extensive and highly productive low-laying coastal areas that are home to millions of people who will have to relocate permanently (Morton, Andrew et.al.2008).

Although there are several predictions on the number of people that are likely to migrate as a consequence of climate change, few empirical studies tried to investigate causes and consequences of human displacement and migration in any detail. These predictions in terms of numbers have attracted significant academic, policy and media attention, globally and nationally. However, the drivers of displacement and migration are yet to be understood from ground level; especially no site specific study has been conducted yet that can help government to take initiatives to address the matter. This study has been conducted to investigate site-specific evidences of displacement and migration related to climate change and -to

- understand ground level causes of displacement and migration and their links to climate change
- analyse drivers of migration, particularly in the selected climate hot-spots', and
- identify the consequences of climate driven displacement and migration.

It is important to note here that this report will cover some selected areas in Bangladesh that are heavily affected by climate change. It is expected that understanding causes and consequences of displacement and migration linked with climate change will provide the scope for further policy research to identify steps to be taken by the policy makers.

Study Area

Study areas have been selected on representational basis from the country's different Agro Ecological Zones (AEZs) that may suffer to various degrees from weather extreme events. A study (CCC 2009) on the impacts of climate change on different Agro Ecological Zones noted that

- Severe and moderate river flood prone areas are mainly located in the floodplains of major rivers (e.g. Brahmaputra-Jamuna, Meghna estuarine and low Ganges river floodplains), the Haor basin and lower Atrai basin.
- Areas prone to moderate and severe flash floods include mainly the northern and eastern piedmont plains and Chittagong coastal plains.
- Drought prone areas are mainly located in the in the western part of Bangladesh, while the
- very severe areas are concentrated in the Barind Tract and adjacent to the upper Ganges-Padma river floodplain areas.
- Active floodplains of the major rivers Teesta, Brahmaputra-Jamuna, Ganges-Padma, and the middle and young estuarine floodplains of the Meghna are the major areas prone to river erosion.
- Areas prone to cyclone are located in the exposed coastal areas of the Ganges tidal plain, Meghna estuarine floodplain and Chittagong coastal plain.
- Major salinity intrusion takes place in the Ganges tidal plains, with the salinity front extending into the high Ganges river floodplain and Gopalganj-Khulna Beels during dry months.

Given the context of diverse nature of climate change impact in different Agro Ecological Zones the study has been carried out in 5 districts, which has been selected considering geographical diversity, population density and exposure to risk and vulnerabilities. The districts are namely;

- a) Patuakhali, a coastal district, especially prone to tropical cyclone, salinity ingress ion and sea-level rise
- b) Khulna, a coastal district, especially prone to tropical cyclone, salinity ingress ion and sea-level rise, has been severely affected by cyclone SIRD in November 2007 and Cyclone Aila in 2009.
- c) Naogaon- situated at the northern part of the country is facing slow onset of drought
- d) Sirajgonj- situated in the middle part of the country, is especially prone to monsoon flooding and river erosion
- e) Faridpur, especially prone to monsoon flooding and river erosion



Figure 1: Map of the study areas

Study Methodology

The research activities conducted in phases includes: i) information and data gathering phase, ii) analysis phase, and iii) Documentation of key results phase.

Methodologies followed in different steps are

- FGD, group assessment and Key informant interviews to identify the person/households that migrated,
- Structured questionnaire survey and in depth case studies on those households/persons, and
- identifying/analysing the causes of displacement and migration,
- Policy and literature review.

BANGLADESH CLIMATE CHANGE CONTEXT

Bangladesh: Climate Change Context

In Bangladesh, average temperature has registered an increasing trend of about 1°C in May and 0.5°C in November during the 14 year period from 1985 to 1998 (Mirza and Dixit, 1997; Khan et.al,2000; Mirza 2002).

The annual mean rainfall exhibits increasing trends in Bangladesh. Decennial rain anomalies are above long term averages since 1960s (Mirza and Dixit, 1997; Khan et. al, 2000; Mirza 2002)

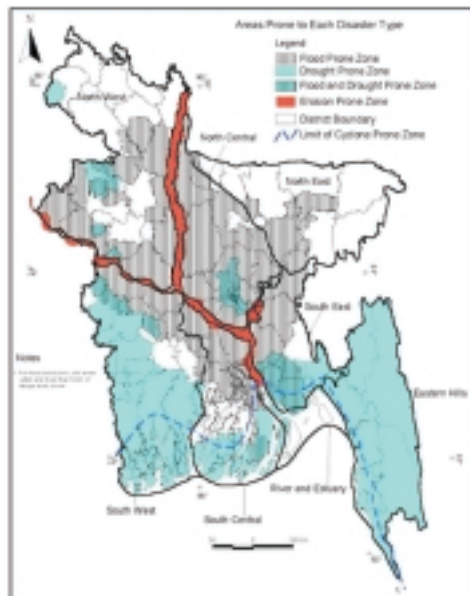
Intensity of Cyclones originating from the Bay of Bengal has increased (Cruz et al, 2007).

Salt water from the Bay of Bengal is reported to have penetrated 100 km or more inland along tributary channels during the dry season (Allison et al 2003).

The precipitation decline and droughts has resulted in the drying up of wetlands and severe degradation of ecosystems (Cruz et al, 2007).

Bangladesh, with an area of about 147,570 sq. km, is home of about 146.6 million people; 75.0 million male and 71.6 million female (BBS, 2009). The country is situated in the tropics between 20°34' to 26°38' north and 88°01' to 92°41' east in South Asia. The interface of two different environments, the Bay of Bengal to the south and the Himalayas to the north gives the country a unique geographic setting that causes not only life-giving monsoons but also catastrophic ravages of natural disasters. About 10% of the country is hardly 1 meter above the mean sea level (MSL), and one-third is under tidal excursions.

Figure 2: Areas prone to different disaster types
Source:http://www.saarc-sadkn.org/countries/bangladesh/hazard_profile.aspx



In the climate change context, when the statements and predictions above are true, Bangladesh will severely face frequent larger scale and intensified flood, cyclone and drought.¹ Melting of ice leading Sea Level Rise may inundate 17% of coastal land unless appropriate actions are taken. Even actions are taken; they might not be appropriate due to unpredictability of climate change lead disasters (BCCSAP 2009).

Climate change already has affected, and will intensify in future, Bangladesh in 2 ways. Firstly, global warming lead to change in precipitation and weather pattern leading agriculture and food security to enormous threat. And secondly, increased number of climate induced disasters in the form of extreme hydro-meteorological events such as flood, drought, salinity ingress, river bank erosion and increased tidal surge leading to destruction of infrastructure, crop production, natural resources, livelihoods and of course the national economy (Huq et.al., 1996; Assaduzzaman et.al., 1997; Choudhury et. al, 2005); not to mention loss of human lives. And it is to be noted that the poor will be the worst victim of such disasters especially the women, children and disable persons.

All these impacts of climate change will relentlessly challenge the country's ability to achieve continuous higher economic growth and eradicate poverty at an expected pace. Though the country has made significant progress in poverty reduction and economic growth in recent years, but more than 50 million people still live in poverty. Country's existing concerns about food security, water scarcity and energy are made all the more difficult by climate risks that will challenge the goals of inclusive and environmentally sustainable economic growth. Responding to these disasters diverted development budget. Over the last three decades, the Government of Bangladesh has invested over \$10 billion (at constant 2007 prices) to make the country more climate resilient and less vulnerable to natural disasters (BCCSAP 2009).

There is also a growing concern that the impacts of climate change will affect the full enjoyment of the accepted human rights, including right to life, right to take part in social and cultural life, right to use and enjoy property, right to an adequate standard of living, right to food, and right to the highest attainable standard of physical and mental health.

Climate Change: Disaster Magnifier

In the study areas both slow onset and sudden onset disasters are reported by community people. Slow onsets disasters are affecting new areas (expansion of areas) and sudden onsets disasters are becoming more frequent and intense. Among the disaster events (including the erratic weather pattern leading to disaster) observed in the study areas, six are sudden and four are slow onset. Occurrence of sudden disasters e.g. tropical cyclone, tidal water incursion, river erosion etc. are reported in the low-lying coastal districts where slow onset like salinity intrusion, soil salinity ingress associated with sea-level rise are also observed in the coastal areas. Empirical observations in the study areas show that climate change is causing increase in frequency and intensity of prevailing disaster events and triggering new form of disaster events. Recent disaster events like cyclone SIDR and Cyclone Aila respectively in 2007 and 2009 and two major floods in 2007 (June and August) can be the examples to illustrate the country's

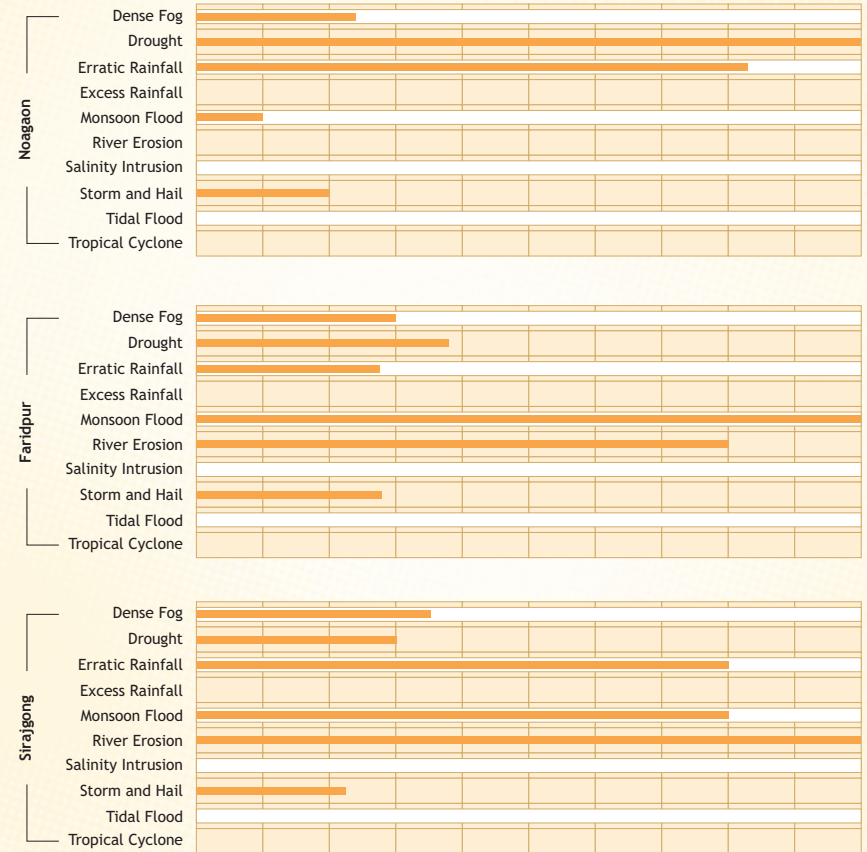
1. Drought in Bangladesh is usually means of having no rain for longer than usual in dry period. It is contextual and area specific

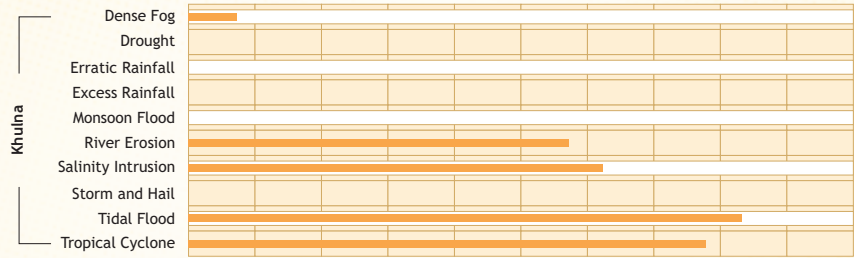
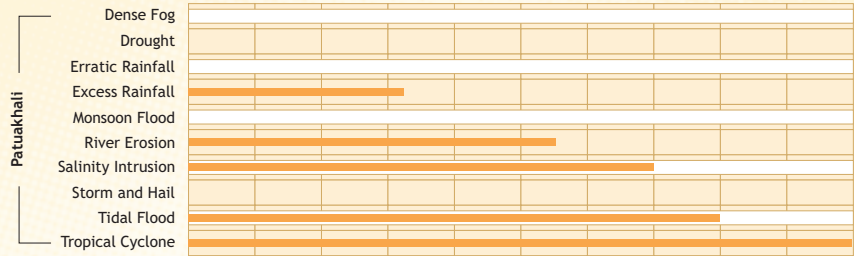
vulnerability to climate change. In every five years more than 50 million people are affected by disaster events. The country's long coastline is exposed to severe cyclones and faces one cyclone on an average of every three years. Annually, approximately one-quarter of the country is inundated, while the 1998 flood inundated up to 61 per cent of the country, rendering 45 million people homeless (Alam et.al. 2011).

These events, both slow onset and sudden disasters, are not common everywhere, rather becoming unique and dominant for a particular region. Types of disaster events, period of occurrence and their prevalence in the past have been analyzed in the study areas. It has been observed that people have been experiencing new type of disaster event which they didn't face in the past. Additionally duration of disaster prevalence also has changed or shifted. For example the Northern part of the country, which is prone to drought, is facing more severe drought now. Drought is also affecting the new areas e.g. the active floodplains of Sirajgonj and Faridpur district, which are usually and historically prone to monsoon flood and river erosion. Fog, a common and usual weather event especially during winter has now become a disaster event as the density and time length of fog has increased causing harm to the agriculture and also to the local cottage textile factories (handloom and power loom) in the flood plain regions e.g. in Faridpur and Sirajgonj districts.

Interestingly enough, the river basin (flood plain) areas are increasingly becoming prone to slow onset disasters, for example drought and dense fog. The active floodplains of the major rivers Teesta, Brahmaputra-Jamuna, Ganges-Padma, and the middle and young estuarine floodplains of the Meghna are prone to monsoon flooding and erosion; while, the people living in coastal districts recently are also experiencing regular flood with high tidal incursion, especially during new and full-moon period. People living in the coastal areas are noted as more vulnerable than the people living in other areas (Alam and Laurel 2005). The river basin populations are also found equally vulnerable due to added and emerging disasters caused by climate change. The Northwest region, in addition to drought, is also experiencing additional slow and sudden onsets like dense fog, flood and erratic rainfall.

Figure 3: intensity of climate induced disasters (sudden and slow onset disasters in the study areas)





DISPLACEMENT AND
MIGRATION
IN THE CONTEXT OF
CLIMATE CHANGE:
CONCEPTUAL CLARITY

Climate Change and Migration: Conceptualizing the drivers of displacement and migration

Understanding link between Displacement, Migration and Climate Change

My sufferings...it's God's will

So is the belief of Kader Hawladar (40), a fisherman from Charipara village of Lalua Union in the coastal region of Patuakhali. There was a time when he owned a fishing boat and net and employed 15 to 20 sailors. Life had its promises and goodness. *"But fate had something else in store for me"* sighed Hawladar. He and his family of three children, wife and mother were forced to migrate by tidal erosion. His house and land plunged in the ocean (the Rabnadhbadh Channel) in May 2010. He is faced with unemployment and extreme poverty losing his assets to the sea.

His house was about one kilometer away from the sea. During the devastating Sidr, he took shelter in the cyclone sanctuary. After the wrath of Sidr was over, Hawladar came back to his land and started reconstruction. He gradually discovered that the sea came closer in the last couple of years. This was an alarming situation for them. Every year the sea kept coming closer grasping the shore and Hawladar waited with his family to face the dismay moment of displacement. Finally in the month of May, 2010 he migrated from his land and took shelter at the adjoining WAPDA Beri Badh (Embankment). Since then his struggles are just for survival, every single day. The sea is again approaching towards his tiny shelter. Then what?—He doesn't know. With a blank gaze upon the sea he utters, *"it's it's God's will"*.

While the term 'climate induced displacement and migration' implies that a direct causal line can be drawn between climate change, displacement and migration, 'it has become evident that the assumption that climate variability leads to migration in a linear way is not supported by empirical investigation' (Kniveton et al 2008). Therefore, it is important to understand i) how climate change influences the drivers of displacement and migration, directly and indirectly, and ii) the relationship between climatic effect on environmental change and displacement and migration.

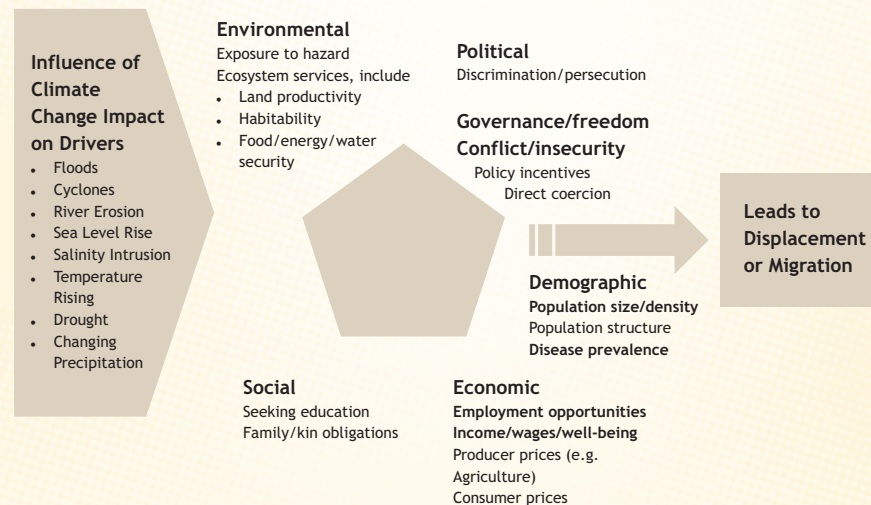
The issue of migration itself covers a wide range of areas and is subjected to many different variables. Professor Sir John Beddington, in his recent report 'Foresight: Migration and Global Environmental Change (2011)' used a 'pentagon' in describing the conceptual framework for the drives of migration which are grouped into five categories e.g., social, political, economic, environmental and demographic (Figure 4).

In each case, it is the existence of spatial and temporal variability in one or more of these five dimensions that creates the conditions (or 'drivers') for migration, allowing that these might interact or overlap in different ways in different places.

Climate change is generally understood as the potential cause of mass migration as any changes in the climatic condition will directly influence 'environmental driver' of migration. For instance increased and intensified hydro -meteorological disasters caused by climate change will directly affect the communities who are highly reliant to the climate sensitive ecosystem services for their livelihoods and are already exposed to disaster risks. On the other hand climate change also has significant influence on the 'Economic Driver' of migration like employment opportunities, income/ wage/ well-being etc.

Considering only the climatic factors as the drivers of forced migration, Robert McLeman grouped the drivers distinctly into two- Climate processes and Climate events. Climate processes refer to slow onset changes such as sea-level rise, salinization of agricultural land, desertification, and growing water scarcity and food insecurity. Climate events, on the other hand, refer sudden and dramatic hazards such as monsoon floods, glacial lake outburst floods, storms, hurricanes and typhoons (Oil Brown, 2008). While, the category of climate migrants presumes to be triggered by a single factor, the migration experts agree that migration decisions are based upon multiple determinants (Kolmannskog 2008).

Figure 4: Influence of climate change impacts on the 'drivers' of migration



It is context specific; like 'political driver' e.g. factors of governance may influence migration of the displaced people, both in good and bad ways. In the Cyclone Aila affected areas it has been observed that governance failure during the post disaster response, that caused food and drinking water crisis, have forced the displaced people to migrate. In this context Ezra & Kiros (2001) observed that vulnerability to food crisis had significant positive effect on out-migration.

When climate stresses coincide with economic or social stresses, the potential for forced migration from the vulnerable areas increases significantly. In the study areas it has been observed that the impacts of climate change are not the only factor or drivers of migration. Sudden onset disasters force people to be displaced and afterward, other factors mostly grouped under 'economic driver' compel people to migrate to distant areas. The study also understands that migration sometimes is a consequence itself where one driver may trigger the initiation of the process by displacing the person from origin and later other factors push that person to migrate permanently, both internally and externally.

Climate change induced displacement and migration: Evidences

In the last 25 years, Bangladesh has experienced six severe floods, with the 1988 and 1998 floods alone causing 2000-6,500 and 1,100 deaths respectively and displacing as many as 45 and 30 million people (NAPA 2005)

Following the cyclone Aila in May 2009, with an estimated 100,000 people still living on embankments in the early months of 2010, (IOM and other agencies, 2010; IRIN 2010.)

The empirical observation of the study emphasized that environment change is not the only factor for migration - except in the case of disasters. For example, sea-level rise is most often cited as the cause of predicted mass-displacement within Bangladesh as a result of climate change. Different suggestions were made on people's displacement, from 13 million to 40 million (Alexandra Matthews 2009) based on assumptions of a one meter rise of sea levels.

As the sudden and dramatic onset disasters like cyclone, river erosion etc. causes mass scale of destruction like loss of habitat and permanent asset, people are found to 'move' to a nearby place from where they can move back to where they used to live. And they migrate permanently when, aftermath of a disaster, economic and social context 'pulls them or pushes them'. Theoretically, the decision of migration, whether it is long distance or short distance, permanent or temporary, depends on the extent of impact of disasters on their livelihoods as they have limited livelihoods opportunity both in terms of diversity and capacity to work on.

Case Study 1: Forced migration from the Cyclone Aila affected areas in Bangladesh

In May 2009, cyclone Aila, a category-1 cyclonic storm with wind speed up to 120 km/h, hit the southwest coastal zone, the same places which were vastly devastated by super cyclone Sidr (category-4: JTWC-6B) in November 2007. Right before Aila, a smaller cyclone Bijli also hit the same area in April 2009. At least four Upazilas namely Dacope and Koyra of Khulna district and Shyamnagar and Assasuni of Satkhira district were badly affected by Aila. Though the death toll of Cyclone Aila was relatively less, 193 people, but the cyclone caused severe damage in infrastructures, human habitat, institutions, cultivable land, standing crops, and caused huge influx of saline water to the agricultural land and other fresh water areas. As per newspaper reports, Cyclone Aila caused displacement of more than 297,000 people who found their shelter on the embankments, educational institutions and cyclone shelters.

It was likely that the displaced people would back to their origin given the context of having access to the basic environmental services e.g. water and also having access to their preferred livelihoods opportunities e.g. agriculture. But even after more than 2 years of Cyclone Aila, 2011 scenario suggests that due to failure of post disaster actions, i.e. reconstruction of embankment and absence of basic services, forced displaced people to migrate, particularly to the urban areas.

Since the day of cyclone, people have been increasingly suffering from acute shortage of required food, drinking water, safe sanitation and outbreak of skin diseases. Roy, K., & Sultana, U. T. (2010) reported migration of at least 88,000 people during May-June 2009. Again, ECHO (European Commission's Humanitarian Aid Office 2009) partners' assessment, reported migration of 40,000 from the Koyra upazila alone, while this figure is around 30,000 in Paikgacha, 18,000 in Dacope and 12,000 in Batiaghata upazila.

Though 'Cash for Work' and 'Food for Work' schemes initiated by the government and humanitarian organizations helped the victims to survive but the non existence of other social, economic and environmental support services became the decisive factors of migration. The diverse and complex inter-play of the factors of environmental, economic and political drivers has forced Aila displaced people to migrate.

In case of slow onset disasters people are found to choose 'routine economic migration' (during lean period) to the urban areas mainly to seek employment. According to people of Naogaon, in the increasing drought scenario, where agriculture is uncertain due to lack of water, people are migrating to other places, especially to cities, for longer period than normal because of elongated drought. In the southern part, because of increased salinity (especially in Khulna Region), people migrate due to not only economic reason, but also for social reasons i.e. in Khulna region, several families were found to move due to salinity-induced-diseases where young women were the most affected ones. Because of salinity induced diseases, young women stays unmarried and are socially marginalized that leads the family to move elsewhere, usually to distant place where they are unknown and after a while, the daughter can get married.

Table 1 summarizes the type and nature of sudden and slow onset of disasters and Annex 1 shows the probable time of occurrence of different disaster events

Table 1: Pattern and scale of displacement/ migration by different disaster events

Disaster events	Impacts	Pattern of displacement and migration	Scale
Dense fog	Damages seasonal crops and seedling beds. Reduces working hour of cottage textile worker (handloom and power loom).	Routine economic migration, may lead to permanent migration in the long run.	Small scale
Drought	Make them Jobless for approximately 180 to 220 days and force them to move to other places. Agricultural land is being converted to 'mango orchard' which leaves agricultural labor jobless.	Routine economic migration, may lead to permanent migration in the long run.	Large scale
Erratic rainfall	Damages standing crops, seed beds and sometimes delays cultivation time due to lack of soil moisture content.	Temporal displacement	Small scale
Excess rainfall	Damages standing crops, seed beds and sometimes delays cultivation period. Continuous raining for 2-3 days also cause joblessness of the agriculture labors.	Temporal displacement	Small scale
Monsoon flood	Makes people homeless and landless or both. Damages standing crops, seed beds Causes death, injuries and outbreak of water borne diseases. Hampers livelihood opportunity.	Temporal displacement, sometimes lead to migration	Large scale

Disaster events	Impacts	Pattern of displacement and migration	Scale
River erosion	Make people landless, homeless and severely affect livelihoods. Cause huge economic loss.	Displacement Sometimes lead to both temporal and permanent migration	Large scale
Saline water intrusion	Damages crops, agricultural lands and fisheries. Soil salinity ingressions leaves agricultural land unsuitable for crop production, fodder production and production of fresh water fisheries. Also causes scarcity of drinking water. Increasing trend of converting agricultural land to brackish water shrimp farm causing mass unemployment	Both temporal and permanent migration	Large scale
Strom and hail	Damages standing crop resulting to household level food insecurity	Temporal displacement	Very small scale
Tidal flood	Destroys homes and habitat, severely hampers the livelihood opportunity. Damages standing crop, fisheries and fresh water sources. Creates water logging and increase soil salinity.	Temporal displacement is predominant Also leads to short-distance permanent migration	Small scale
Tropical cyclone	Destroys everything on its way. Causes substantive loss and damages of household assets. Two recent catastrophes e.g., cyclone Aila and cyclone Sidr caused deaths of around 3700 people and made millions of people homeless, damaged crops and domestic assets.	Cause mass temporal displacement. Cyclone also pushes a significant number of people to be migrated permanently	Large scale

There is another debate on the context whether people are 'forced' to be migrated or choose to migrate 'voluntarily'. Some argues that migration is always a choice of individuals; however in many cases the choice is between staying and starving or migrating that will expose them to the risks associated with movement (Jon Barnett and Michael Webber 2009), where in both the cases women and children are the worst sufferer. In fact the causes, consequences and types of migration are highly dependent on the social and ecological contexts from which people move and to which they move (Locke et al. 2000). Migration, especially when it is a response to slow onset climate change rather than a sudden climatic event like a cyclone, typically requires access to money, family networks and contacts in the destination. Yet chronic and long-term adverse effects of an extreme weather event on the provision of environmental and non-environmental goods and services force people to be migrated, especially during the post disaster response and recovery, where government functions broadly fails to respond to the disaster or continue providing basic services to the affected population. And these people end up being in the city with hope of livelihood that creates further complication.

Table 2: Destination of the displaced people

Origin	Destination of the displaced people
Naogaon	Dhaka, Naogaon Sadar, Chittagong, Bogra, Pabna, Rajshahi
Sirajgong	Adjacent Char lands, Sirajganj Sadar, Dhaka, Faridpur, Tangail, Gazipur
Faridpur	Adjacent Char, Dhaka, Faridpur Sadar
Patuakhali	Dhaka, Chittagong, Jessore, Barishal, Patuakhali Sadar (from villages)
Khulna	Dhaka, Jessore, Khulna Sador, Chittagong , Rangamati

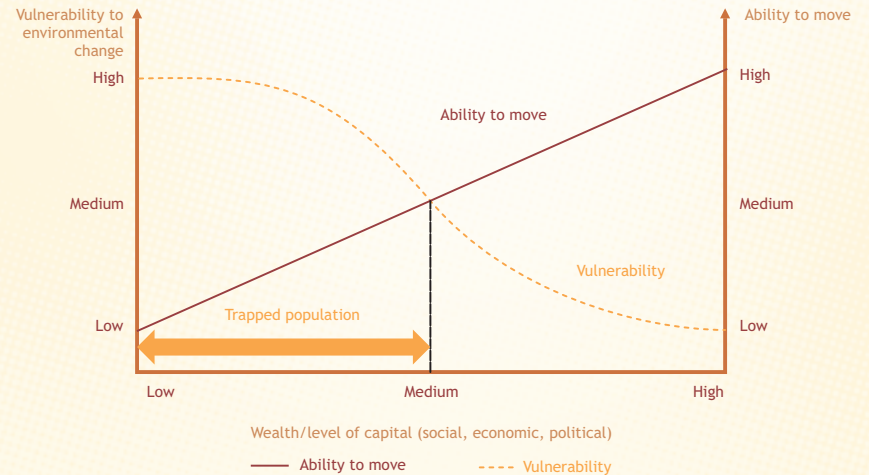
Who migrates and who is trapped?

There are concerns regarding the risks of trafficking and sexual exploitation of young women and children in the area, and women headed households are believed to be particularly vulnerable to this risk. (IMO 2010, IRIN 2010)

Following Cyclone Aila, there was a major increase in seasonal migration from affected areas, with an estimated 100,000 people - primarily men looking for work - migrating from four Upazilas alone -Koyra, Paikgacha, Dacope and Batiaghata (ECHO Partners, 2009)

Evidence shows that the people who are in relatively better position in social and human capital choose to be migrated in a planned way. In the study areas it has been observed that the relatively rich and educated people are planning for permanent migration from the slow onset disaster areas. Many of the rich people already left Southern part of the country where scarcity of drinking water becoming a permanent problem due to sea level rise and soil salinity ingression. In contrary, no evidence of planned migration by the poor found relatively less in the study areas. This is possibly because they feel more insecurity moving to a new place where they don't have any kinship, social relationship and above all the scope of preferred livelihoods. In this context, existence of a migration hump implies that the poorest of

Figure 5: people who are with low ability to move are trapped in the situation due to vulnerability to environmental change; source: Foresight: Migration and Global Environmental Change (2011)



the poor do not migrate (Amin 1995). The poor are faced with a double dilemma: they are more reliant on ecosystem services, but also less able to diversify their incomes in advance of an environmental shock either through migration or through the pursuit of other strategies (ref...). Different marginalized professional group like small holders and subsistence farmers, pastoralists and artisanal fisher folk will suffer complex and localized impacts of climate change (Easterling, et al., 2007) as they have limited adaptive capacity, highly exposed to extreme events and less able to diversify their incomes in through the pursuit of other strategies. However, in the context of chronic vulnerability where there is less chance of restoration of environmental and social services, the male migrates with a hope to be employed in the destination, especially in the urban areas.

Options for migration either planned or forced, for the women, children, elderly people, disable and poorest of the poor are relatively less and they are likely to be trapped in the vulnerable and unsafe locations. Professor Sir John Beddington, in his recent report 'Foresight: Migration and Global Environmental Change (2011)' showed that people who have low ability to move are trapped even in the low and medium level of vulnerability. Among the displaced population of the cyclone Aila affected areas gender differences in migration is distinctly found.

Box 2: Displacement and migration: Gender differences in sufferings

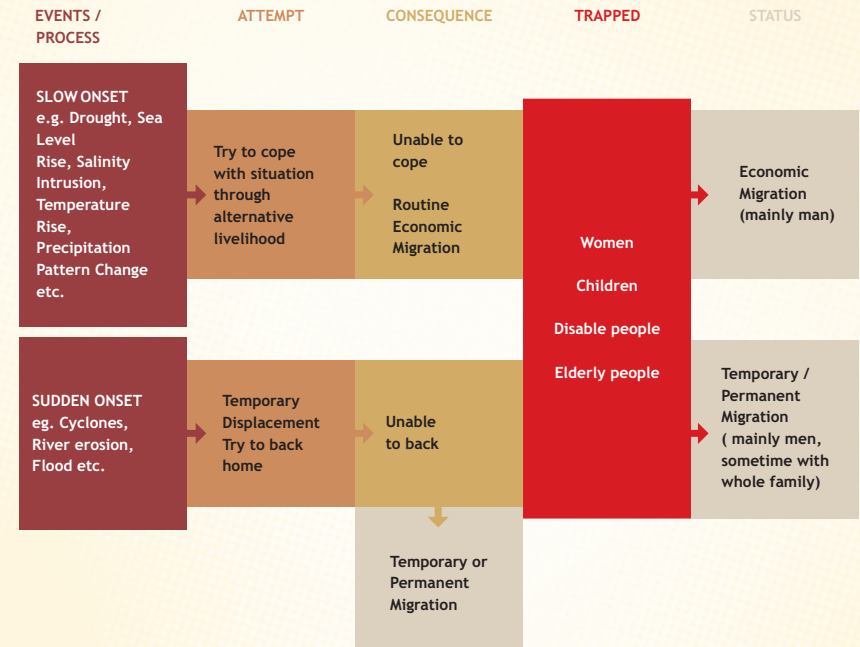
Immediate after displacement, women and children suffer from lack of house and shelters as they usually took shelter beside the road or embankment. They just make a very temporal shelter usually made of grass and woods. During severe flooding often have to pass their days only on a Macha (raised platform) and there is always a risk of fall down and drawn in water especially for children.

Women also face lack of sanitation facilities as, usually, the temporary shelters e.g. embankment are not facilitated with the toilets. It is observed that unless it's an emergency women don't use toilet in daytime, they wait for dark hours in the night to use open spaces.

Women and children also suffer from the scarcity of drinking water. Prevalence of drinking water scarcity is becoming a common phenomenon in the in the drought and salinity prone areas in the North-west and Southern part of the country. In those areas women and found to walk a long distance for fetching drinking water for household consumption. In few placed it is observed that women consume comparatively less water while offering more share to other family members.

Due to unavailability of drinking water and proper sanitation the women and children in the Cyclone Aila affected areas are found suffering from various diseases like skin diseases, pneumonia of children and diarrhea etc.

Figure 6: Illustration showing how people are trapped in the process of displacement and migration (Developed by the authors)



Consequences of displacement and migration in a Climate Change Scenario

Consequences of displacement and migration

A survey carried out in 1998 among 230 households in Sirajganj, found that 5,500 of 30,000 slum dwellers were erosion-affected displaces. (Hutton, D. and C.E. Haque 2004)

The Development Research Center on Migration, Globalization and Poverty (2009) briefing suggested that woman becomes socially and economically vulnerable when the male member of the household migrates. The context and scale of vulnerability varies as changes in variables like geographical location, governance structure, power relation, and access to services; however, this study found that any displacement or migration puts them into most vulnerable position, especially the young women.

As mentioned earlier, migration is not a new issue for Bangladesh, as usually the men from rural areas usually migrates for couple of months to the urban areas especially during the lean period leaving women and children behind. In the study areas, especially in Naogaon (drought areas) and Patuakhali (cyclone, sea level raise and salinity) the seasonal migration is very common. This migration is purely economical and numbers of consequences are visible. Such migration affects the women and children the most in several ways and the family structure become vulnerable. Women, the sole 'caretaker' of the poor families are burdened with more work including ensuring food availability for the family during those months.

In the changing climate scenario where the lean period is extended, the time length of staying out of house for men gets (and already is) extended. This has caused several additional problems for the poor and vulnerable. Besides doing all the household works, women are to do income generating work (as men in most of the cases leaves small sum of money that can only run a family for couple of weeks) for longer period in a context where women's going out is not always culturally accepted. In many cases, the children are pulled out of the school and also are engaged in household / income generation work.

Karimon BiBi's life wrecked by flood

July, 2011, Karimon Bibi (70) was forced to migrate from Hat Gorjan Char to Bhat Dighulia of Kaijuri Union leaving her only asset behind, a tiny piece of land and even a tinier house. The great and unpredictable river Jamuna grasped her assets. However, this was not the first time she had been displaced due to climatic events. She migrated a few times from one Char to another at Kaijuri Union due to river bank erosion until 2004. "Disaster, migration and increased suffering is all that is left in my life" said Karimon Bibi wiping out uncontrollable tears. Before coming to Bhat Dighulia she was living in Hat Gorjan with her husband and children. Her husband died in 2007 and the Char was hugely devastated by flood a year later. Finding no other option to survive with her children in Hat Gorjan, she took shelter in an adjacent Char temporarily. After the monsoon flood took off, Karimon Bibi came back to Hat Gorjan. To her utmost anguish, she discovered her home in ruins. She had no house to live, no source of income to feed her family. However, against all the odds she started to rebuild the house and look for livelihood opportunities. Her son, Saddam (12 yrs.) goes fishing while she and her daughter Bahela (15yrs) work as day labourers. Right when they started to put the pieces in order, Jamuna's rage wrecked it again in 2011. She must repeat the tiresome cycle of struggle against unemployment as she had to migrate from her previous dwelling again.

The short term migration doesn't only create problem the communities, it also has serious impact where the people end up at. And it is even worse when the entire family migrates. At destinations, the displaced people internally end up living in refugee camps or urban slums. Short-term displacement following sudden-onset events in Bangladesh raises significant environmental and public health concerns, particularly where people cannot return to their homes and villages for protracted periods. On the other hand, influx of poor migrants to urban areas certainly raises significant environmental concerns. Whether migrants end up in large slums or smaller 'poverty pockets', their houses (and workplaces) are frequently found to be in unhygienic and in environmentally vulnerable locations which are characterized by close quarters, poor sanitation, safe water scarcity and insufficient food supply or livelihood opportunities. Cases from the ground demonstrate sufferings of people who either displaced or migrated by the sudden onset disasters.

Ishak Mollah and Alim Uddin: Playing Hide and Seek with the River

Ishak Mollah (62), from Ishak Mollah'r Char at North Channel of Faridpur District had migrated thirteen times from one char to another. Three times before the liberation war in 1971 and the remaining ten times from the year 1971 to 2011. After all these years, he struggled to recall all the names of chars he shifted to and from and shifting year. A quick walk down the memory lane reminded him of shifting along with his family from Decree'r Char to Kaji Kanda and then Raghunathpur Char, again to Kajikanda and then to his present village Ishak Mollah'r Char in 1993. He is preparing to migrate again as the river already reached very near to his village. He may have to leave the village during the next monsoon.

Alim Uddin Matbor, an eighty (80) year male from Tara Majhi'r Dangi (small village) of Faridpur District has migrated for more than five times. He is a father of five and used to live on a char (island) named after his own -*Alim Uddin Matbor er Dangi*. In 1988 the char was grasped by the mighty Padma River and he migrated to an adjacent char named *Gendua Mollar Hat*. Alim Uddin lived there till 1992. After few years, he shifted again to *Vangi Dangi* as his char was under erosion. The same phenomenon made him migrate again in 2002 to *Emarot Dangi*. Two years later, in 2004, he shifted to *Al-Mas Matbor er Dangi* and finally in 2006 he along with his family came to his present village *Taramajhir Dangi*. He is unsure of how long he would be able to reside here. It is as if the river is chasing him away from one char to another. Years back, he used to migrate after 10-15 years. But recently, is has been a "hide and seek game" with the River Padma as the river becoming more and more unpredictable.

CONCLUSION AND POLICY SUGGESTIONS

Conclusion and Policy Suggestions

It is evident that migration, in its different forms, is increasing from the climate hot-spots. Along with the large scale displacement by sudden onset disasters, the routine economic migration and permanent migration influenced by the slow onsets are also found increasing. The study identifies the following decisions and choices that policy makers need to consider addressing the displacement and migration issue with a broader socio-political and environmental aspect.

Though the impacts of climate change influence migration but this is not the sole factor; thus it is important to understand the interplay of the 'drivers of migration' in localized context to design and develop local as well as national level planning.

In every case it is observed that the poor and marginalized with less social networks and economic choices do not want to be migrated. They are mostly reliant on local economic base, local ecosystem and environmental services. Therefore, following the sudden onset disaster it is important to keep local economy functioning through creating employment opportunities and restoring the environmental and ecosystem services.

The trapped population e.g. women, children, disable and elderly people become particularly vulnerable as they stay and starve in the unsafe location facing other form of oppression. This trapped population should be supported with expanded 'social safety nets' financed by international community.

There should be proper, healthy rehabilitation instead of people ending up in slum areas with no safe drinking water, sanitation, shelter, or services. Migration to another exposed area, as the case studies showed, does not solve the problem, so a rehabilitation policy or mechanism should be there to stop further displacement.

The impacts of climate change are understood as the prevalence of frequent sudden onset disasters of intensified nature. The study findings summarize that the Active Floodplains and Barind Tract are becoming increasingly vulnerable to slow onset disasters that are forcing people to migrate. In addition, raising vulnerability and adaptation requirement in the coastal areas historically prone to sudden onset disaster are causing people to migrate. These areas, therefore, require adequate policy attention in the local and national level adaptation plan.

ANNEXES

Annex 1: Disaster events with their probable time of occurrence

Climatic Events	Areas	January	February	March	April	May
Drought	Naogaon	High intensive period				Moderate or low intensive period
	Sirajganj		High intensive period			
	Patuakhali		High intensive period			
	Faridpur				High intensive period	
River Erosion	Naogaon	Not Found				
	Sirajganj				High intensive period	
	Patuakhali				High intensive period	
	Faridpur	Not Found				
Cyclone Or Storm Surges	Naogaon	Freq increasing without following any pattern of occurrence				
	Sirajganj	Not Found				
	Patuakhali				High intensive period	
	Faridpur	Not Found				
Flood	Naogaon	Not Found				
	Sirajganj	Not Found				
	Patuakhali	Not Found				
	Faridpur				High intensive period	
Erratic Rainfall	Naogaon	Pattern of Rainfall becoming irregular day by day				
	Sirajganj	No significant Pattern and May Occur any time or any month in the year				
	Patuakhali	No significant Pattern and May Occur any time or any month in the year				
	Faridpur		High intensive period		Not Found	
Tidal Flood	Naogaon	Not Found				
	Sirajganj	Not Found				
	Patuakhali				High intensive period	
	Faridpur	Not Found				
Saline Water Intrusion	Naogaon	Not Found				
	Sirajganj	Not Found				
	Patuakhali	High intensive period		High intensive period		
	Faridpur	Not Found				
Excess Rainfall	Naogaon	Magnitude is low in terms of loss and damages				
	Sirajganj	Magnitude is low in terms of loss and damages				
	Patuakhali	Not Found				
	Faridpur	Magnitude is low in terms of loss and damages				

June	July	August	September	October	November	December
High intensive period			High intensive period			
High intensive period			High intensive period			
Absent						
Not Found						
High intensive period			Due to high tide			
High intensive period			High intensive period			
Seasonal Flood Occur but loss and damage is not significant						
Flash Flood Occur due to excess rainfall or sea water rise but not so significant in terms of loss and damage						
High intensive period			High intensive period			
Seasonal Flood Occur but loss and damage is not significant						
Pattern of Rainfall becoming irregular day by day						
Absent						
Absent						
High intensive period			High intensive period			
Absent						
Absent						
Absent						
High intensive period			High intensive period			
Absent						
High intensive period			High intensive period			

High intensive period Moderate or low intensive period

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