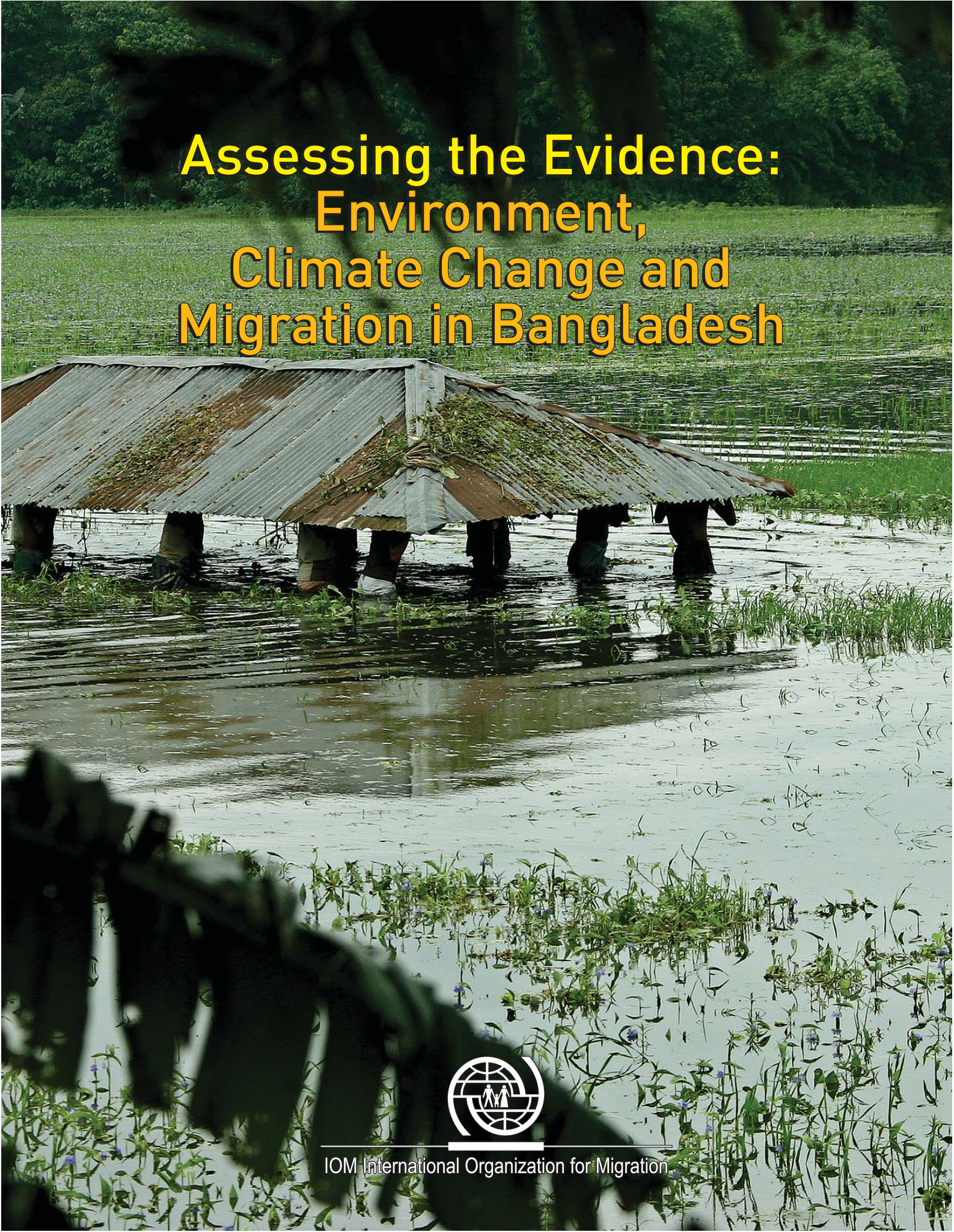
Assessing the Evidence: Environment, Climate Change and Migration in Bangladesh



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Prepared for IOM by Matthew Walsham*

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CONTENTS

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 study on "Assessing the Evidence: Environment, Climate Change and Migration in Bangladesh" which has been developed by the International Organization for Migration (IOM).

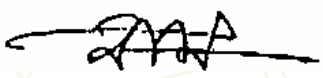
The study has been developed with the aim of compiling the existing evidence on the environment-climate change-migration nexus, and to shed light on possible policy options for Bangladesh to address the growing threat of climate change. As the study outlines, Bangladesh is plagued by various environment and climate related issues such as environmental degradation, riverbank erosion, cyclones, floods, coastal erosion and sea level rise, to name a few.

Bangladesh as we know is not one of the most vulnerable countries, but the most vulnerable country to the impacts of climate change in the world. The unique geographical location of Bangladesh coupled with the distinctive development challenges that it faces, makes it especially vulnerable to climate change.

Bangladesh is already experiencing the growing phenomenon of environmental migration, with rural-urban migration increasing manifold leading to rapid and unplanned urbanization in city centres such as Dhaka. Such growing environmental migration if not properly managed can lead to issues of human insecurity as individuals compete over scarce resources. Whether migration is used as an adaptive strategy or as a last resort to cope with sudden onset disasters, we should ensure that it is done in an orderly and planned fashion, so that all parties involved – migrants, source communities and destination communities – benefit.

Climate change has meant increased frequency and intensity of natural disasters such as cyclones for Bangladesh. As we have seen with Cyclone Aila, the effects of such disasters can last a long time, with the victims of Aila still living on embankments in makeshift shelters one year on.

In conjunction with the study, IOM organized a Policy Dialogue on the one year anniversary of Cyclone Aila. This not only helped raise awareness regarding the continuing plight of the Aila affected people, but also facilitated active discussion on the issues of environment, climate change and migration in Bangladesh among representatives from the government, civil society, international and donor community. I thank IOM for undertaking this initiative to raise greater understanding on this issue and for initiating an informed policy discourse which I hope will contribute to Bangladesh's efforts to address the problems of climate change in a timely, effective and humane manner.



Dr. Hasan Mahmud, MP
State Minister
Ministry of Environment and Forest
Government of the People's Republic of Bangladesh

FOREWORD

The nexus of environment, climate change and migration is becoming an increasingly important policy issue for Bangladesh, as in the wider South Asian region and globally. The intention of 'Assessing the Evidence: Environment, Climate Change and Migration' is to provide an informed starting point for discussions on this issue amongst all key stakeholders - including government, civil society, research institutions and development partners – in shaping the country's policy agenda on environmental migration going forward. The document brings together evidence on environment, climate change and migration in Bangladesh from a survey of existing literature and interviews with key experts -presented in Section One - with the findings of an IOM policy dialogue on this topic held on 23 May 2010 and presented in Section Two.

The impact and aftermath of Cyclone Aila are reminders of the kind of challenges Bangladesh is likely to face increasingly in the future. The cyclone struck on 25th May 2009, affected 3.9 million people and breached 1,742 kilometres of embankments. One year on, large areas remain flooded and around 100,000 people are still living on embankments, roads and any other available elevations of land. As 'Assessing the Evidence' demonstrates, cyclones are just one of the many environmental threats to which the country is already exposed. These include not only sudden-onset or extreme events (such as cyclones and floods) but also slow-onset processes of environmental change and degradation (such as changing rainfall patterns and saline intrusion). All of these events and processes have complex but tangible effects on patterns of migration and, over the long-term, climate change will exacerbate the existing situation, further impacting on migration from environmentally vulnerable regions.

Far from being passive in the face of these challenges, Bangladesh is in a position to respond proactively to minimize the risks and maximize the benefits of environmentally induced migration. As IOM's recent experience in Aila affected areas has shown, while disaster risk reduction and post-disaster response have improved significantly over recent decades, there is still considerable room for improvement. Most importantly there is scope for actions that not only minimize displacement and protect the displaced, but also policies and programmes that support voluntary migration from environmentally vulnerable or degraded regions as a positive livelihood and adaptation strategy. Bangladesh already has considerable experience in promoting international migration – including a range of IOM supported programmes - that suggests that there is good potential to develop innovative long term measures that benefit both internal and international migrants.

IOM's policy dialogue on environment, climate change and migration in Bangladesh and this publication - Assessing the Evidence - comes at a time when there is active policy discourse taking place in the field of migration, environment and climate change in Bangladesh, and IOM is pleased to be able to make an early contribution to the ongoing discussions.

Rabab Fatima
Regional Representative for South Asia
International Organization for Migration
Dhaka
June 2010

Executive Summary

Section One: Assessing the Evidence

Section One of this report brings together as much existing evidence as possible regarding the climate change, environment and migration nexus in Bangladesh. This section of the report was presented at the IOM policy dialogue held on this topic on 23rd May 2010 and is intended to assist in building policy coherence in this area by guiding discussions on potential avenues for the inclusion of environmentally-induced migration into Bangladesh's overall migration management policy, as well mainstreaming migration into national policies on Disaster Risk Reduction, environment and climate change.

Key findings include:

Environmental change and migration

- Both gradual environmental change and extreme environmental events influence population migration patterns but in different ways. Extreme environmental events may cause affected populations to leave their homes at least temporarily, often leading to sudden, large-scale movements, but return is often feasible in the long run. However, a larger number of people are expected to migrate due to a gradual deterioration of environmental conditions and migration of this sort may be more permanent owing to the long-lasting – and in some cases irreversible - effects of these processes.

- Migration is a multi-causal phenomenon: even in cases where the environment is a predominant driver of migration it is usually compounded by social, economic, political and other factors. The "decision" to move or to stay is highly complex and depends on available resources, social networks and the perceived alternatives to migration. In turn, these depend, inter alia, on the individual, social and even cultural ability to cope with and adapt to climate shocks and stresses, including the particular vulnerabilities faced by women, children, the elderly, the disabled and the extreme poor. Therefore, just as the environment is only one among many factors that drive migration, migration is also only one among many possible responses to environmental change.

- Drawing a line between forced and voluntary environmental migration is highly challenging and environmentally-induced migration is therefore best understood as a continuum, ranging from clear cases of forced to clear cases of voluntary movement, with a large grey zone in between.

- While migration can be a manifestation of acute vulnerability, it can also represent a logical and legitimate livelihood diversification and adaptation strategy. Migration can help reduce risks to lives, livelihoods and ecosystems, and contribute to income diversification and enhance overall capacity of households and communities to cope with the adverse effects of environmental degradation and change.

Climate change and migration

- Climate change is expected to affect the movement of people in at least four ways: 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.

- The consequences of climate change (including its effects on migration) will be most severe for the developing world. Particular areas – including the Asian megadeltas - have been identified as 'hotspots' where greater exposure and sensitivity to climate change combine with limited adaptive capacity to suggest that impacts will be most significant.

- Predicting the scale of impacts of climate change on migration remains an extremely difficult task. Existing estimates are based on long-term projections with a wide geographical scale and little recognition of the ability of individuals, communities and nations to implement both spontaneous and planned adaptations to reduce vulnerability to environmental change. There is a need for more localized, fine-grained projections, which take realistic account of the potential for adaptation and provide the data needed for planning over the short- and medium-term, as well as over longer term timeframes.

- Mainstreaming migration into development, climate change and environment policy to minimize the risks and maximize the benefits of human mobility should be acknowledged as a priority issue for policymakers as they seek to plan for environmental and climate related challenges in the future.

Critical Issues for Bangladesh

- More than 50 million people still live in poverty in Bangladesh and many of these occupy remote and ecologically fragile parts of the country, such as flood plains and river islands (chars), or the coastal zones where cyclones are a major threat. The increasing trend in population growth means that, while disaster preparedness may have improved in many ways, an ever growing number of people are exposed to these environmental threats.

- The country's environmentally vulnerable regions are also faced with the consequences of growing pressure on the environment as a result of rising demand for water, inadequate maintenance of existing embankments and other environmental protection measures, and rapid and often unmanaged urbanization and industrialization. These pressures risk creating new environmental problems, not least in the country's fast growing urban slums.

- Climate change in Bangladesh is expected to exacerbate many existing vulnerabilities, with increasingly frequent and severe floods, cyclones, storm surges and droughts forecast. Sustained and sustainable growth and development will be crucial in Bangladesh's long-term efforts to adapt to climate change, and within this framework, migration has an important role to play.

- International migration is an important phenomenon, but far more people move within the borders of Bangladesh, both temporarily and permanently – and often with positive economic benefits for themselves, their destination area (urban or otherwise), as well as for family members who choose to remain in rural areas.

- Environmental factors will be an increasingly important component of people's migration decisions over the course of the 21st century. While it remains crucial – morally and practically – to be aware of the long-term threat from climate change, the best way to prepare for the consequences of climate change in 2050 or 2100 is to improve the ability to deal effectively with Bangladesh's existing vulnerabilities now.

Sudden-onset events: floods, cyclones and river erosion

- **Floods:** Large areas of Bangladesh are and will continue to be highly vulnerable to the threat of floods for the foreseeable future, and climate change may well aggravate the situation over the course of the 21st century. The country's first priority is to seek to reduce this threat and help communities to manage the consequences of floods through investment in comprehensive flood management and Disaster Risk Reduction policies and activities. But vulnerability to floods will remain a reality for many people in coming decades and existing evidence highlights the importance of migration as a safety net for flood affected households. More research

is therefore needed into the dynamics of migration from flood-affected communities – both as a result of severe floods, 'normal' seasonal flooding and protracted water-logging – so that specific policies can be tailored to minimize the risks and maximize the benefits for individuals, households and communities.

- **Cyclones:** The coastal zone in Bangladesh will always be vulnerable to the threat of cyclones and associated storm surges and the threat of an increase in the severity of storms as a result of climate change underlines the need for continued investment in disaster risk reduction in vulnerable districts. Bangladesh has improved its capacities in this regard, as well as its ability to mobilizing the immediate post-cyclone relief effort, but recent cyclones have demonstrated that the effects on communities can still be both severe and protracted, with many households displaced for months or even years. In this context, temporary migration acts as a 'safety net' for many households by providing alternative livelihood options for one or more family members, resulting in additional sources of income during a period of considerable stress. However, because of the lack of evidence it is not possible to say what proportion of these migrants end up moving permanently. Given the vulnerability of many of these individuals – including children and the elderly as well as young women who move to take up jobs in garment industry – there is therefore an urgent need for more research into both the short- and long-term migration effects of cyclones, both in terms of its risks and its potential benefits.

- **River erosion:** The majority of people affected by erosion choose to remain within the local area so existing programmes that seek to benefit those living in and alongside Bangladesh's major rivers are likely to benefit many of those displaced. However, there has been inadequate policy attention to those directly affected by river erosion, in part because of the difficulties of effectively targeting such a geographically dispersed group of people. Recent attempts to provide communities with better information on risks based on national level projections are promising, but do little to prevent eventual displacement. Policies and programmes are therefore needed which seek to assist victims of displacement – especially the small but significant minority who are forced to migrate and often end up in Bangladesh's urban slums. The effects of climate change on the highly dynamic phenomenon of river erosion are unclear at present, but the potential for increased monsoon rainfall to exacerbate the existing situation is considered a real possibility, making it even more essential that adequate policies are put in place to support those affected by river erosion.

Slow-onset processes: coastal erosion, sea-level rise, salt water intrusion, rising temperatures, changing rainfall patterns and drought

- **Coastal erosion:** The coastal zones of Bangladesh are a highly dynamic environment and there will always be areas under threat from erosion and land loss. While much may be done to address this threat where identified, there may be locations where this is technically challenging or economically unfeasible. In these cases, adequate contingency planning and mechanisms need to be developed to assist affected households and, in the most severe cases, provide for whole communities that may need to move en masse. At the same time, the country is currently experiencing significant land gain as a result of sediment deposition in the Meghna Estuary, with a net increase in land in areas such as Noakhali (although this new land is significantly less productive than eroded land, and may be inaccessible to those who have lost land elsewhere). However, little is understood about in-migration to such areas. Given this complexity, much more research is needed on the dynamics of land gain and land loss in the coastal regions of Bangladesh and how these relate to both in- and out-migration, to ensure policy is based on a real understanding of the reality of these processes in coastal zones.

- **Sea level rise:** Over recent decades rising sea-levels have been incrementally adding to many of Bangladesh's environmental vulnerabilities in the coastal zone – such as saline intrusion, floods and storm surges - and will continue to do so throughout the 21st century. However, given the timescales involved and the relatively small changes expected over the next 50 years, many adaptation measures are certainly feasible (for

example, those outlined in Bangladesh's NAPA and Climate Change Strategy and Action Plan). If community strengthening and adaptation measures of this sort are given priority within the short- to medium-term policy planning process, it seems reasonable to conclude that mass displacement as a result of sea-level rise is highly unlikely over these timescales and far from certain even at a greater distance in time. As such, while narratives of mass displacement are understandable in highlighting the potential long-term risks of failing to curb C02 emissions globally, they should be approached with considerable caution as they risk undermining the case for investment and adaptation measures in vulnerable coastal regions to deal with very real existing vulnerabilities.

- **Salt-water intrusion:** Even without the projected impacts of climate change, the evidence suggests that in the South-West in particular, increasing salinity and population pressure will tend to increase emigration pressures in this region over the coming years. Attempting to identify specific flows of 'environmental migrants' leaving these areas may not be possible given the complex and multi-causal nature of migration decisions in areas of gradual environmental degradation. However, what can be predicted with some degree of certainty is that the impacts will be most severely felt by marginal and rural landless farmers who rely on agricultural labour opportunities to sustain their livelihoods. Existing data support the notions that where people choose to undertake long-term or permanent migration, most will make their way to cities within their home division (Khulna for the South-West) or to Dhaka and Chittagong. Given the proximity of the South-West of Bangladesh to India, it also seems reasonable to conclude that some individuals and households will also choose to cross the border. However, it is important to note that at present there is insufficient data to draw any firm conclusions on the scale of these movements, let alone the role played by saline intrusion.

- **Rising temperatures, changing rainfall patterns and drought:** Bangladesh's variable climate already presents significant challenges to its farmers, who have developed various strategies to cope with unpredictable rainfall and temperatures. Climate change threatens to exacerbate this situation and is only one of a range of long term challenges the country faces in maintaining or improving its agricultural productivity, such as population growth, increasing water usage and loss of productive agricultural land to urbanization. In combination with the growing economic 'pull' of urban areas, it therefore seems inevitable that a steady flow of people will continue to migrate out of rural areas. Identifying 'environmental migrants' within this flow is unlikely to be feasible except perhaps in some extreme cases where gradual environmental degradation exacerbates significant existing vulnerabilities. This may include both the drought-prone North-West discussed in this section and the saline affected South-West discussed elsewhere, where further research into existing and migration dynamics is essential if effective policy to deal with future challenges is to be developed.

The 'cascade' effect? – environmental degradation, urbanization, human security and international migration

- **Environmental degradation:** Short-term displacement following sudden-onset events in Bangladesh does raise significant environmental and public health concerns, particularly where people cannot return to their homes and villages for protracted periods. However, there is no evidence that temporary or seasonal rural to rural migration from environmentally vulnerable regions has any major impacts on environmental degradation in places of destination. The possible exception to this is more permanent in-migration to areas of new land along rivers or in coastal zones, but while there is insufficient evidence to draw any firm conclusions, it seems quite likely that the impacts of migrants in these areas is largely 'positive' in the sense that they take action to speed up the process of converting new sediment deposits into agriculturally productive land. Where there is reason for greater concern is in regard to rural-urban migration, where migrants escaping environmental degradation in their rural homes face new environmental risks in cities that only add to their

existing vulnerability. Given the continued growth of Bangladesh's cities and their slum populations, improved urban environmental management is therefore clearly of critical importance.

- **Urbanization:** Anecdotal and media reports suggest that many migrants from environmentally vulnerable regions of Bangladesh end up in the country's urban slums, particularly those of Dhaka. However, while existing data suggests that many urban migrants do come from districts prone to natural disasters, it is not detailed enough to identify the role played by environmental factors in driving migration from these areas. While there is a tendency to conceptualize slum dwellers as a problem population, almost 70per cent of the workforce is in the informal sector and the economy of Bangladesh's cities is highly dependent upon its poorer residents. Further, not only have rural households been migrating to cities as a livelihood strategy, but urban migration is significantly contributing to diversifying rural incomes and livelihoods. These trends suggest that there is a need to adopt and support a more creative approach to human mobility and its complex relationship with environmental factors, in which migration is perceived not only in terms of a failure to adapt, but also as a legitimate adaptation strategy in itself. Further, the reliance of Bangladesh's fast-growing urban economy on rural-urban migrants – including people from regions of environmental vulnerability – points to the need to support poor slum dwellers as the 'engine of the economy' rather than seeking to evict them, as well as the importance of sustainable urban policy and planning which facilitates the integration of migrants.

- **Human security:** Exploring human security concerns in relation to migration and the environment in Bangladesh highlights a wide variety of issues that suggest a combination of measures is needed, including reduction of underlying vulnerabilities, risk reduction and adaptation measures in communities of destination and origin in the country's environmentally vulnerable regions (including its cities), as well as better planning for and management of environmental migration to ensure adequate assistance and protection of the affected individuals and communities. Over the longer term, migration management also needs to be part of a holistic approach to addressing the human security implications of climate change, including adequate recognition and support for the positive dimensions of migration as a planned adaptation strategy. Given the lack of existing data on migration from and to these regions it is difficult to draw firm evidence-based conclusions at this stage, but what is clear is that a human security dimension is essential in future policy and planning in relation to environmental vulnerability and its migration effects in Bangladesh.

- **International migration:** The overwhelming majority of migration in which environmental factors play a role in Bangladesh is internal rather than international. Nonetheless, the possible causal impact of environmental degradation and change on cross-border migration is likely to increasingly feature in policy discourse in South Asia, and there is an urgent need for further research on this topic in order to draw more informed conclusions on existing and projected trends and dynamics, and to develop evidence-based policy interventions. The connections between longer-distance and more permanent forms of international migration are far less clear and there is no convincing evidence at present which links the two processes. Population growth, relative poverty and economic and other opportunities that flow from international migration will continue to make it an attractive option for many, but in the medium term at least it is important to ensure that 'alarmist' notions of 'waves of environmental migrants' – and the resulting securitization of the debate on climate change and its impacts - are challenged. However, it is important to note that this does not preclude the option for innovative long-term policies to support potential migrants from environmentally vulnerable regions to the benefits of themselves, their families and their communities. Further, given that in the long-term climate change is likely to exacerbate many of these environmental vulnerabilities and place greater strains on already poor regions of Bangladesh, mainstreaming migration policies into adaptation strategies seems entirely justifiable.

Existing policy, policy options and research priorities

- Despite encouraging signs within more recent policy on climate change, at present migration issues are not effectively mainstreamed with environmental, disaster management, or climate change policy. Further, where migration is referenced, the tendency to concentrate on its negative dimensions – such as forced displacement or migration as a 'failure of adaptation' – is a barrier to introducing more proactive policy measure that maximize the benefits of migration from and between environmentally vulnerable regions.

- All the issues raised in this report have considerable implications for Government policies and programmes, but truly effective action will require the active involvement of all stakeholders – local as well as national government, communities themselves, civil society organizations and NGOs, the private sector and the country's development partners.

- Based on the available evidence on environment, climate change and migration in Bangladesh reviewed in this report, it is possible to identify some potential policy tools and approaches which can form the starting point for discussions on this increasingly important issue. These can be broadly divided between policies and programmes which aim to minimize forced migration and protect the displaced, and those that seek to support migration as adaptation. Given the limited empirical data available on many issues, a range of potential research priorities can also be identified.

Section Two: Event Report – Policy Dialogue

In this section, a summary of the discussions and key findings from the IOM Policy Dialogue on environment, climate change and migration held in Dhaka on 23 May 2010 are presented. As well as presentations and discussions during the plenary sessions, these findings reflect the results of three working groups into which participants were divided to explore the following issues: sudden-onset events; slow-onset processes; and 'cascade effects'.

Drawing on the extensive discussions throughout the day, a set of suggested 'ways forward' were developed and presented in the closing session. These included short, medium and long term priorities for future action on the environment, climate change and migration nexus in Bangladesh and five main pillars were proposed upon which to base any future efforts:

1. Raising policy and public awareness on the complex linkages between migration, the environment and climate change.

2. Undertaking and supporting research to broaden understanding and inform evidence-based policy.
3. Supporting the development of policy coherence at a national level in Bangladesh, including systematic mainstreaming of migration considerations, across all relevant sectors and in particular in development and humanitarian action.
4. Working to minimize forced migration but also to facilitate the role of migration as a planned adaptation strategy.
5. Bolstering humanitarian action with adequate resources to meet environmental and climate change related challenges.

On this basis, and to mobilizing the momentum from the policy dialogue, the following priorities for action were identified:

1. Bring together findings from the workshop, especially around policy options, best practice examples and research priorities, and disseminate to all stakeholders.

2. Present findings to:
   - Parliament/All Party Parliamentary Committee on Environment and Forest Affairs
   - Local Consultative Group (LCG) Sub-Group on Environment and other appropriate national or sectoral policy fora.
   - Appropriate regional and international fora.

3. Work with all relevant ministries to ensure that migration is mainstreamed into appropriate existing national policies (e.g. Climate Change Strategy and Action Plan and five-year development plan) as well as into all future environment, disaster risk reduction and climate change policies and vice versa.

4. Discuss appropriate setting for Government coordination to ensure 'whole of government' approach to migration policy (including environmental, internal and international migration) and develop a national policy on migration.

5. Undertake in-depth analysis of current policy and programmatic responses to environment, migration and development and undertake research in identified priority areas.

6. Consider convening an international conference in Dhaka on Environment, Climate Change and Migration.

7. Investigate areas of opportunity identified in workshops and develop pilot project proposals (at least one in DRR and one supporting migration as adaptation).

8. Identify appropriate institution/fora to oversee regional research on environmental migration.

The agenda for the policy dialogue as well as a full list of attendees can be found in the Annexes to the report.

SECTION ONE
ASSESSING THE EVIDENCE

Introduction

The objective of the first section of this report is to bring together as much existing evidence as possible regarding the climate change, environment and migration nexus in Bangladesh. The findings from this section were presented at the IOM policy dialogue on this topic on 23 May 2010 and are intended to assist in building policy coherence in this area by guiding discussions on potential avenues for the inclusion of environmentally-induced migration into Bangladesh's overall migration management policy, as well as mainstreaming migration into national policies on Disaster Risk Reduction, environment and climate change. The evidence in the document comes from a wide variety of sources and studies, including Government of Bangladesh statistics and policy documents, academic research, working papers and other publications and research carried out by national, bi- and multi-lateral organizations, NGOs and research institutions. In addition, meetings were held with a number of key experts in Bangladesh and the research also draws extensively on IOM's growing body of work on this topic globally. It must be recognized that in a number of areas empirical data remains relatively limited in Bangladesh – for example, regarding the relationship between slow-onset processes of environmental change and migration – and where this is the case, the need for further research has been highlighted.

The report begins with an overview of the international discourse on environment, climate change and migration, outlining current thinking within this complex and increasingly visible policy debate. Turning to Bangladesh, a brief description of important demographic and economic trends is provided - focusing on population growth, urbanization, poverty and the economy - before a more in-depth exploration of the role of the environment and climate change in shaping the country's long-term development and migration dynamics. In the subsequent section a set of key issues are identified and considered in detail. These are broadly divided into three categories: sudden-onset events (cyclones, flooding and river bank erosion); slow-onset processes (coastal erosion, sea-level rise, salt water intrusion, rising temperatures, changing rainfall patterns and drought); and 'cascade' effects (environmental degradation, urbanization, human security and international migration). Following this, the existing policy framework is outlined and a 'policy toolkit' of potential policy options and priorities identified, before a brief conclusion sums up the report's main findings.

Every attempt has been made in the report to provide a comprehensive and evidence-based overview of the environment climate change and migration nexus in Bangladesh. However, it must be emphasized that the findings presented in this section – and those from the policy dialogue presented in Section Two - should be viewed as only an initial contribution to what will be a major topic of policy debate within Bangladesh, in the region and at global level over the coming years and decades.

As a result, while in this section the existing policy framework is outlined and some potential policy options and priorities are identified, these should be viewed as preliminary in nature; a first input to what will hopefully be an ongoing and constructive discourse.

Overview of climate change, environment and migration[1]

i) Environmental change and migration – the evidence

It has long been recognized that environmental factors have an impact on migration, but until recently the issue received comparatively little attention within mainstream debates about the movements of people, both within and between States. However, debates about the impacts of climate change have placed the issue firmly within the policy spotlight and there now exists a growing body of research into the 'climate change-environment-migration nexus'. This has helped to inform a number of recent international conferences and high level seminars on the issue[2] which in turn has given the topic growing visibility within the international discourse on climate change, not least at the 2009 Copenhagen Summit.

The following section briefly presents a series of 'key findings' and insights from this growing body of global research that will provide the framework for the evidence on the relationship between the environment, climate change and migration in Bangladesh that follows.

Framing the debate (Sudden-onset events; slow-onset processes; environmental migration: a continuum)

There has always been a fundamental interdependency between migration and the environment, but the precise nature of this relationship has been the subject of considerable debate. Both gradual environmental change and extreme environmental events influence population migration patterns but in different ways.

1. For further in-depth discussion of the issues raised in this section, see Migration, Environment and Climate Change: Assessing the evidence, IOM, 2009 and www.iom.int/envmig
2. IOM-UNFPA Expert Seminar on Migration and the Environment, Bangkok 2007; the Greek Government in its capacity as Chair of the Human Security Network and IOM workshop on Climate Change, Environmental Degradation and Migration: Addressing Vulnerabilities and Harnessing Opportunities, Geneva 2008; UNITAR, IOM and UNFPA workshops on Climate Change, Environmental Degradation and Migration: Preparing for the Future, New York 2008, and on Environment Migration and Climate Change, New York 2010; IOM, UNU-EHS, UNEP, Munich Re Foundation and the Rockefeller Foundation Research Workshop on Migration and the Environment, Munich 2008 and 2009; ECDEM and UNU-EHS Policy Dialogue on Environmentally Induced Migration, Brussels 2008; UNU-EHS Environment, Forced Migration and Social Vulnerability (EFMSV) conference, Bonn 2008; OSCE Migration management and its linkages with economic, social and environmental policies to the benefit of stability and security in the OSCE region, Athens 2009; UNFPA and IIED Expert Group Meeting on Population Dynamics and Climate Change, London 2009; Institute of Political Studies expert workshop on Climate Change and Migration in the South Pacific Region: Policy Perspectives, Wellington 2009.

Extreme environmental events may cause affected populations to leave their homes at least temporarily, often leading to sudden, large-scale movements, however return is often feasible in the long run. Such events may include geophysical hazards such as earthquakes, tsunamis or volcanic eruptions. They may also be of an atmospheric or hydrological nature, such as tropical storms or floods, with secondary impacts such as landslides. Some of these latter phenomena are expected to be exacerbated by climate change, while geophysical disasters are not generally considered to be affected by the climate.

Global data on people affected by disasters has improved considerably in recent decades, with the Emergency Disasters Database (EM-DAT) currently the most complete publicly accessible international database[3], alongside a number of other initiatives such as Munich Re's National Hazards Assessment Network (NatHan)[4]. The data shows that there has been an increase in reported natural disasters over the last 30 years, especially hydro-meteorological events, and an increase in the people affected, averaging more than 255 million people every year between 1994 and 2003 (although numbers of deaths are decreasing)[5]. Developing countries suffer the worst impacts, with 98per cent of the 262 million people affected by climate disasters between 2000 and 2004 living in the developing world. However, it must be noted that while there is accurate data on migration as a result of specific recent disasters (such as Hurricane Katrina), there are no credible figures for the migration effects of disasters globally and existing estimates should be approached with considerable caution.

Although extreme environmental events are more likely to result in mass displacement, a larger number of people overall are expected to migrate due to a gradual deterioration of environmental conditions. For example, between 1979 and 2008 it is estimated that 1.6 billion people were affected by droughts compared to 718 million affected by storms[6]. Slow-onset environmental processes, which also include phenomena such as desertification, reduction of soil fertility and coastal erosion, impact existing livelihood patterns and systems of production and may trigger different types of migration. Crucially, not only may the numbers of people affected be larger, but migration may be more permanent owing to the long-lasting – and in some cases irreversible - effects of processes such as desertification.

Migration, especially a mass influx of migrants, can also affect the environment in places of destination. In particular, unmanaged urbanization as well as internally displaced person (IDP) or refugee camps and temporary shelters may produce strains on the environment. In places of origin, on the other hand, out-migration may alleviate population and land use pressure, sometimes allowing a degraded local ecosystem to recuperate.

The relationship between the environment and migration is often complicated by the multifaceted associations with other factors, such as population growth, poverty, governance, human security and conflict. Migration is a multi-causal phenomenon: even in cases where the environment is a predominant driver of migration it is usually compounded by social, economic, political and other factors. Furthermore, the “decision” to move or to stay is highly complex and depends on available resources, social networks and the perceived alternatives to migration. In turn, these depend, inter alia, on the individual, social and even cultural ability to cope with and adapt to climate shocks and stresses, including the particular vulnerabilities faced by women, children, the elderly, the disabled and the extreme poor. Therefore, just as the environment is only one among many factors that drive migration, migration is only one among many possible responses to environmental change.

This complexity and the individual nature of the decision to move, make drawing a line between forced and voluntary environmental migration highly challenging. Classifying environmental migration as forced may be relatively uncontroversial in cases of imminent or acute natural disaster. Similarly, we can say that at early and

3. www.emdat.be
4. http://www.munichre.com/en/reinsurance/business/non-life/georisks/nathan/default.aspx
5. All statistics in this paragraph are from Migration and Natural Disasters, Asmita Naik in Migration, Environment and Climate Change: Assessing the evidence, IOM, 2009
6. EM-DAT, 2009, quoted in Migration, Environment and Climate Change: Assessing the evidence, IOM, 2009

intermediate stages of environmental degradation, for example, migration is more likely to be voluntary and to be used by the affected populations as one of a number of possible adaptation strategies to environmental and climate change. For the most part, however, the distinction is not clear-cut.

Environmentally-induced migration is therefore best understood as a continuum, ranging from clear cases of forced to clear cases of voluntary movement, with a large grey zone in between[7].

Further, environmental migration is often portrayed as a failure of adaptation to environmental change and a worst case scenario. However, while migration can be a manifestation of acute vulnerability, it can also represent a logical and legitimate livelihood diversification and adaptation strategy that has been used for millennia and is likely to be of growing importance in the future.

Migration can help reduce risk to lives, livelihoods and ecosystems, contribute to income diversification and enhance overall capacity of households and communities to cope with the adverse effects of environmental degradation and change.

Environmental migrants – terminology*

There is no international consensus on terminology about people who move in response to climate-related factors. 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

The currently accepted definition of internally displaced persons is "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

Under international law, 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."****

The United Nations High Commissioner for Refugees has a mandate to protect, as refugees, persons who fear serious and indiscriminate threats to life, physical integrity or freedom resulting from generalized violence or events seriously disturbing public order, in addition to persons falling within the 1951 Refugee Convention (1951 Convention Relating to the Status of Refugees) definition. These definitions exclude anyone who crosses borders solely because of environmental degradation in their nations of origin.

7. IOM Policy Brief: Migration, Climate Change and the Environment, IOM, 2009; Environmental concerns and international migration, International Migration Review, Hugo, G., 2009

Stateless persons

A stateless person is defined as "a person who is not considered as a national by any state under the operation of its law."***** Persons who possess a nationality in formal terms but whose nationality is ineffective are generally referred to as "de facto stateless persons." Additionally, a "stateless refugee" is defined in the 1951 Refugee Convention as a person "who, not having a nationality and being outside 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."

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* The text in this box was jointly drafted by IOM and the Office of the United Nations High Commissioner for Refugees for UNFPA's State of the World Population report, 2009. For further discussion and background on terminology, see Introduction and Overview: Enhancing the knowledge base, Laczko and Aghazarm in Migration, Environment and Climate Change: Assessing the evidence, IOM, 2009

** IOM, 2007, "Migration and the Environment." Discussion note MC/INF/288: www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/microsites/IDM/workshops/evolving_global_economy_2728112007/MC_INF_288_EN.pdf

*** This definition comes from the UN Commission on Human Rights Guiding Principles on Internal Displacement, E/CN.4/1998/53/Add.2.

**** 1951 United Nations Convention relating to the Status of Refugees, Art. 1A(2), 1951, as modified by the 1967 Protocol.

***** 1954 United Nations Convention relating to the Status of Stateless Persons

ii) Climate change and migration – the evidence

Given the impacts that existing environmental processes and events have on global migration flows, it is expected that in the long-term climate change will produce environmental effects and exacerbate existing environmental vulnerabilities which will make it difficult – or even impossible – for some people to survive where they are. Among other things, climate change is expected to increase global temperatures, with more frequent hot extremes and heat waves, cause a rise in sea-levels, and lead to more intense weather events such as storms, floods and droughts[8].

These changes are expected to affect the movement of people in at least four ways: 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[9].

Neither the impacts of climate change as a whole, nor their effects on migration, will be spread evenly across the world. Instead, the consequences will be most severe for the developing world, in other words, those areas which are both least responsible for climate change and least able to deal with its effects[10]. Further, within these

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8. See IPCC Fourth Assessment Report, 2007
9. p15 Migration, Environment and Climate Change: Assessing the evidence IOM, 2009
10. Stern Review on the Economics of Climate Change, 2006; IPCC Fourth Assessment Report, 2007; World Development Report 2010: Development and Climate Change, World Bank, 2010

regions, particular areas have been identified as 'hotspots' where greater exposure and sensitivity to climate change combine with limited adaptive capacity to suggest that impacts will be most significant. The Asian megadeltas have been identified as one such area based on a combination of factors including substantial barriers to adaptation, multiple existing natural and human-induced stresses, exposure to storm surge hazards and limited scope for inland migration[11]. Combined with the high population density and the evidence for significant existing flows of both internal and international migrants, these factors provide considerable justification of the need to better understand the potential impacts of climate change on migration patterns within the region.

However, while it is certain that climate change will have impacts on human mobility, and it is possible to identify areas where the effects are likely to be particularly significant, predicting the scale of impacts of climate change on migration remains an extremely difficult task. Given the complexity of the relationship between environmental factors and human mobility, the difficulties in gathering data on existing 'environmental migrants' and the considerable differences between the six emission scenarios in the IPCC's projections, this should come as no surprise. Some existing – and widely cited – figures vary by as much as a factor of 40 (ranging from 25 million to one billion by 2050), and in reality none of them have a sound basis in empirical data. Particularly problematic is that most rely on estimates based on a wide geographical scale with - more importantly - little recognition of the ability of individuals, communities and nations to implement both spontaneous and planned adaptations to reduce vulnerability to environmental change[12].

Another issue regards planning timescales. While many projections use 2050 as the date of choice for attempting to predict migration outcomes, it remains a very long timeframe in terms of realistic policy and planning[13]. Combined with present uncertainty over the magnitude of the impacts of climate change, a strong case can be made that there is insufficient evidence to make reasonable predictions about the patterns and consequences of migration forty years from now.

This lack of credible data presents a considerable challenge to national planners and policymakers, but it should not be a cause for inaction. Indeed the problems with global figures strongly suggest the need for more localized, fine-grained projections, which take realistic account of the potential for adaptation – both in relation to existing environmental threats and climate variability and the projected impacts of climate change - and provide the data needed for planning over the short- and medium-term, as well as over longer term timeframes. In turn, such data can be used to explore the development implications of migration, not only in terms of preventing involuntary displacement, but also through recognizing migration as a potentially positive adaptive strategy of individuals, households and communities, not just a negative outcome of environmental events or processes[14].

If migration is both planned and voluntary, it can provide a social safety net for loss of income, for example through both financial and social remittances, and potentially help alleviate pressure on already degraded lands. Mainstreaming migration into development, climate change and environment policy to minimize the risks and maximize the benefits of human mobility should therefore be acknowledged as a priority issue for policymakers as they seek to plan for environmental and climate related challenges in the future.

11. IPCC Fourth Assessment Report, 2007
12. See Accommodating Migration to Promote Adaptation to Climate Change, Swedish Commission on Climate Change and Development (CCCD), 2009
13. p4 Ibid.
14. Ibid. and see also, Climate Change and Development - World Bank Development Report, 2010; Migration, Environment and Climate Change: Assessing the Evidence, IOM, 2009

Critical issues for Bangladesh

i) Background (the context - population growth, urbanization, poverty and the economy; the environment – natural disasters, environmental degradation and climate change)

The context - population growth, urbanization, poverty and the economy

Since independence in 1971, Bangladesh has experienced significant growth in its economy, with GDP increasing more than three-fold, as has overall food production[15]. The population growth rate has declined from 2.9per cent a year in 1974 to 1.4per cent in 2006, and the percentage of people living in poverty has declined from approximately 59per cent to 40per cent, while the country's Human Development Index improved from 0.347 in 1975 to 0.547 in 2005[16].

The population of Bangladesh is now approximately 150 million people,[17] of whom around a quarter live in urban areas[18]. The rural sector still accounts for the majority of the population - as well as the majority of the poor – with around 63 per cent of the workforce engaged in agriculture[19]. It also remains the biggest sector of the economy but represents a declining proportion of GDP - around 35per cent compared with the urban economy which has contributed more than 50per cent since 2005. These trends are set to continue, with the urban population predicted to number more than 50 million, or 32per cent of the population, by 2015 and account for an ever-increasing portion of GDP[20].

The revised second National Strategy for Accelerated Poverty Reduction (FY2009-2011) places poverty reduction at the heart of Bangladesh's development strategy, as the country seeks to achieve its aim of becoming a Middle Income Country by 2021. The Strategy aims to sustain the significant progress that has been made on achieving

15. Government of Bangladesh Economic Survey, 2007, cited in Climate Change Strategy and Action Plan, GoB, 2009
16. Bangladesh Bureau of Statistics Yearbooks (1975, 2006 and 2007); UNDP Human Development Report 2007; revised draft, Second National Strategy for Accelerated Poverty Reduction, GoB, 2009.
17 Statistical Pocket Book Bangladesh 2008, Bangladesh Bureau of Statistics
18. Bangladesh Bureau of Statistics 2005, cited by Urban Governance and Infrastructure Improvement Sector Project, 2008
19 Livelihood adaptation to climate variability and change in drought-prone areas of Bangladesh, Developing Institutions and options, Selvaraju et al., 2006
20 Bangladesh Bureau of Statistics, 2005

many of the Millennium Development Goals and address underperforming areas[21], while identifying priority areas to ensure that pro-poor growth is achievable in the short, medium and long-term.

The environment-natural disasters, environmental degradation and climate change

Despite these notable developments, more than 50 million people still live in poverty in Bangladesh[22] and many of these occupy remote and ecologically fragile parts of the country, such as flood plains and river islands (chars), or the coastal zones where cyclones are a major threat. Indeed, the increasing population means that, while disaster preparedness may have improved in many ways, an ever growing number of people are exposed to these environmental threats.

Further, populations in these regions have to cope not only with existing vulnerabilities, they are also faced with the consequences of growing pressure on the environment as a result of rising demand for water, inadequate maintenance of existing embankments and other environmental protection measures, and rapid and often unmanaged urbanization and industrialization. These pressures not only threaten to undermine progress in reducing vulnerability to the existing environmental threats that Bangladesh faces, but risk creating new environmental problems, not least in the country's fast growing urban slums.

Climate change in Bangladesh is expected to exacerbate many of these vulnerabilities, with increasingly frequent and severe floods, cyclones, storm surges and droughts forecast. As noted above, the IPCC's Fourth Assessment Report identified the Asian megadeltas as a whole, and Bangladesh specifically, as an area of key concern. Its findings included:

- the substantial barriers to adaptation (economic, institutional, environmental, technical etc.);
- the multiple natural and human-induced stresses, such as subsidence and declining natural defences;
- significant flood plain populations that are exposed to significant storm surge hazards; and
- highly sensitive coastal systems where the scope for inland migration is limited.

Importantly, as the IPCC report notes, “while physical exposure is an important aspect of the vulnerability for both human populations and natural systems to climate change, a lack of adaptive capacity is often the most important factor that creates a hotspot of human variability.” Further, as the report points out, fundamental to assessing adaptive capacity is a country's level of development, because wealth and technology increase capacity, while poverty generally limits it. Given that Bangladesh is a Least Developed Country, this is clearly a cause for concern. However, as the revised Second National Strategy for Accelerated Poverty Reduction (NSAPR-II) and Bangladesh's Climate Change Strategy and Action Plan recognize, it is also a call for action, highlighting the importance of sustained and sustainable growth and development for Bangladesh's long-term efforts to adapt to climate change.

Within this framework, migration has an important role to play. As the NSAPR-II notes, international remittances play a significant role in contributing to overall GDP. The Climate Change Strategy and Action Plan also notes the importance of international migration and sets out possible actions for strengthening it. Importantly in the context of environmental change, the benefits of international migration can extend well beyond direct financial transfers to include, among other things, the transfer of technology and knowledge, enabling people to strengthen and diversify their livelihoods and make them more sustainable. But while international labour migration is indeed an important phenomenon, far more people move within the borders of Bangladesh, both temporarily and permanently – and often with positive economic benefits for themselves, their destination area (urban or otherwise), as well as for family members who choose to remain in rural areas.

As the evidence in the following section will show, where environmental factors play a role in these movements, some people stay within areas of environmental sensitivity, while others choose to migrate elsewhere within the

21. See Millennium Development Goals Bangladesh Progress Report, GoB & UNDP, 2008
22. Climate Change Strategy & Action Plan, GoB, 2009

country. Some people are forced to move, but more often decisions are based on a range of factors – economic, social and environmental – with individuals, households and communities actively trying to minimize the risks and maximize the benefits of migration.

Within this complex and dynamic situation, climate change is projected to exacerbate many of the risks people face, making environmental factors an increasingly important component of people's migration decisions over the course of the 21st century. However, as noted above, the scale and timing of the impacts of climate change remain uncertain and – for most if not all of these factors – they remain long term threats within the overall policy and planning process. The approach in the following section is therefore to explore the existing environmental vulnerabilities within Bangladesh that are projected to be affected by climate change – and the evidence of their impacts on human mobility – but with a primary focus on the short to medium-term scenario. While it remains crucial – morally and practically – to be aware of the long-term threat, the principle adopted here is that the best way to prepare for the consequences of climate change in 2050 or 2100 is to improve the ability to deal effectively with Bangladesh's existing vulnerabilities now.

ii) Key challenges: the migration, environment and climate change nexus (sudden-onset events; slow-onset processes; the 'cascade effect')

As noted above, both gradual environmental change and extreme or sudden environmental events influence population migration patterns but in different ways. In the following section, the key environmental challenges have therefore been divided into two sub-categories: sudden-onset events and slow-onset processes. However, while this is useful in highlighting some important differences in their effects, it should also be noted that the boundaries between the two categories often overlap – for example in the case of river and sea erosion, droughts or protracted flooding – and the distinction between the two should not be applied too rigidly. The final set of 'key challenges' considered in this section relate to the potential 'cascade effects' of environmental migration (both in areas of origin and destination) in terms of further environmental degradation, human security, urbanization and international migration.

Sudden-onset events: floods, cyclones and river erosion

a) Floods

Floods are a fact of life for many in Bangladesh, with around a quarter of the country inundated in a 'normal' year[23]. Most people living in these areas have adapted, raising their houses on plinths and adjusting their farming systems. However, once every few years there is a severe flood that covers a considerably greater area, with much more significant damage to lives and livelihoods. 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[24].

Further, in addition to the existing flood risk, there is an increasing problem of protracted water-logging in many areas due to sedimentation in drainage channels and rivers, particularly in the South-West coastal region of Khulna Division[25].

23. p8 Climate Change Strategy & Action Plan, GoB, 2009
24. p9 Ibid. and National Adaptation Plan of Action, GoB, 2005
25. Participatory Water Management: A strategy for climate change in coastal Bangladesh, Habibullah et al., 2009

Over the course of the 21st century, climate change is expected to increase the risk of more frequent and severe floods through higher river flows resulting from heavier and more erratic rainfall in the Ganges-Brahmaputra-Meghna system during the monsoon and increased melting of the Himalayan glaciers[26].

EXISTING EVIDENCE

Periodic severe floods in Bangladesh cause displacement on a very significant scale. In the most recent severe floods of 2007, around 32,000 Km^2 were inundated, affecting almost 16 million people in around 3 million households[27]. Around 85,000 houses were severely damaged, with 1.12 million hectares of cropland affected and an estimated loss of BDT 5.8 million in livestock. Damage to embankments and other critical infrastructure are also a major problem and often prevent the early return of affected communities, but ultimately, as waters recede, most households do return to their land.

However, while there is good data on initial displacement as a result of floods there is less evidence on longer-term impacts of floods on migration decisions. Evidence from India suggests that floodplains are charactarized by a variety of migration dynamics, including periodic movements to high ground for shelter and temporary work as well as permanent migration where people's livelihoods are more severely affected[28]. A recent 'EACH-FOR' study in Vietnam also identified a wide range of different kinds of migration and concluded that repeated flood events may cause more people to migrate permanently than one-off floods because of the protracted impacts of multiple shocks to people's livelihoods[29].

In Bangladesh, a number of studies make reference to floods as a contributing factor in decisions to migrate[30], but few attempt to examine the influence of individual or recurrent floods on decision making. What evidence there is suggests that for many communities in flood prone areas, migration offers an important safety net for affected families. In particular, one recent survey of 595 households that focused on rural-urban migration after a flood across four districts[31] found that "...the decision to migrate is often guided by the aspiration to replenish asset values damaged by the flood." In this way, rural-urban migration can be seen as a source of credit, enabling "potentially vulnerable households to avoid a debt cycle."

Among the sample households from the four districts in the study, 28per cent had at least one migrant and 83per cent reported that unemployment due to frequent floods was the main reason for family members to leave. Importantly, only 6per cent of migrants went to another village, and these were all from the poorest income quartile, while 89per cent went to the nearby city (70per cent of whom were from the middle quartiles economically). The remaining 5per cent of households with overseas migrants were all from the richest quartile. The consequences for families were broadly positive, with 80per cent receiving money from the migrants, 32per cent reporting improved social standing within the village and only 8per cent reporting a loss. Remittances were primarily used for food, but also for longer term investments, especially the repairing of houses.

26. p14 Climate Change Strategy & Action Plan, GoB, 2009
27. Consolidated Damage and Loss Assessment, Lessons Learnt from the Flood 2007 and Future Action Plan (Executive Summary), Disaster Management Bureau, Ministry of Food & Disaster Management and Comprehensive Disaster Management Programme, 2007
28. Kayashta & Yadava, 1985, as cited in Migration and Natural Disasters, Naik, A. in Migration, Environment and Climate Change: Assessing the Evidence, IOM, 2009
29 Researching environmental change and migration: evaluation of EACH-FOR methodology and application in 23 case studies worldwide, Warner et al., in Migration, Environment and Climate Change: Assessing the Evidence, IOM, 2009
30. See for example, Emigration and development: the case of a Bangladeshi Village, Rahman, 2000
31. Coping with floods: does rural-urban migration play any role for survival in rural Bangladesh?, Rayhan & Grote, 2007

The link between loss of assets and the decision to migrate is supported by another study following the 1998 flood which suggests that well-coordinated relief efforts – in which households receive sufficient compensation for their losses - have a direct causal link with a reduction in migration decisions[32]. While this strengthens the case for effective post-flood assistance, including safety nets, given the scale of flooding within Bangladesh and the limited resources available, it remains likely that families will also seek to take active steps to manage their risks both during and after floods, and that migration offers an important means of doing so.

Finally, as noted above, in addition to 'normal' patterns of flooding within Bangladesh, water-logging (the long-term inundation of areas as a result of inadequate drainage) has become an increasing problem in recent years for a variety of reasons: natural changes in river flow; increased sediment in rivers due to reduced sediment deposition on flood plains protected by embankments; and a lack of proper operation and maintenance of sluice gates[33]. While there is very little specific research on the issues, it is believed that climate change could further exacerbate this issue through changes in sedimentation and river-flow, increased monsoon rainfall and retarded discharge of rivers due to sea-level rise[34]. Unfortunately at present there is no data on migration patterns from areas that face chronic water-logging so it is not possible to make any firm statements, however it can be assumed that, as with Aila-affected areas that face regular tidal flooding because of breached embankments, the more protracted the water-logging, the greater the potential for long-term or permanent out-migration.

ANALYSIS

Large areas of Bangladesh are and will continue to be highly vulnerable to the threat of floods for the foreseeable future, and climate change may well aggravate the situation over the course of the 21st century. Obviously, the country's first priority is to seek to reduce this threat and help communities to manage the consequences of floods through investment in comprehensive flood management and Disaster Risk Reduction policies and activities[35]. But given the scale of these challenges, vulnerability to floods will remain a reality for many people in coming decades and, while the evidence on migration in relation to floods is currently limited, what does exist highlights the importance of migration as a safety net for flood affected households. More research is therefore needed into the dynamics of migration from flood-affected communities – both as a result of severe floods, 'normal' seasonal flooding and protracted water-logging – so that specific policies can be tailored to minimize the risks and maximize the benefits for individuals, households and communities.

b) Cyclones and storm surges

Tropical cyclones hit Bangladesh, on average, every three years[36]. They are accompanied by high winds and storm surges of up to seven metres, leading to extensive damage to houses and loss of lives and livelihoods. Tropical cyclones in 1970 and 1991 killed 500,000 and 140,000 people respectively.

Over the years, Bangladesh has made significant progress in terms of early warning systems, cyclone shelters and other disaster preparedness measures and an estimated 1.5 million people took refuge in cyclone shelters during the Cyclone Sidr in 2007. More recent cyclones have therefore seen a lower death toll (approximately 3,500 for Sidr) but have still resulted in very widespread damage to houses, crops, livestock and other assets.

The IPCC's Fourth Assessment Report concluded that climate change is likely to result in an increase in peak wind intensity and precipitation during tropical cyclones. It also forecast – although with less confidence – an increase in the number of the most intense tropical cyclones along with a possible decrease in the overall number of storms.

32. Relief Assistance to 1998 Flood Victims: A comparison of the performance of the Government and NGOs, Paul 2003
33. Climate Change, Loss of Livelihoods and Forced Displacements in Bangladesh: whither facilitated international migration?, Ahmed & Neelormi, 2008
34. Bangladesh Climate Change Impacts and Vulnerability: A synthesis, Ahmed/GoB, 2006
35. After the Bangladesh Flood Action Plan: Looking to the future, Brammer, 2010; Development and Climate Change in Bangladesh: Focus on coastal flooding and the Sunderbans, Agrawala et al., 2003
36. All statistics in this paragraph from p13 Climate Change Strategy & Action Plan, GoB, 2009

EXISTING EVIDENCE

As with floods, tropical cyclones cause widespread mass displacement of people both during and after the storm itself. The most recent cyclone, Aila, affected 3.9 million people and the loss of about 150,000 livestock, breaching 1,742 kilometers of embankments and displacing 76,478 families in Satkhira and Khulna alone (the two worst affected districts)[37]. As with floods, most people are displaced locally and seek to return to their homes as soon as possible. While the economic, social and psychological damage for those able to return quickly may still be very severe, early return does at least enable the recovery process to begin, and as with floods and other rapid onset events such as tornados in Bangladesh[38], experience suggests that timely and adequate assistance is a key factor in reducing out-migration as a direct consequence of cyclones. However, the immediate effects of the storm surge and, just as importantly, the long-term effects of damage to breached embankments in affected coastal areas, mean that many families end up living on embankments for months and even years because their villages are repeatedly inundated with every high tide.

Clearly the effects on the livelihoods of families who cannot return in the short term is very severe and, when the situation remains protracted, significant out-migration from affected districts can occur. Following 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)[39]. There are also 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. Further, with an estimated 100,000 people still living on embankments in the early months of 2010, anecdotal and newspaper reports of large numbers of local people considering permanent out-migration seem plausible[40].

However, to an even greater degree than with floods, while there is good data on immediate local displacement as well as short-term out-migration as the direct result of cyclones, there is much less evidence on long-term migration patterns in cyclone affected localities. For example, it is unclear the extent to which the initial wave of 'seasonal' migration from Aila has translated into more permanent out-migration, and how many of the migrants who have not returned – both men and young women - continue to maintain connections with their families, providing them with an ongoing 'safety net' in terms of regular remittances and other support.

ANALYSIS

The coastal zone in Bangladesh will always be vulnerable to the threat of cyclones and associated storm surges and the threat of an increase in the severity of storms as a result of climate change underlines the need for continued investment in disaster risk reduction in vulnerable districts. Further, as the response to the two most recent cyclones, Sidr and Aila, has shown, while Bangladesh may have improved its capacities in this regard, as well as its ability to mobilizing the immediate post-cyclone relief effort, the effects on communities can be both severe and protracted. Many households remained displaced for months or even years, unable to return to their villages because of damage to embankments, underlining the need for investment in sustainable development alongside disaster risk reduction in cyclone-affected areas (including the construction and maintenance of appropriate infrastructure and livelihood strengthening).

37. Data from multiple sources listed at: www.cccm.iom.org.bd/index.php?option=com_content&view=article&id=3&Itemid=8
38. See Evidence against disaster-induced migration: the 2004 tornado in north-central Bangladesh, Paul, 2005 and Relief Assistance to 1998 Flood Victims: A comparison of the performance of Government and NGOs, Paul, 2003
39. Indepth Recovery Needs Assessment of Cyclone Aila Affected Areas, ECHO Partners, 2009
40. Joint Position Paper on Cyclone Aila Affected Areas, IOM and other agencies, 2010; 'Cyclone Aila survivors take another hit', IRIN, 7 April 2010 www.irinnews.org/Report.aspx?ReportId=88716

In this context, temporary migration certainly acts as a 'safety net' for many households by providing alternative livelihood options for one or more family members, resulting in additional sources of income during a period of considerable stress. However, because of the lack of evidence it is not possible to say what proportion of these migrants end up moving permanently. Given the vulnerability of many of these individuals – including children and the elderly as well as young women who move to take up jobs in garment industry – there is therefore an urgent need for more research into both the short- and long-term migration effects of cyclones, both in terms of its risks and its potential benefits.

c) River Erosion

River-bank erosion is a constant threat to people living alongside Bangladesh's major rivers and on river islands ('chars'). Since 1973, over 158,780 hectares of land has been eroded and in 2010 alone, river bank erosion is expected to displace 11,000 people living on the banks of the Jamuna, and more than 5,000 living alongside the Ganges and Padma rivers[41]. At the same time, land accretion creates new land in and along the rivers themselves – chars – on which more than 2 million people are estimated to live[42].

Rates of river erosion have in fact been declining since the early 1990s, with erosion along the Jamuna river declining from a high of 5000 hectares per year in the 1980s to around 2000 hectares per year since 2000[43]. However, despite this, rates remain high enough to cause significant disruption to the livelihoods of thousands (as the projections for 2010 above demonstrate) and, while the precise effects of climate change on river bank erosion are unpredictable, it is thought that an increase in monsoon rainfall may contribute to higher rates of erosion along Bangladesh's main rivers, possibly resulting in an increase in the loss of homes and agricultural land in the long-term[44].

EXISTING EVIDENCE

The problem of displacement by river bank erosion has long been recognized in Bangladesh and, from the landmark River Erosion Impact Study (1984-1988) onwards, there have been a number of studies into the effects of loss of land on residents[45]. While many early studies emphasized the devastating effect of land erosion on displaced households, and the potential for conflict over new or remerging land, more recent studies have found that families and communities have a variety of coping strategies to deal with river erosion, including means to negotiate access to land for building new homesteads[46]. These studies suggest that, while erosion causes serious disruption, it is considered an inevitable, if unwelcome, fact of life for those living in river bank or char communities. Most families who lose their homes or agricultural land to erosion therefore choose to remain within the local area. For example, in a survey of 547 families living on the banks of the Jamuna, it was found that households moved an average of only 2.2km, with less than 3per cent moving over 8km[47].

As such, most families experience multiple displacements over the course of a lifetime. For example, one study of 200 affected households in the North West of Bangladesh found that households had been displaced 4.46 times on average[48], while the earlier study cited above put the figure as high as seven times (and even more for those living on chars). While households with sizeable land holdings may be able to move onto a different piece of their land,

41. Prediction of riverbank erosion along the Jamuna, Ganges and Padma rivers in 2010, CEGIS
42. The poorest and most vulnerable? On hazards, livelihoods and labelling of riverine communities in Bangladesh, Lein, 2009. See also Charland Socio-Economic Summary Report, Bangladesh Flood Action Plan, IPSAN, 1995 and Chars Livelihoods Programme: www.clp-bangladesh.org
43. Long-term Erosion Processes of the Jamuna River, CEGIS, 2007
44. p14 Climate Change Strategy & Action Plan, GoB, 2009
45. See, for example, Hacque & Zaman, 1989; Zaman & West 1991; Abrar & Azad, 2007; Hutton & Haque 2003; Lein 2009
46. The poorest and the most vulnerable? On hazards, livelihoods and labelling of riverine communities in Bangladesh, Lein, 2009
47. Coping with Riverbank Erosion and Displacement in Bangladesh: Survival strategies and adjustments, Haque & Zaman, 1989
48. Coping with Riverbank Erosion Induced Displacement, RMRRU, 2007, based on study by Abrar and Azad, 2003

for those with limited resources, resettlement depends on kinship and social networks. Although most families are able to arrange for themselves in this way, the consequences of displacement can still be severe for many, with a drastic reduction in assets and livelihoods, as well as the social and psychological impacts of repeated displacement[49].

However, while the majority of households continue to move essentially within a localized area, some households or individuals do choose to migrate greater distances, both temporarily and permanently. For example, in the 2003 study cited above, while relocation of the whole household was not considered an attractive option by those households surveyed, rural-rural labour flows in peak harvesting and sowing seasons, as well as rural-urban migration for longer-term employment of male members of the household, was considered "an important livelihood strategy for the displaced households." Another study of 155 households in 1998 found that about 10per cent were considering long distance migration, although only 2 families were considering a permanent move to an urban area[50]. The same study revealed some important gender dimensions to migration decisions, with women on chars expressing greater interest in moving to the mainland and identifying improved access to educational facilities for children and greater security as important motivations in wanting to do so. Further, in addition to the significant levels of long-distance temporary labour migration reported, in which women who stay behind with families are often vulnerable in a number of ways[51], local people reported that since the early 1990s between 50 and 100 young unmarried women and divorced or widowed women with children had left to work in the ready made garment (RMG) sector in Dhaka.

Further, while many of the migration decisions outlined above are broadly 'voluntary' in nature, in some cases, erosion may be so severe, or the capacity to cope so strained, that whole households and even communities may opt to move out of an area. For example, a survey carried out in 1998 among 230 households in Serajganj, found that 5,500 of 30,000 slum dwellers were erosion-affected displaces[52]. Most were forced to live in marginal areas of the city – for example along railway lines or along the city's flood protection embankments – and only 7per cent had received some sort of assistance from a government or NGO. 90per cent of those surveyed were working as unskilled labour, with length of residence seemingly having little impact on earning capacity. Interestingly, three quarters were living alongside households from their original village or district suggesting that many may have moved en masse, possibly as a result of a severe episode of erosion displacing whole communities.

ANALYSIS

Some sizeable programmes exist that seek to benefit those living in and alongside Bangladesh's major rivers, including the Chars Livelihood Programme and IFRC's community-based disaster risk reduction programme (in which victims of river erosion are a specific target group). Helping households to raise their houses on improved plinths, supporting them to strengthen their livelihoods and improving access to basic services is certainly an important task. Indeed, given that the majority of people affected by erosion choose to remain within the local area, programmes of this nature are likely to benefit many of those displaced.

However, even those who emphasize on the coping strategies of households in char and riverbank communities generally accept that there has been inadequate policy attention given to those directly affected by river erosion. This must in part be because of the difficulties of effectively targeting such a geographically dispersed group of

49. Coping with Riverbank Erosion and Displacement in Bangladesh: Survival strategies and adjustments, Haque & Zaman, 1989
50. The poorest and the most vulnerable? On hazards, livelihoods and labelling of riverine communities in Bangladesh, Lein, 2009
51. Staying Behind When Husbands Move: Women's Experiences in India and Bangladesh, Development Research Centre on Migration, Globalisation and Poverty Briefing No.18, 2009
52. River-bank erosion induced displacees in Bangladesh, Hutton & Haque, 2004

people. Recent attempts to provide communities with better information on risks based on national level projections, specifically the CEGIS/UNDP pilot programme using flags to mark out sites likely to be affected by erosion, are promising. But given that this does little to prevent eventual displacement, policies and programmes are needed which seek to assist victims of displacement – especially the small but significant minority who are forced to out-migrate and often end up in Bangladesh's urban slums.

The effects of climate change on the highly dynamic phenomenon of river erosion are unclear at present, but the potential for increased monsoon rainfall to exacerbate the existing situation is considered a real possibility. In this light, it becomes even more essential that adequate policies are put in place to support those affected by river erosion so that, in the long term, climate change does not cause even greater suffering among this vulnerable group.

Slow-onset processes (coastal erosion, sea-level rise, salt water intrusion, rising temperatures, changing rainfall patterns and drought)

a) Coastal erosion

As with river erosion, coastal erosion is a continuous process in Bangladesh in which the flow of the country's main rivers plays an important role. Given the deltaic nature of Bangladesh's coast it is impossible to draw a clear distinction between the two within the coastal zone and there are many similarities between coastal and upstream river erosion as processes. However, the dynamics of coastal erosion are different because of the role of the sea and tidal forces, as well as coastal defences and other factors.

Coastal erosion can be a slow-onset process - with one study identifying rates of erosion on Bhola Island for instance as between 0.31 to 0.43cm a day[53] - as well as a sudden-onset event, for instance when high spring tides or storm surges result in much faster rates of change. In this section, an emphasis has been placed on its longer-term, slow-onset effects to contrast these with the impacts of cyclones and storm surges addressed above, although clearly it can be seen to have effects that fit both categories.

Climate change is expected to exacerbate coastal erosion primarily through rising sea-levels, but also through changes to river flow and other hydrological dynamics. In this section the focus is on existing erosion dynamics as the projected effects of long term rising sea-levels are explored separately in the next sub-section.

EXISTING EVIDENCE

The coastal zone of Bangladesh can be divided into three broad segments each with quite different erosion and accretion dynamics: the South-West, including the Sunderbans; the Meghna Estuary region; and the South-East coast in Chittagong Division. While it is well known that sediment within river flows creates new land as well as erodes existing land, most studies and reports have assumed that Bangladesh was facing an overall annual net loss of land as a result of gradual changes to the sea-land ratio (which includes the effects of tectonic setting, sediment load and deltaic subsidence as well as rising sea-levels)[54]. The IPCC's Second Assessment, for example, suggested that as much as 17.5per cent of the country's land could be lost with a 1m rise in sea-levels (see section on sea-level rise for further discussion).

However, new research by CEGIS suggests that in the Meghna estuary zone at least, the impacts of sedimentation in mitigating changes to the sea-land ratio have been significantly underestimated, and that Bangladesh has in fact been gaining not losing land since the 1940s, with a net increase of 1,790 Km^2 over this period[55]. The research

53. Coastal Erosion on the Island of Bhola, Bangladesh, Krantz, 1999
54. See p493 Impacts of climate change and sea-level rise on cyclonic storm surge floods in Bangladesh, Karim & Mimura, 2008
55. Country gets new land, Daily Star, 23 April 2010

paints a much more dynamic picture of Bangladesh's land-loss/-gain scenario than previous studies, with some areas net winners, and other losing out. For example, most of the new land has emerged in the district of Noakhali, while Bhola Island has lost around 230 Km^2 (a phenomenon often attributed to rising sea-levels but found by the researchers to be largely due to changes in the flow of the Meghna).

It is important to point out that new land is far less productive initially than agricultural land lost during this process, and as such the overall impacts on agricultural production cannot be assumed to be positive. Further, while river erosion and accretion may enable people to remain within a local area, the new land and old land in the estuary zone are widely geographically dispersed and there is no necessary connection between a household or community experiencing loss of its land, and access to fresh land in other parts of the coastal zone. Indeed, it is very difficult to make any concrete connections between the two processes at all as - in stark contrast with more than two decades worth of research on the impacts of river erosion on human mobility - the dynamics of land ownership in areas of major land gain such as Noakhali are very little understood, as are the migration effects of coastal erosion and accretion (both in terms of in- and out-migration). Finally, there is even less concrete data on land loss or gain in the South-West or South-East, although examples of severe erosion such as that experienced by Khutubdia Island demonstrate that coastal erosion is a significant threat in these regions too[56].

ANALYSIS

As the CEGIS research highlights, the coastal zones of Bangladesh are a highly dynamic environment and there will always be areas of the coast under threat from erosion and land loss. While much may be done to address this threat where identified, such as coastal protection structures, tree planting and other appropriate measures[57], there may be areas where this is technically challenging or economically unfeasible. As such, it seems reasonable to assume that, as with Bhola Island, changes in river flow, sedimentation deposition and other factors will periodically place new areas under threat of significant land loss. In these cases, adequate contingency planning and mechanisms need to be developed to assist affected households and, in the most severe cases, provide for whole communities that may need to move en masse. However, in order to ensure policy is based on a real understanding of the reality of these processes in coastal zones, much more research is needed on the dynamics of land gain and land loss in the coastal regions of Bangladesh, including the South-West and South-East, and how these relate to both in- and out-migration.

b) Sea-level rise

Globally average sea levels rose by a rate of 1.8mm per year from 1961 to 2003 and the most severe of the IPCC six scenarios in the Fourth Assessment Report predicts a further total increase of between 26 and 59cm by the end of the 21st Century (or between 20 and 43cm on the mid-range 'B2' scenario)[58]. However, global averages of sea level rise do not directly translate into local level projections. In the Bengal Basin, tectonic setting, sediment load and deltaic subsidence all influence the relative sea level[59]. An OECD study in 2003 concluded that sediment loading may broadly balance out the effects of compaction and subsidence and therefore suggested a figure of between 30 and 100cm by 2100 (still considerably higher than either the Third or Fourth IPCC assessment)[60]. In contrast, Bangladesh's NAPA, which relied on the IPCC's Third Assessment, recommended figures of 14, 32 and 88cm for the years 2030, 2050 and 2100 respectively[61].

56. See, for example, IRIN article on erosion in Kutubdia, 23 October 2008: http://www.irinnews.org/report.aspx?ReportId=81079
57. Coastal and Sea Erosion, Nair & Guleria, SAARC – report available at http://saarc-sdmc.nic.in/coast.asp
58. This is also the scenario used by CDMP in their modelling in their Impact Assessment of Climate Change and Sea Level Rise on Monsoon Flooding, 2008, who noted that this suggests a 23cm rise by 2050
59. See p493 Impacts of climate change and sea-level rise on cyclonic storm surge floods in Bangladesh, Karim & Mimura, 2008
60. Agrawala, S., Ota, T., Ahmed, A.U., Smith, J., Aalst, M.V., 2003. Development and Climate Change in Bangladesh: Focus on Coastal Flooding and the Sundarbans. OECD
61. National Adaptation Plan of Action, GoB, 2005

Over the course of the century, sea-level rise is projected to significantly exacerbate coastal erosion, saline intrusion, flooding and the impacts of high tides and storm surges. All these issues are discussed elsewhere in more detail in separate sub-sections, so the aim of this section is to focus more specifically on the evidence for some of the widely cited projected long-term impacts of sea-level rise on mass migration.

EXISTING EVIDENCE

As noted above, there have been numerous predictions of significant loss of land for Bangladesh throughout the course of the 21st century; for example, the widely cited prediction in the IPCC's Second Assessment Report in 1995 that Bangladesh will lose about 17.5per cent of its landmass with a 1m rise in sea-levels. However, as the CEGIS research discussed in the section on coastal erosion demonstrates, the dynamics of coastal erosion are highly complex and land-loss cannot be assumed in the short to medium term even in the face of a changing sea-land ratio. Further, it is important to stress that – regardless of the methodology used – all of the studies that attempt to assess the impacts of significant sea level rise in Bangladesh are long-term predictions and many are based on a 1m rise that is only projected for the end of the century (and even then, is significantly beyond the range of the most severe predictions of the latest IPCC report).

Sea-level rise is the most often cited cause of predicted mass-displacement within Bangladesh as a result of climate change. Widely quoted figures range from 13 million[62] to 40 million[63] people displaced, generally based on assumptions of a one metre rise in sea levels. However, as noted above, not only are these changes long-term in nature, predicated on ranges outside of the harshest IPCC scenarios, and grounded in projections that do not take sufficient account of land accretion as well as loss, but, perhaps most crucially, they are based on the assumption that no significant adaptation measures are undertaken[64]. Given the difficulties in describing existing migration dynamics within the coastal zone of Bangladesh, it therefore seems reasonable to conclude that all such projections should be approached with considerable caution.

ANALYSIS

Certainly Bangladesh's coastal zones face numerous ongoing threats, not only from saline intrusion, storm surges and floods, but also from monthly high-tides which increase erosion, regularly place poorly maintained embankments under severe pressure and may result in breaches that allow sea water into polders, even without the added strain of a flood or storm. Rising sea-levels have been adding incrementally to this threat and will continue to do so throughout the 21st century. However, given the timescales involved and – for the next 50 years at least – the relatively small changes expected, many adaptation measures are certainly feasible. For example, while even a 50cm rise in sea-levels by 2050 (which would require a much higher rate of change than any of the projections cited above) would certainly have effects, it is not necessarily unmanageable in a country where storm surges can reach as high as 10m[65].

Bangladesh's NAPA and Climate Change Strategy and Action Plan propose a range of measures including infrastructure improvements, coastal afforestation, livelihood adaptation and increased investment in comprehensive disaster management. Existing evidence suggests that these approaches will be most successful if they are based on meaningful community participation, for example in construction and maintenance of embankments and other water management infrastructure[66]. If community strengthening and adaptation measures

62. Climate Change, Mass Migration and the Military Response, Smith, 2007
63. Centre for Strategic and International Studies http://csis.org/files/publication/sam_136
64. This includes the figure of 17.5% in the Second IPCC Assessment which was based on the assumption that no significant adaptation measures were put in place.
65. Impacts of climate change and sea-level rise on cyclonic storm surge floods in Bangladesh, Karim & Mimura, 2008
66. Participatory Water Management: A strategy for climate change adaptation in coastal Bangladesh, Habibullah et al., 2009

of this sort are given priority within the short- to medium-term policy planning process, it seems reasonable to conclude that mass displacement as a result of sea-level rise is highly unlikely over these timescales and far from certain even at a greater distance in time. As such, while narratives of mass displacement are understandable in highlighting the potential long-term risks of failing to curb C02 emissions globally, they should be approached with considerable caution as they risk undermining the case for investment and adaptation measures in vulnerable coastal regions to deal with very real existing vulnerabilities[67].

c) Salt-water intrusion

Saline intrusion is already a major problem in the South-West of Bangladesh, where diminished flow in the dry season enables salt water to penetrate far inland through the estuarine river system, severely limiting the potential for supplemental irrigation and potentially damaging crops during very high tides[68]. Groundwater is also problematic, with coastal wells required to penetrate as deep as 250m or more to reach fresh water and increasing water usage in 'recharge' areas further north threatening to exacerbate the issue still further.

As a result of climate change, rising sea-levels and, potentially, decreased winter rainfall are expected to aggravate the situation by increasing salt water intrusion up coastal rivers and into groundwater aquifers and reducing the availability of freshwater in the coastal regions, particularly in the South-West.

EXISTING EVIDENCE

In the west of the Ganges tidal floodplain, rivers already become saline during the dry season and tube-well irrigation is not feasible because the upper aquifer is also saline, thus severely limiting options for dry season crop production[69]. Further, over recent decades, the salt-water front in tidal rivers has moved inland as a result of the upstream diversion of river water, including by the Farakka barrage in India. Increased salinity has severe consequences on agricultural productivity, with the multiple effects of surface water, groundwater and soil quality change combining to reduce crop yields[70]. Climate change is expected to exacerbate this situation, with projections by CEGIS suggesting that the '5 ppt' isohaline line could shift as far north as 90km inland due to sea-level rise by the 2070s[71].

Despite these threats, adaptation remains feasible, with changes in land-use, for example salt-tolerant rice and shrimp cultivation, and improvements to surface water management infrastructure[72]. However, clearly changes in cultivation patterns related to increased salinity will have impacts on the productivity of coastal zones and the viability of people's livelihoods and this, in turn, is likely to exacerbate emigration pressures, particularly in the South-West. While adapted agricultural practices need not necessarily result in major reductions to the 'carrying capacity' of rural areas in terms of food production and employment opportunities, it seems unlikely given the range of problems these regions face that even with growth in agricultural productivity demand for farm labour in these regions will be sufficient to keep pace with population growth. In addition, major shifts in livelihoods will not only impact on the economy of these areas, they will affect every dimension of life, including the social and cultural sphere. Taken together, this represents a major challenge for future policy towards those regions.

67. For a discussion on narratives of mass displacement, climate change and sea-level rise see Climate change, migration and adaptation in Funafuti, Tuvalu, Mortreux & Barnett, 2009
68. Bangladesh Climate Change Impacts and Vulnerability: A synthesis, Ahmed/GoB, 2006
69. After the Bangladesh Flood Action Plan: Looking to the future, Brammer, 2010
70. Impact of Sea Level Rise on Suitability of Agriculture and Fisheries: A case study on Southwest Region of Bangladesh, Hassan & Shah, 2006
71. Impacts of Sea Level Rise on Landuse Suitability and Adaptation Option, CEGIS, 2006 cited in Climate Change, Loss of Livelihoods and Forced Displacements in Bangladesh: whither facilitated international migration?, Ahmed & Neelormi, 2008
72. Participatory Water Management: A strategy for climate change adaptation in coastal Bangladesh, Habibullah et al. 2009

Further, there is evidence that an increase in shrimp farming could cause significant out-migration from some areas, because while it may result in an overall increase in employment opportunities if all stages of the production process are taken into account, it requires significantly less on-farm labour compared to rice production[73]. This is in addition to the considerable numbers of newspaper and anecdotal reports of deliberate flooding of paddy fields with saline water in the shrimp industry with resulting negative impacts on people's livelihoods[74].

ANALYSIS

While the evidence of migration directly induced by saline intrusion may be limited to examples of malpractice within the shrimp industry (or other accidental causes of breached embankments, such as those caused by Cyclone Aila), the scale of the challenges faced by the South-West in particular suggest that even without the projected impacts of climate change, increasing salinity and population pressure will tend to increase emigration pressures in this region over the coming years. As the global evidence on slow-onset processes discussed above suggests, attempting to identify specific flows of 'environmental migrants' leaving these areas may not be possible given the complex and multi-causal nature of migration decisions in areas of gradual environmental degradation. However, what can be predicted with some degree of certainty is that the impacts will be most severely felt by marginal and rural landless farmers who rely on agricultural labour opportunities to sustain their livelihoods.

Data on existing migration movements within Bangladesh (discussed in detail below) support the notion that where people choose to undertake long-term or permanent migration, most will make their way to cities within their home division (Khulna for the South-West) or to Dhaka and Chittagong. Given the proximity of the South-West of Bangladesh to India, it also seems reasonable to conclude that some individuals and households will also choose to cross the border. However, it is important to note that there is insufficient data to draw any firm conclusions on the scale of these movements, let alone the role played by saline intrusion (this issue is discussed separately in the section on international migration below).

d) Rising temperatures, changing rainfall patterns and drought

Farmers in Bangladesh already have to deal with a highly variable climate including significant variations in the onset and end of the monsoon, unpredictable rainfalls patterns and problems with excessive temperatures, dry spells and low soil moisture[75]. Climate change is expected to exacerbate these problems, with the IPCC's Fourth Assessment Report suggesting that temperatures will increase globally by 0.2^0C per decade for the next two decades. After that point there is considerable divergence in models depending upon the IPCC's six scenarios with between 1.8 and 4^0C warming projected by 2100. Importantly, temperature changes will vary regionally, with greatest warming expected over land and at high northern latitudes, and South Asia as a whole is projected to experience warming greater than the global mean. Further, warming is expected to be more pronounced over winter and it is considered very likely that hot extremes and heat waves will become more frequent.

Alongside these changes, rainfall patterns are projected to change considerably. The predicted increase in the frequency of intense precipitation events has already been discussed above and is expected to be accompanied by a decrease in precipitation during the dry season (of around 5per cent). However, while it is clear that there will be long-term changes in rainfall patterns, it is important to stress that all the precipitation models have a high

73. Shrimp Culture in Bangladesh with Emphasis on Social and Economic Aspects, Alauddin & Hamid, 1999

74. See for example, Farmers resist saline water based shrimp farming, Daily Star, 11 May 2009 and 'No' to saline-water based shrimp farming, Daily Star, 9 April 2009

75. p26-33 Livelihood adaptation to climate variability and change in drought-prone areas of Bangladesh, Developing Institutions and options, Selvaraju et al., 2006

degree of uncertainty (this is reflected in the fact that the difference between the various models used are greater than those between different emission scenarios). For example, recent climate modelling undertaken by the Bangladesh University of Engineering and Technology for the Climate Change Cell at the Ministry of Environment and Forests supported the increase during the monsoon and post-monsoon periods, but suggested that rainfall will remain close to historical levels during the dry season[76].

EXISTING EVIDENCE

Overall, higher temperatures, higher rates of evaporation and changing rainfall patterns are expected to cause a decline in agricultural production in Bangladesh. For example, higher temperatures have been found to reduce yields of High Yielding Varieties (HYVs) of *aus, aman* and *boro* rice[77]. Rising levels of C0□ are known to have a positive effect on yields that may counteract the effects of the initial rise in temperatures, but the IPCC's Fourth Assessment Report suggested that the combination of increased thermal stress and water scarcity (in some areas) could lead to a an overall decline in rice production in Asia of 3.8per cent by the end of the century and a decrease in the production of rice and wheat in Bangladesh by as much as 8per cent and 32per cent respectively by 2050. Some models cited by Bangladesh's NAPA even predict declines as high as 30per cent for rice and 70per cent for wheat, although it is important to note that these are based on a 4^0C temperature rise and there is considerable variation between models.

Given Bangladesh's existing environmental trends, such as the continuing loss of land to urban and industrial development and the rising and potentially unsustainable use of current water resources, the country faces a major challenge in sustaining the impressive gains in agricultural production and food security secured over the last few decades. However, once again, Bangladesh's agricultural sector is certainly not passive in the face of the existing issues and projected threats, and sustained investment into improved crop strains, agricultural practices and other adaptation measures may help to address many of the current problems and prepare for future challenges[78]. Further, the specific threats from climate change are long term in nature and mean that planned adaptation strategies have considerable potential to address gradual changes in rainfall patterns and temperatures. However, even if policy and practice in this area is successful in mitigating many of these threats, given the already very high population density of rural Bangladesh it seems unlikely that the 'carrying capacity' of the land will keep pace with the current rate of population growth. When the 'pull' factor of the growing urban economy is also taken into account, the conclusion must be that, in addition to seasonal migration within and between rural areas, continued rural-urban migration – both temporary and permanent - is inevitable.

As with those affected by saline intrusion, where declining agricultural productivity plays a role in the decision to move, most rural-urban 'environmental migrants' are - and will continue to be - impossible to separate from the steady stream of 'economic migrants' making their way to Bangladesh's cities, with population pressure, a lack of economic opportunities, debt and 'pull' factors such as urban growth and industrialization more often cited as the motivation to move than gradual processes of environmental change or degradation[79]. A possible exception to this are those areas already most susceptible to low rainfall and drought, where the impacts of temperature increases and changing rainfall patterns are projected to be most severe[80]. For example, in areas which experience the annual 'monga', a period of seasonal pre-harvest shortage primarily in the North-West[81].

76. Generation of PRECIS scenarios for Bangladesh (Validation and Parameterization), Climate Change Cell, MoEF, 2009
77. National Adaptation Plan of Action, GoB, 2005
78. For example, see the range of food security, livelihoods and agricultural adaptation measures outlined in the Climate Change Strategy and Action Plan, GoB, 2009
79. See for example, p91-97 Rural-Urban Migration in Bangladesh: Causes, Consequences and Challenges, Afsar, 2000
80. See Livelihood adaptation to climate variability and change in drought-prone areas of Bangladesh, Developing Institutions and options, Selvaraju et al., (2006); although, as Agrawala et al. (2003) note (p18-19), the projected increases in monsoon rainfall and only marginal decrease in winter rainfall mean that it is not possible to predict the effects on droughts themselves with any degree of certainty.
81. Migrating Away from a Seasonal Famine:A randomized intervention in Bangladesh, Chowdhury et al. 2009

The evidence on existing patterns of migration from drought affected regions is somewhat contradictory. One survey found that only 5per cent of households in Rangpur, a district particularly susceptible to monga, received domestic remittances, compared to 22per cent of Bangladeshi households nationally[82]. However, a major 'census' of Dhaka's slums revealed that Rangpur was one of the top five districts of origin (out of 64 in total), representing 4.6per cent of the total slum population despite its geographical distance from the capital[83], and a survey of 1600 households in the Northwest also found that seasonal migration was an important livelihood strategy for 19per cent of households across all wealth groups and 25per cent of the chronic poor[84]. Further, a randomized intervention carried out in Rangpur in which cash, credit or information was provided to potential migrants during the monga season found that a significant number - just over 40per cent of those offered cash or credit, and 16per cent of those given information (compared to 13per cent of 'control' households) did choose to migrate (both to neighbouring towns as well as to Dhaka)[85]. While the special conditions under which this experiment was carried out make it difficult to draw too many conclusions, it does at least indicate that migration has the potential to play a significant role in livelihood options for people from drought prone areas.

ANALYSIS

Bangladesh's variable climate already presents significant challenges to its farmers, who have developed various strategies to cope with unpredictable rainfall and temperatures. Climate change threatens to exacerbate this situation and is only one of a range of long term challenges the country faces in maintaining or improving its agricultural productivity, such as population growth, increasing water usage and loss of productive agricultural land to urbanization. In combination with the growing economic 'pull' of urban areas, it therefore seems inevitable that a steady flow of people will continue to migrate out of rural areas. Identifying 'environmental migrants' within this flow is unlikely to be feasible except perhaps in some extreme cases where gradual environmental degradation exacerbates significant existing vulnerabilities. This may include both the drought-prone North-West discussed in this section and the saline affected South-West discussed elsewhere, where further research into existing and migration dynamics is essential if effective policy to deal with future challenges is to be developed.

The 'cascade' effect? - environmental degradation, urbanization, human security and international migration

There is recognition within the literature on environmental migrants of the potential for migrating populations to have a 'knock-on' or 'cascade' effect[86] on those areas to which they move. After major disasters such as cyclones and floods this can include environmental degradation in and around temporary settlements or in urban slums, but it also includes broader 'human security'[87] concerns where large numbers of migrants enter vulnerable, insecure or even conflict prone areas. Slow-onset processes that produce a smaller but steady stream of migrants may be less dramatic but they too may have effects where people move into environmentally stressed locations or areas of insecurity.

However, it is important to stress that there is no necessary relationship between migration and environmental degradation or human insecurity. The specific context, and the way in which migrants are perceived, managed and treated – both by government and communities themselves – are crucial factors in determining the outcomes of

82. Ibid.
83. Islam, N. et al. (2006) Slums of Urban Bangladesh: Mapping and Census 2005, Dhaka: Centre for Urban Studies.
84. Surviving on their feet: charting the mobile livelihoods of the poor in rural Bangladesh, Hossain et al., 2003
85. Migrating Away from a Seasonal Famine:A randomized intervention in Bangladesh, Chowdhury et al. 2009
86. This term has been adapted from Environmentally-Displaced Peoples and the Cascade Effect: Lessons from Tanzania, Charnley, 1997
87. See below for a discussion on definitions of 'human security'

human movement. A human security perspective also places the well-being and needs of migrants themselves at the centre of attention – in terms of decent shelter and access to food and water, but also protection from harassment, trafficking or other negative dimensions of insecurity.

Finally, and just as importantly, any analysis of the consequences of migration must take full account of the benefits of migration – both potential and realized –for areas of origin and destination. To maximize these benefits, policymakers, government officials, donors, international organizations and other key stakeholders must adopt a more strategic, long-term approach to migration – and this can only happen with a shift towards a more positive attitude to migrants themselves.

In this section, these issues are briefly explored in the context of Bangladesh.

a) Environmental degradation

A key issue noted in the international literature on environmental migrants is the potential for those leaving environmental degraded areas to cause environmental damage in the areas they enter[88]. However, as the literature also notes, there is very little high quality empirical evidence regarding the effects of migrants on the environment, and a linear relationship between migration and environmental degradation certainly cannot be assumed[89].

EXISTING EVIDENCE

As the evidence discussed in previous sections suggests, most environmentally-induced forced migration remains localized within Bangladesh, with victims of cyclones and floods primarily relocating short distances on a temporary basis. Where the majority of people are able to return quickly, the environmental impacts of these movements are likely to be relatively limited (although there may be serious environmental or public health issues in the villages to which they return as a result of damage from the disaster). However, where people are unable to return for protracted periods – for example as a result of damaged embankments (as in the case of the Cyclone Aila affected areas) – there may be serious issues regarding contamination of water and poor sanitation in areas with large numbers of displaced people, with significant public health consequences. For example, one year on from Aila, sanitation remains a major concern, with an average of 15 families still sharing only one latrine and inadequate access to safe water resulting in a notable increase in diarrhoea and skin diseases[90].

Where people do choose to move further away –temporarily, seasonally or permanently – Bangladesh's very high population density means that most are likely to move into areas with significant existing populations – both in rural and urban areas. This is in contrast to much of the international literature, which frequently concentrates on 'frontier zones', where migrants bring new land under cultivation. However, there are some areas where this may be the case, for instance where significant quantities of new land has been emerging as a result of sediment deposition from Bangladesh's main rivers; specifically, riverbank and charland, and newly accreted coastal land.

The evidence on this issue for emerging charland along inland rivers is that in most cases these will already be the subject of existing claims based on previous episodes of river erosion. As one recent study[91] notes,

88. See Collecting Data on the Migration-Environment Nexus, Bilsborrow in Migration, Environment & Climate Change, IOM, 2009
89. Ibid
90. Joint Position Paper on Cyclone Aila Affected Areas, IOM and other agencies, 2010
91. p107 The poorest and most vulnerable? On hazards and labelling of riverine communities in Bangladesh, Lein, 2009

> *"Char lands are not, as has been implied, open frontier zones capable of absorbing large groups of poor, landless people migrating from more densely populated rural areas. Although land appears to be available, there is always someone who owns or claims ownership to emerging char land. Of the 554 households interviewed, 82 per cent (442) originated from within Sarishabari Subdistrict, 14 per cent came from two neighbouring sub-districts (Sherpur and Sirajgonj), and only 1 per cent were from more distant districts."*

However, there is less evidence on the issue of in-migration to emerging land within the mouth of the Meghna Estuary, for example in Noakhali which has gained considerable tracts of new land since the 1940s[92]. Anecdotal reports suggest that many households may be moving from the north of the district to emerging land along the coast, but it is not possible to confirm the scale of such movements with existing data, nor what proportion of incoming migrants have themselves been victims of erosion or other environmental factors. Further, the environmental consequences of such migration are likely to be 'positive' in the sense that those who occupy new land take steps to convert initially infertile land into productive agricultural land.

In contrast, in the south-eastern district of Cox's Bazar the presence of 28,000 registered Rohingya refugees and an estimated 200,000 unregistered Rohingyas from Myanmar's northern Rakhine State is a cause of significant concern in terms of environmental degradation and public health issues in that region. Given that the area is among Bangladesh's poorest regions with scant existing resources, these concerns are legitimate and highlight the challenges that can arise in terms of 'knock on' environmental degradation in situations of protracted mass displacement.

A significant amount of short-term and seasonal migration in Bangladesh is rural-rural, with many poor or landless households relying on labour migration during periods of high demand for agricultural labour. Given that more than 60per cent of the country's labour force remains engaged in agriculture[93], the significance of these movements cannot be understated, but the environmental impacts of these movements are probably limited to issues of public health surrounding the temporary settlements of seasonal workers. However, where sudden environmental events or gradual environmental degradation do play a role in inducing individuals or families to move greater distances, the lack of available land, high population density and shortage of year-round work across rural Bangladesh, allied to the 'pull' factors of employment opportunities in urban areas, means that the overwhelming majority of those who move greater distances – individually or as a family, temporarily or permanently - move to urban areas[94].

This influx of poor migrants to urban areas - whether environmentally induced or otherwise - 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[95]. Migrants' environmental 'footprints' may be greater when living in a city due to differing production and consumption patterns, many slums are in sites prone to natural disasters such as flooding, and inadequate waste and sanitation services often result in pollution of the local environment through the dumping of waste and discharging of wastewater[96]. The consequences of the resulting environmental degradation are felt by all city residents, but fall most heavily on the poor themselves.

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92. Estuary Development Programme Inception Report, 2007; Country gets new land, Daily Star, 23 April 2010
93. p95 Livelihood adaptation to climate variability and change in drought-prone areas of Bangladesh, Developing Institutions and options, Selvaraju et al., 2006
94. See Internal migration and the development nexus: the case of Bangladesh, Afsar, 2003 for a detailed discussion of the issue. The exception to this rule appear to be 'permanent' female migrants, more of whom move from rural to rural areas, reflecting high rates of marital migration and intra-district marriage.
95. Moral, J.B. & Rainis, R., 2008, 'The Nexus between Urban Poverty and Local Environmental Degradation of Rajshahi City', Conference Proceedings, STSS2008 Conference, Pahang: UiTM.
96. See p36-37 Expert Seminar: Migration and the Environment, IOM, 2008

ANALYSIS

Short-term displacement following sudden-onset events in Bangladesh does raise significant environmental and public health concerns, particularly where people cannot return to their homes and villages for protracted periods. However, there is no evidence that temporary or seasonal rural to rural migration from environmentally vulnerable regions has any major impacts on environmental degradation in places of destination. The possible exception to this is more permanent in-migration to areas of new land along rivers or in coastal zones. However, while there is insufficient evidence to draw any firm conclusions, it seems quite likely that the impacts of migrants in these areas is largely 'positive' in the sense that they take action to speed up the process of converting new sediment deposits into agriculturally productive land.

Where there is reason for greater concern is in regard to rural-urban migration, where migrants escaping environmental degradation in their rural homes face new environmental risks in cities that only add to their existing vulnerability. Given the continued growth of Bangladesh's cities and their slum populations, improved urban environmental management is therefore clearly of critical importance. However, the migration to urban centres of people from areas of environmental sensitivity is only one dimension of a set of broader trends relating to the growth of urban centres in Bangladesh, and the environmental consequences of urbanization cannot be approached in isolation from other important dynamics – both positive and negative. The next sub-section therefore explores this issue in greater detail.

b) Urbanization

Urbanization is both a cause and consequence of economic growth. As nations develop economically, their urban areas grow in size and economic importance, and we live in a world which is becoming increasingly urban. While Bangladesh remains predominantly agrarian in nature, the country is changing fast. The overall urban population growth rate is 2.5per cent, significantly higher than the 1.4per cent growth rate of the population as a whole, and Bangladesh's cities are projected to reach 51 million by 2015, or 32per cent of the population[97]. The contribution of towns and cities to national GDP has also been increasing rapidly, rising from 26per cent in 1972 to more than 50per cent by 2005. Importantly, while the garment industry and other export-orientated sectors have contributed significantly to this growth, it is the informal sector – from domestic workers to micro-entrepreneurs - who account for more than 70per cent of the urban workforce[98].

EXISTING EVIDENCE

Anecdotal and media reports suggest that many migrants from environmentally vulnerable regions of Bangladesh end up in the country's urban slums (or *bastees*), particularly those of Dhaka. Certainly the city has been absorbing migrants at a very fast pace over the last few decades and now houses around 13 million people, with an annual growth rate of 4per cent[99]. The Centre for Urban Studies' (CUS) 2005 slum survey found that, unlike other divisional capitals ('sadars') in the country, whose slum dwellers were primarily from districts adjoining them, Dhaka attracted significant migration from nearly 28 districts (out of 64 in total)[100]. Of these, more than 50per cent were from only five districts: Barisal (22.7per cent), Faridpur (9.2per cent), Comilla (9.1per cent), Mymensingh (7.3per cent) and Rangpur (4.6per cent). However, while most of these districts are in areas prone to

97. Bangladesh Bureau of Statistics, 2005, cited by Urban Governance and Infrastructure Improvement Sector Project (2008). For further discussion of issues raised in this section, see also Bridging the Urban Divide in Bangladesh, Local Consultative Group, 2010
98. Maligalig, D., Cuevas, S. & Rosario, A., 2009, Informal Employment in Bangladesh, ADB Economics Working Paper.
99. UN-Habitat, State of the World's Cities 2008-2009
100. Islam et al. (2006) Slums of Urban Bangladesh: Mapping and Census 2005, Dhaka: Centre for Urban Studies.

natural disasters such as floods and cyclones as well as river erosion and drought – Barisal for instance is highly vulnerable to floods, cyclones and river erosion - the data from the survey is not detailed enough to identify the role played by environmental factors in driving migration from these areas.

Further, it is important to note that Dhaka represents only 40per cent of the urban population in Bangladesh, with the remaining 60per cent divided roughly evenly between the other five divisional capitals and the country's 309 secondary cities' or 'Pourashavas' (representing about 31per cent of the urban population)[101]. CUS's survey found significant slum populations in all of the five divisional capitals other than Dhaka, with 35.4per cent of the population in Chittagong and 19.5per cent, 32per cent, 27.4per cent and 30.1per cent of the population in Khulna, Rajshahi, Sylhet and Barisal respectively, representing more than 2 million slum dwellers in total.

While there is a tendency to conceptualize slum dwellers as a problem population, the reality is far more complex given that, as mentioned above, almost 70per cent of the workforce is in the informal sector and the economy of Bangladesh's cities is highly dependent upon its poorer residents. Given the centrality of urbanization and the urban economy to growth in Bangladesh – not only in terms of the divisional capitals, but also more localized urban-rural linkages – there are therefore direct and positive connections between the migration dynamics outlined above and economic development and poverty reduction in Bangladesh[102]. Further, household income from agriculture declined in rural areas from 59per cent to 44per cent between 1987/1988 and 1990/2000, while income from trade, services and remittances increased from 35per cent to 49per cent (with remittances increasing from 7.3per cent to 12.8per cent), suggesting that not only have rural households been migrating to cities as a livelihood strategy, but urban migration is significantly contributing to diversifying rural incomes and livelihoods[103].

ANALYSIS

The trends outlined above suggest that, in terms of migration and its complex relationship with environmental factors – both human and natural, present and projected, short term and long term – one important dimension of strengthening adaptive capacity is the need for adopting and supporting a more creative approach to human mobility, in which migration is perceived not only in terms of a failure to adapt, but also as a legitimate adaptation strategy in itself. Further, the reliance of Bangladesh's fast-growing urban economy on rural-urban migrants – including people from regions of environmental vulnerability – points to the need to support poor slum dwellers as the 'engine of the economy' rather than seeking to evict them, as well as the importance of sustainable urban policy and planning which facilitates the integration of migrants[104].

c) Human security

The concept of 'human security' encompasses a wider range of issues than traditional notions of 'security' which concentrate on the protection of the state and its borders. Shifting the focus onto the protection of individuals from a broad spectrum of threats, human security includes safety from hunger, disease and repression as well as crime, violence and sudden or harmful disruptions in people's daily lives[105].

101. City Cluster Economic Development, ADB, 2009

102. Bangladesh: Internal migration and pro-poor policy, Afsar, R. in Migration, Development and Poverty Reduction in Asia, IOM, 2005

103. Hossain, M., I. Bose, M.L., Chowdhury, A. and Dick, R.M. (2002) Changes in Agrarian Relations and Livelihoods in Rural Bangladesh. In: Ramachandran, V.K. and Swaminathan, M. eds. Agrarian Studies: Essays on Agrarian Relations in Less-Developed Countries, Proceedings of the international conference 'Agrarian Relations and Rural Development in Less Developed Countries', January 3-6, Kolkata. New Delhi: Tulika Books cited in Afsar, 2003

104. See Bangladesh: Internal migration and pro-poor policy, Afsar, R. in Migration, Development and Poverty Reduction in Asia, IOM, 2005 and Bridging the Urban Divide in Bangladesh, Local Consultative Group, 2010

105. The Human Security Framework and National Human Development Report, NHDR Occasional Paper 5, UNDP, 2006

While there is no single accepted definition of the term, the UN Secretary General noted in his report on human security[106] that:

> *"Common to all the definitions are three essential components that encompass the principles of human security and help further explore the added value of the concept. First, human security is in response to current and emerging threats — threats that are multiple, complex and interrelated and can acquire transnational dimensions. Second, human security calls for an expanded understanding of security where the protection and empowerment of people form the basis and the purpose of security. Third, human security does not entail the use of force against the sovereignty of States and aims to integrate the goals of freedom from fear, freedom from want and freedom to live in dignity through people-centred, comprehensive, context-specific and preventive strategies."*

IOM believes that it is important to recognize migration management, including in the context of crisis, as one element of a holistic approach to addressing the human security implications of environmental events and processes, including the consequences of climate change. Further, it is important to recognize that while environmental migration can be a manifestation of human insecurity (especially in relation to forced migration) or even one of the causes of such insecurity (for example in cases of trafficking or irregular migration), it also represents a means for individuals and groups to escape a dangerous situation or increase the resilience of vulnerable groups and households (particularly where it is a planned adaptation strategy).

EXISTING EVIDENCE

Clearly, the impacts of climate change and its migratory consequences – forced or voluntary, temporary or permanent, urban or rural – raise a number of significant human security concerns in Bangladesh. Both during and after sudden events such as floods or cyclones, people are especially vulnerable. Women may be particularly at risk, with many waiting at home to accompany relatives to safety or reluctant to leave their possessions and assets until the last moment thus putting their lives in danger[107]. For example, during the cyclone and flood disasters of 1991, the death rate for women aged 20-44 was 71 per 1,000 compared to 15 per 100 for men[108]. Women also face particular danger of physical and sexual harassment, are usually responsible for collecting water, and more exposed to health risks from poor sanitation.

If people are displaced for significant periods with severely undermined livelihoods, not only is their food security and health threatened, they may become more vulnerable to various forms of exploitation. Where people cannot return to their land even after an event – especially in the case of loss of land due to erosion – they risk being entrapped into harmful or exploitative relationships with landowners. This is a particular risk for families affected by land erosion where, despite recent evidence for existence of community coping mechanisms which mean conflict and exploitation is not inevitable, entrapment into various forms of 'patron-client' relationship is clearly a risk for the most vulnerable[109]. Trafficking is an additional concern, particularly in the protracted aftermath of environmental disasters which exacerbate existing vulnerabilities and may heighten the risks faced by certain

106. Human Security: Report of the Secretary-General, United Nations, 2010

107. Gender, Human Security and Climate Change in Bangladesh, Alam et al., 2008

108. Mainstreaming Gender in Environmental Assessment and Early Warning, UNEP, 2005, quoted in Alam et al. 2008

109. See Coping with Riverbank Erosion Hazard and Displacement in Bangladesh: Survival Strategies and Adjustments, Haque & Zaman, 1989 but also discussion in The poorest and most vulnerable? On hazards, livelihood and labelling of riverine communities in Bangladesh, Lein, 2009

groups, especially children and young women[110]. Further, where male members of households have migrated for temporary or seasonal work, this may cause problems for the remaining household members who stay behind[111].

Human security concerns are also a significant issue at migrants' places of destination. Seasonal workers moving between rural destinations may be vulnerable to exploitation by landowners as well as other threats to their livelihoods and physical well-being; while for those who move to urban destinations, there is a range of major concerns including exposure to environmental or health risks (both at home and at work) and crime. For example, evidence suggests that long working hours and poor working conditions mean that garment work is not a sustainable long-term livelihood option for poor women[112], while similar factors mean that the initial economic returns for rickshaw pullers diminish significantly over time[113]. A recent study in four Dhaka slums also found that levels of violence are serious and perceived to be increasing, with 93per cent of respondents having been affected by a crime of some sort in the previous 12 months[114]. 'Mastaans' (criminal musclemen) are a particular concern as they control property rents and many basic services in Bangladesh's slums. Gender-based violence is also endemic, with 62per cent of women in slums reporting having been physically abused by their husbands in the 2006 Bangladesh Urban Health Survey.

While the emphasis above is on internal migrants, there are also specific human security concerns for migrants who cross international borders. However, given that international migration from Bangladesh is itself a complex and dynamic phenomena, with at least three broad categories of migration – regional/cross-border, labour and more permanent forms of migration – these will be considered separately in the following subsection.

Finally, despite the gravity of the human security concerns outlined above, it is important to reiterate that, as the evidence presented in previous sections amply demonstrates, migration in environmentally vulnerable regions of Bangladesh also represents an important strategy for addressing insecurity. Not only is it a means of escaping immediate danger, but it makes an important contribution to strengthening the resilience of many individuals, households and communities in the face of a range of environmental threats[115]. Indeed, the most vulnerable people are often those who are unable to migrate because of the costs involved (financial and otherwise).

ANALYSIS

Exploring human security concerns in relation to migration and the environment in Bangladesh highlights a wide variety of issues that suggest a combination of measures is needed, including reduction of underlying vulnerabilities, risk reduction and adaptation measures in communities of destination and origin in the country's environmentally vulnerable regions (including its cities), as well as better planning for and management of environmental migration to ensure adequate assistance and protection of the affected individuals and communities. Over the longer term, migration management also needs to be part of a holistic approach to addressing the human security implications of climate change, including adequate recognition and support for the positive dimensions of migration as a planned adaptation strategy. Given the lack of existing data on migration from and to these regions it is difficult to draw firm evidence-based conclusions at this stage, but what is clear is that a human security dimension is essential in future policy and planning in relation to environmental vulnerability and its migration effects in Bangladesh.

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110. For example, there were reports of increased trafficking of Honduran women and girls following Hurricane Mitch in 1998. In contrast, while there was heightened awareness of the risk of trafficking following the Asian Tsunami, there is no evidence that this threat materialized, perhaps due to swift preventative measures put in place by government and agencies. See IOM Migration Research Series No.30, Migration, Development and Natural Disasters: Insights from the Indian Ocean Tsunami, Naik et al., 2007 for further discussion.
111. Bangladesh: Internal migration and pro-poor policy, Afsar, R. in Migration, Development and Poverty Reduction in Asia, IOM, 2005
112. The poverty impacts of female employment, Kabeer, 2003
113. Unsustainable Livelihoods: Health shocks and urban chronic poverty: Rickshaw pullers as a case study, Begum & Sen, 2004
114. Bangladesh – Dhaka: Improving living conditions for the Urban Poor, World Bank, 2007
115. See, for example, Bangladesh: Internal migration and pro-poor policy, Afsar, R. in Migration, Development and Poverty Reduction in Asia, IOM, 2005

d) International migration

The evidence presented above has focused almost entirely on internal migration in relation to environmental vulnerability and the predicted effects of climate change. While it is not possible to provide exact figures, what evidence does exist suggests that – in line with international trends - the overwhelming majority of migration in which environmental factors play a role at present is internal rather than external. This certainly applies to sudden-onset events, where all the data presented above suggests that initial displacement is primarily local and short term in nature and there is no evidence for mass migration across borders (where irregular migrants would be likely to face considerable difficulty in accessing post-disaster humanitarian support). Longer term impacts of events of this nature and the effects of gradual environmental change and degradation in border regions, are more complex and less predictable, but the considerable resources needed for long-distance and international migration – including access to finance, but also information, social networks, skills, etc. – imply that those most vulnerable to environmental disasters and degradation would also be least able to undertake journeys of this sort. For example, in the study on the migration effects of floods cited earlier, only 5per cent of households with a migrant had a family member overseas and these were all from the richest quartile in the village[116].

However, Bangladesh is also a major labour sending country, and concerns regarding the effects of environmental factors and climate change on overseas migration are becoming increasingly visible within the academic and policy literature. Further, some of the regions of greatest environmental vulnerability – such as the South-West and North-East - lie along the border region with India. What follows therefore examines the existing evidence on environment, climate change and international migration in Bangladesh, with a broad distinction made between regional migration (primarily to India), labour migration (to the Gulf States and other major destinations), and other forms of more permanent overseas migration (for example to the UK, Europe or the US).

EXISTING EVIDENCE

Regional migration

South-south migration accounts for around half of all outward migration from South Asia and is predominantly intraregional, with approximately three times more south-south migrants moving to other South Asian countries than outside of the region[117]. Intra-regional migration in South Asia is complex and multidirectional, although for historical, economic and geographical reasons various 'migration corridors' exist within the region along which a greater number of migrants travel[118].

Globally around 80per cent of south-south migration occurs between countries with contiguous borders[119]. Bangladesh's border with India stretches more than 4,000 km and brings it into contact with five different Indian states. During the partition of India in 1947, millions of people crossed in both directions and, subsequently, the War of Independence with Pakistan in 1971 also saw more movements. Since Independence, people have continued to cross the border in both directions and for a variety of reasons, mostly economic. Figures for regional and cross-border migration vary significantly and the issue receives considerable policy and media attention in the region.

Increasingly commentators both in the region and internationally are emphasising the role of environmental change and degradation in people's migration decision making processes[120]. The economic impacts of perceived

116. Coping with floods: does rural-urban migration play any role for survival in rural Bangladesh?, Rayan & Grote, 2007
117. South-South Migration and Remittances, Ratha & Shaw, World Bank, 2007
118. Migration and Remittances Factbook 2008, World Bank
119. Demographics and Climate Change: Future trends and their policy implications for migration, Black et al., 2008
120. See for example, Climate change induced migration and its security implications for India's neighbourhood, TERI, 2009; Climate change-induced migration and violent conflict, Reuveny, 2007; Climate Change, Mass Migration and the Military Response, Smith, 2007

'environmental migrants' receive some attention within this literature, but the focus of these debates – especially where it relates to the long-term impacts of climate change - is frequently on issues of national security[121]. However, despite the considerable visibility of the issue within regional and international policy and media discourse, it is important to emphasize that reliable data on the number and characteristics of Bangladeshi migrants in India and other countries in the region is not available, nor is it for Indian and other regional migrants in Bangladesh, and existing figures are based on very little empirical evidence[122]. Further, most analyses make very little distinction between regular and irregular migrants or short-term (even daily) movements for trade or as labour and longer-term, more permanent migration. This lack of evidence is even more pronounced regarding the role of environmental factors in regional and cross-border migration. Thus, given that available evidence shows that a simple linear relationship between climate-related events (sudden or slow onset) and international migration does not exist[123], the growing visibility of 'environmental migrants' within the policy and media discourse does not necessarily reflect the reality of cross-border movements between the two countries.

Obviously, social and family networks and cultural, linguistic, and religious affinities between the populations of Bangladesh and West Bengal, allied to opportunities in both countries' fast-growing economies, mean that some cross-border migration – regular and irregular, short, medium and long-term - is inevitable in both directions. Indeed, there is evidence that in the border regions of North-East India, cross-border traffic plays a major role in the local economy, with many Indian traders and day-labourers crossing into Bangladesh on a frequent basis and the balance of trade significantly in India's favour[124]. Bangladeshis work as labourers in the border regions, but also penetrate further into India, to Kolkata and beyond. Within this complex and dynamic landscape, discussions on the connections between migration decisions and environmental factors are too often based on simplistic assumptions of a causal relationship between the two. As noted above, this seems implausible in relation to the short term effects of sudden-onset events, where people generally move locally and temporarily. Even for those communities living in the immediate border zone, the difficulties irregular migrants are likely to face in accessing post-disaster humanitarian support make it unlikely that many people would choose to cross the border in the immediate aftermath of an event. On the other hand, the longer term impacts of events of this nature - for example, where people are unable to return to their homes because of damage to embankments - and the effects of gradual environmental change and degradation can be expected to contribute to existing cross-border and regional migration dynamics[125]. This is likely to be particularly important in the environmentally vulnerable South-West and North-West, where it is also reasonable to assume that climate change will further exacerbate the situation in the coming decades.

However, as noted above, given the complexity of people's livelihoods strategies and migration decisions, even in these instances it is unlikely that a direct causal relationship between environmental change and migration will be identified in most cases. Further, given the scarcity of good data on existing dynamics, it is not possible at this stage to make convincing projections of the scale of future regional and longer distance migration, nor the significance of environmental factors and climate change in contributing to these trends. This has important implications for the current discourse on regional and cross-border migration and environmental change in Bangladesh, both regionally and internationally, because it brings into question the direct connections between 'environmental migrants' and national security frequently asserted by many commentators and highlights the need for a more evidence-based approach to this issue. In the immediate border region, more research is therefore needed into existing migration dynamics, both from and to India, as well as the effects of environmental conditions on both sides of the border (given the similarity between the border region of West Bengal and

121. Indifference, impotence, and intolerance: transnational Bangladeshis in India, Ramachandran, 2005

122. Ibid.

123. See for example, discussion p16 – p18 Demographics and Climate Change: Future trends and their policy implications for migration, Black et al., 2008

124. Indifference, impotence, and intolerance: transnational Bangladeshis in India, Ramachandran, 2005

125. Demographics and Climate Change: Future trends and their policy implications for migration, Black et al. 2008

Bangladesh) on migration decisions[126]. Further, more research into longer-distance and longer-term regional migration from environmentally vulnerable areas of Bangladesh is also of considerable importance, including to India as well as other regional destinations for Bangladeshi migrants.

International labour migration

In comparison with intra-regional migration, the data on long-distance international labour migration is much more reliable. About 5.5 million Bangladeshis live and work overseas, with the Gulf States (in particular Saudi Arabia and the UAE) and Malaysia being the main destinations[127]. In 2009 alone, 475,000 Bangladeshi workers departed in a regular manner, and $10.7 billion was received as remittance[128]. While the majority of these migrants are less- or semi-skilled and on temporary contracts with limited scope for career development or integration, the potential benefits of migration still extend well beyond financial remittances to include new knowledge, skills and business or social networks. Various government and donor or agency initiatives have sought to strengthen these benefits and reduce the risks, and labour migration is an important dimension of Bangladesh's plans for long-term economic growth[129].

In the Climate Change Strategy and Action Plan, an explicit link is made between displacement and migration as a result of climate change and overseas labour migration. However, as noted above, international migration requires access to considerable resources – including finance, information, networks and other resources – and this suggests that those most vulnerable to environmental disasters and degradation would also be least able to undertake journeys of this sort. This is supported by the study on floods discussed earlier which found that where people do migrate internationally from environmentally vulnerable regions, they are likely to be from the richest segment of the population not the marginal or landless labourers most exposed to environmental risks[130]. Indeed there is no evidence at present of any concrete link between environmental degradation or change in Bangladesh and long-distance international labour migration[131].

International evidence is also inconclusive on this issue. For example, there is some evidence of cross-border migration from drought-affected communities, but studies from the Sahel, for example, suggest that long-distance international migration is reduced in the immediate aftermath of major environmental events where resources are at their most stretched[132]. Nonetheless, given that the evidence from Bangladesh presented above suggests that considerable out-migration can be expected from regions of environmental vulnerability, if the current emphasis on environment and climate change focuses attention on these regions, there is no reason why skills development and other policies and programmes to support people to engage in labour migration could not be concentrated in precisely these districts and regions. It must be emphasized, however, that this would be a long-term project with only marginal impacts on overall migration flows, at least initially.

126. Ibid.

127. Bangladesh Economic Review 2008

128. Data from Bureau of Manpower, Employment and Training website: www.bmet.org.bd [Accessed 10 May 2010]

129. Revised Draft, Second National Strategy for Accelerated Poverty Reduction, GoB, 2009

130. Coping with floods: does rural-urban migration play any role for survival in rural Bangladesh?, Rayhan & Grote, 2007

131. Demographics and Climate Change: Future trends and their policy implications for migration, Black et al. 2008

132. Migration and slow-onset disasters: desertification and drought, Leighton, in Migration, Environment and Climate Change: Assessing the evidence, IOM, 2009

Skilled international migration

In contrast to the destinations for low- or semi-skilled labour migrants, long-term, permanent or skilled migrants are more likely to emigrate to Europe - in particular the UK - and the United States, with around half a million Bangladeshis in both Britain and the US[133]. However, to an even greater extent than international labour migration, these forms of movement follow pre-existing patterns and require considerable resources and family or social networks, and there is no evidence that environmental factors play any significant role within these movements[134]. Nonetheless, there is no reason that long-term skills development could not prepare some people from environmentally vulnerable regions to migrate as skilled workers to various international destinations. But given the ever more stringent requirements for skilled workers in many countries of destination, this would certainly be a long-term undertaking and there would be considerable difficulties in ensuring that the benefits of such an approach were genuinely targeted at environmentally vulnerable households and communities.

ANALYSIS

In line with international trends, the overwhelming majority of migration in which environmental factors play a role in Bangladesh is internal rather than cross-border. Nonetheless, the possible causal impact of environmental degradation and change on regional migration will be an issue that will increasingly feature in policy discourse in South Asia, and there is an urgent need for further research on this topic in order to draw more informed conclusions on existing and projected trends and dynamics, and to develop evidence-based policy interventions. The connections between longer-distance and more permanent forms of international migration are far less clear. Indeed, what is striking given the visibility of this issue in global debates is the absence of any convincing evidence at present which links the two processes. Population growth, relative poverty and economic and other opportunities that flow from international migration will continue to make it an attractive option for many, but in the medium term at least it is important to ensure that 'alarmist' notions of 'waves of environmental migrants' – and the resulting securitization of the debate on climate change and its impacts - are challenged[135]. However, while it is possible to state with some confidence that environmental factors do not play a significant role in overseas migration at present, it is important to note that this does not preclude the option for innovative long-term policies to support potential migrants from environmentally vulnerable regions to the benefits of themselves, their families and their communities. Further, given that in the long-term climate change is likely to exacerbate many of these environmental vulnerabilities and place greater strains on already poor regions of Bangladesh, mainstreaming migration policies into adaptation strategies seems entirely justifiable.

133. Ibid.

134. Ibid.

135. Ibid.

Toolkit for Policymakers

Based on the available evidence on environment, climate change and migration in Bangladesh reviewed in this report, it is possible to identify some potential policy tools and approaches which can form the starting point for discussions on this increasingly important issue. Following a brief overview of the existing policy framework, a range of policy suggestions and ideas are therefore presented in this section. These are broadly divided between policies and programmes which aim to minimize forced migration and protect the displaced, and those that seek to support migration as adaptation. It should be emphasized that these are preliminary in nature and should be viewed as an initial contribution to what will hopefully be an ongoing and constructive policy discussion over the coming years and decades. Further, they should be viewed in conjunction with the findings from the policy dialogue presented in Section Two. Finally, given the limited empirical data available on many issues, an additional section has been included in which potential research priorities are identified.

i) Existing policy framework

Migration

In 1976, the Bureau of Manpower, Employment and Training (BMET) was created to process labour migration. This was followed by the passing of the Emigration Ordinance in 1982 to regulate the recruitment and placement of migrant workers from Bangladesh. Since then BMET has been working as the implementing agency of the Ordinance and is currently responsible for a wide range of functions including: control and regulation of recruiting agents; collection and analysis of labour market information; registration of job seekers for local and foreign employment; development and implementation of training programmes in response to specific labour needs both in the national and international labour market; development of apprentice and in-plant programmes within existing industries; organizing pre-departure briefing sessions; and resolving legal disputes.

In 2001 a separate ministry named the Ministry of Expatriates' Welfare and Overseas Employment was established under which BMET now operates and whose functions include the creation and implementation of legislation regarding migrant workers as well as the regulation of labour recruitment institutions. The Ministry also oversees the Wage Earners Welfare Fund which was established in 1990. In 2002, the government framed an additional three rules under the 1982 Ordinance - the Emigration Rules, the Rules for Conduct and Licensing Recruiting Agencies and the Rules for Wage Earner's Welfare Fund, and in 2006 the Overseas Employment Policy was issued in recognition of the contribution made by migration to development and the need to strengthen the sector.

The remit of BMET and the Ministry of Expatriates' Welfare and Overseas Employment is to enforce regulation regarding overseas migrants, and neither institution has functions related to internal migration. Neither they, nor the existing regulatory and policy framework, make any reference to environmental migration.

Poverty reduction[136]

Bangladesh's overall development strategy is set out in the revised second National Strategy for Accelerated Poverty Reduction FY2009-2011 (NSAPR-II) as well as the forthcoming five-year development plan (2011-2016) and Vision 2021. The strategy places poverty reduction at the centre of national policy – including the achievement of the Millennium Development Goals - and, importantly, migration issues are given significant consideration within the document, including in a specific section on 'foreign employment' in which a number of long-term strategies for expanding access to overseas labour markets are set out. Caring for the environment and tackling climate change is one of the NSAPR-II's five key "supporting strategies" and environmental concerns are also reflected in the strategic goals on international migration, which include "undertaking [a] special initiative for exporting workers from Monga and other ecologically vulnerable areas"[137]. The strategy also considers the challenges of urbanization and the urban environment, although it does not identify rural-urban migrants as a specific vulnerable group.

Environment

In terms of guiding strategies on the environment, among the key documents are the National Environmental Management Action Plan (1996), the more recent National Capacity Self-Assessment (NCSA) for Global Environmental Management (2007) and sector specific environmental policies such as the National Water Policy (1999) and the Guidelines for Participatory Water Management. All of these documents are understandably focused on meeting Bangladesh's current environmental challenges and make few specific references to the migration effects of environmental change and degradation (although the NSCA refers to the problems of displacement by river bank erosion, rural-urban migration and the potential for out-migration from coastal zones). In contrast, policies on disaster management such as the Draft National Plan for Disaster Management (2008) do make reference to displacement and specific vulnerabilities related to migration, such as problems facing families left behind when men out-migrate following an event. However, once again, longer-term migration patterns in disaster-prone regions are not considered in any detail.

Climate change

Regarding climate change, the two key documents are the National Adaptation Plan of Action (2005) and the Climate Change Strategy and Action Plan (2009). While the NAPA provides an important overview of the main threats facing Bangladesh and outlines a range of adaptation strategies, its only references to migration are as a negative 'livelihood impact' of environmental threats (specifically saline intrusion and floods, which are linked to a potential increase in urban migration). In contrast, the BCCSAP makes numerous references to the potential migration impacts of climate change, including the need to strengthen coastal polders to prevent coastal out-migration and the potential for river bank erosion and saline intrusion to displace large numbers of people. Importantly, the Strategy does not only identify threats, it also calls for more "monitoring of internal and external

136. For temporary/circular labour migration programmes that aim to benefit environmentally vulnerable populations, cooperation at bilateral/regional level is essential. Best practice examples include the Colombian Temporary and Circular Labour Migration (TCLM) programme - see case study in the policy toolkit section. For further information and other examples, see A Sample of IOM's Activities in Migration, Climate Change and Environmental Degradation, 2009, IOM

137. For temporary/circular labour migration programmes that aim to benefit environmentally vulnerable populations, cooperation at bilateral/regional level is essential. Best practice examples include the Colombian Temporary and Circular Labour Migration (TCLM) programme, an innovative model of temporary and circular labour migration between Colombia and Spain which offers a livelihood alternative to permanent migration through temporary work abroad for families confronted with natural disasters, enabling affected zones to recuperate. The programme also supports migrants and their families in maximizing the impact of remittances on the recovery of the affected area. For further information and other examples, see A Sample of IOM's Activities in Migration, Climate Change and Environmental Degradation, 2009, IOM

migration of adversely impacted population" and, crucially, "support to them through capacity building for their rehabilitation in new environment". A specific programme on migration is set out with three key elements:

> *"- Development of a monitoring mechanism of internal and external migration*
> *- Development of a protocol to provide adequate support for their re-settlement and rehabilitation*
> *- Building of capacity through education and training to facilitate their re-settlement in new environment"*[138]

However, despite these encouraging signs within more recent policy on climate change, it is fair to say that at present migration issues are not effectively mainstreamed with environmental, disaster management, or climate change policy. Further, where migration is referenced, the tendency to concentrate on its negative dimensions – such as forced displacement or migration as a 'failure of adaptation' – is a barrier to introducing more proactive policy measure that maximize the benefits of migration from and between environmentally vulnerable regions. In the next section therefore, a range of potential policy options and priorities are identified that could contribute to better integrating the full spectrum of migration issues and concerns into overall environmental and developmental policy and vice-versa within Bangladesh.

While many of the issues raised may have considerable implications for Government policies and programmes, it is important to note that truly effective action will require the active involvement of all stakeholders – local as well as national government, communities themselves, civil society organizations and NGOs, the private sector and the country's development partners. As such, where policy options are discussed below, attempts are made to identify appropriate roles for different stakeholders.

ii) Policy options and research priorities – some initial suggestions

The following suggested policy options have been divided into two broad categories: 1) minimizing forced migration and protecting the displaced (the focus of most current policy in this area); and 2) supporting migration as adaptation (which will require a more positive approach that seeks to maximize the benefits of human mobility in regions of environmental vulnerability). These options should be read in conjunction with the findings of the policy dialogue presented in Section Two and, once again, it is important to emphasize the preliminary nature of these proposals and the need for further research to inform policy making in this area. The section therefore concludes with some observations on research priorities regarding the environment, climate change and migration nexus in Bangladesh.

Minimizing forced migration and protecting the displaced

The following measures are essential if forced migration is to be minimized and – where displacement does occur – the necessary assistance and protection are provided to those affected. While government (both national and local) has a crucial role to play, the involvement of other stakeholders such as NGOs, civil society and development partners is also critical. Perhaps most importantly, communities themselves must be actively involved in the

138. It is important to note that while the BCCSAP only uses the term 're-settlement' (which is generally considered to refer to the reinstallation of people to a third country), relocation (which usually refers to reinstallation within the same country) should also be given due consideration in most situations. In either case, the concerned populations should be fully involved in the design of such a strategy from the outside to avoid/minimize negative impacts.

planning and implementation of developmental and humanitarian programmes if they are to be effective and sustainable in the long-term.

- Continued investment into sustainable development and vulnerability reduction in environmentally vulnerable regions, including infrastructure, basic services (education, health etc.), awareness raising campaigns, livelihood strengthening and better management of existing environmental migration (see below for further details).

- Continued investment into Disaster Risk Reduction (DRR) in disaster prone regions, including areas vulnerable to cyclones and storm surges, floods, river and coastal erosion and droughts. This is even more important in areas experiencing recurring disasters or a combination of extreme events and gradual environmental degradation, which generate cumulative vulnerabilities.

- Stronger synergies between the humanitarian system (including emergency response and disaster risk reduction) and the development system and integrating environmental and long-term climate change considerations into both (including agricultural adaptation, participatory water resource management, support for voluntary migration and other measures to prepare for and cope with the consequences of climate variability and change).

- Mainstreaming of migration into adaptation strategies, for example through protection for vulnerable individuals in affected communities (e.g. measures to reduce trafficking) or consideration of the needs of seasonal in-migrants (e.g. extra capacity in cyclone shelters for areas with major migration during harvest periods).

- Development of specific policies on river and coastal erosion, including the feasibility of assistance and protection measures for those affected, contingency planning for relocation of communities threatened by coastal erosion, allocation of unused government-owned 'khas' land and/or newly accreted land in coastal areas to displaced households and improved regulatory mechanisms for resolving land disputes.

- Introduction of contingency plans and funds for immediate repair of breached embankments that do not rely on standard funding and tendering processes (including a potential role for the army in addition to civil protection entities where/if needed).

Supporting migration as adaptation – internal and international migrants

While the focus of the policy options above is primarily on risk reduction and mitigation in areas of origin, the following set of measures are intended to support migration as a positive adaptation strategy. Once again, government has a key role to play alongside donors, NGOs and civil society groups.

- Support for individuals and households from environmentally vulnerable regions who choose to migrate, including at early stages of environmental degradation (e.g. through the provision of information, strengthening of remittance channels and reduction of the costs for transactions, protection against human security risks and longer-term skills development in environmentally vulnerable areas).

- Facilitate the role of migration as an adaptation strategy to climate change. For instance, develop temporary and circular labour migration schemes for environmentally vulnerable communities (such as the programme for people from monga-affected regions outlined in the NSAPR-II) and strengthen the developmental benefits of such migration for areas of origin.

- Improved preparation and planning in major areas of destination for migrants from environmentally vulnerable regions, including better urban management that takes account of rural-urban migration and increased investment into sustainable development (e.g. infrastructure, basic services (education, health etc.) and livelihood strengthening) to the benefit of host communities as well as migrants.

- Promotion of de-concentrated urban economic development with a focus on secondary cities and towns in regions of environmental vulnerability.

- Long-term skills development for internal and international migrants in environmentally vulnerable regions[139], including by promoting skills circulation and transfer among migrants and local communities in areas where migration is already taking place.

- Assistance to networks among the Bangladeshi diaspora to help them provide relevant support to communities of origin in environmentally vulnerable regions (both through financial and social remittances etc.).

Research priorities

For the measures outlined above to be effective, much more research is needed into migration dynamics in regions of environmental vulnerability in Bangladesh as well as comparative work on other regions facing similar environmental, developmental and migration challenges. Government can contribute to this process – for example, through operationalising the migration 'monitoring mechanism' described above and supporting and funding the research efforts mentioned below - but academics, research institutions and international agencies will also have a vital role to play in undertaking policy-oriented research in this area. Key priorities include:

- In-depth analysis and mapping of current policy and programmatic responses to environment, migration and development to capture information on existing policies and programmes, ranging from prevention and adaptation to resettlement. Outcomes of such research would include the scope for adding either environmental or migration aspects within existing policies and the identification of programming and policy gaps.

- Further research on short and long-term migration patterns in environmentally vulnerable regions both during and after sudden-onset events and as a result of gradual environmental change.

- Further research on areas of destination for migrants from environmentally vulnerable regions including rural areas with significant seasonal in-migration, newly accreted coastal land and urban areas (both divisional capitals and regional 'secondary cities').

- Further research into the needs of those who are not able to migrate as they may be the most vulnerable and in need of specific types of interventions in the community.

- Specific research on both regional and longer-distance international migration from environmentally vulnerable regions.

- Development of improved methodologies for integrating long-term projections of demographic, economic and environmental change (climate change induced or otherwise) with human mobility impacts.

- Establishment of a 'migration observatory' – either by government or other stakeholders — to optimize the benefits of migration for sustainable development[140]. This could be integrated with the 'monitoring mechanism' for migration described in the Bangladesh Climate Change Strategy and Action Plan.

139. For example, see the Statement by the President of the Republic of Kiribati to the UN General Assembly, September 2009, regarding the Kiribati Australia Nursing Initiative and the Australia Pacific Technical College.

140. For example, see the African, Caribbean and Pacific Group of States (ACP) Migration Facility: http://acpmigration.org

Case Studies

IOM Activities in Environment, Climate Change and Migration

1. Temporary and Circular Migration Scheme for Environmentally-vulnerable Populations – Colombia

Many areas of Colombia are subject to severe environmental risks mostly as a result of human activity but predicted to be aggravated by climate change related alteration of rainfall patterns. Colombia's environmental problems are exacerbated by a high poverty rate as well as a range of conflict and crime-related challenges. A combination of these factors contributes to the high proportion of internal migrants (the country has the second largest number of internally displaced people after Sudan) and significant rates of international migration.

Recognizing the potential of migration for development and adaptation, Colombia began putting into practice innovative models of temporary and circular labour migration between Colombia and Spain. The Colombian Temporary and Circular Labour Migration (TCLM) programme offers a livelihood alternative through temporary work abroad to families confronted with natural disasters while also allowing affected zones to recuperate. The programme also supports migrants and their families in maximizing the impact of remittances on the recovery of the affected area through public and private co-funding and international cooperation and takes into account the needs of the most marginalized populations among rural communities. For instance, in 2007, 162 women received training in leadership and local development to bolster their capacity as potential agents of development.

TCLM can serve as a concrete illustration of how migration can be used as an adaptation strategy for vulnerable populations and contribute to sustainable development as it enables local populations to increase their resilience to environmental challenges and offers them an alternative to permanent migration, whether to urban slums or abroad. IOM is providing support to expand the TCLM plan to include a much larger number of migrants and increase the number and diversity of employers in Spain. The project will also address the lack of public policies, information, affordable credit and other services in Colombia that hinder returned labour migrants from making use of their acquired skills, knowledge and income to promote development in their communities.

2. Connecting Emergency Response and Community Development Programmes - Philippines

The Bicol region is one of the most vulnerable regions in the Philippines, with the fourth-highest poverty incidence in the country (41.8per cent) and four of its six provinces ranked as “at most risk” to climate- and weather-related risks. Typhoon Durian hit Catanduanes, an island-province in the Bicol Region, on 30 November 2006. It caused widespread destruction, predominantly linked with mudflows and landslides in Catanduanes and Albay provinces,

and as of 7 December 2006, the Philippine Government reported 590 people dead, with some 749 missing and 1,995 injured. A total of 2.19 million people (458,632 families) were affected in 148 municipalities and 12 cities across 13 provinces. About 114,446 houses were reported to have been totally destroyed while 197,543 houses were partially damaged. Some 20,788 families (101,000 people) sought refuge in 338 evacuation centres.

Following the devastation caused by typhoon Durian, IOM supported the Philippine Government in its emergency response, providing immediate response assistance by providing transport and logistic support and distributing emergency shelter and non food items (NFIs). Additionally, IOM assisted the Philippine authorities in establishing monitoring, inventory and evaluation systems. Three months after Durian, the Philippine government continued its efforts towards permanent relocation by identifying eleven permanent relocation sites, and committing to construct 4,100 permanent typhoon resistant 'core shelters'. In addition to core shelter commitments from other agencies, there were a total of 22,230 permanent core shelter units to be built. From the 312,000 houses that had been totally destroyed, there remained an assumed permanent shelter need of 289,770.

While fully supportive of permanent relocation initiatives, IOM also acknowledged the importance of addressing the affected population's interim needs (pending the move to permanent sites). A major issue was overcrowding in the temporary shelters. Months following the disaster, residual humanitarian needs were felt in cramped evacuation and transit sites (including schools) that served as temporary homes for internally displaced persons (IDPs). Due to poor conditions, many families moved out to seek better accommodations in empty lots or with host families. These IDPs continued to have access to relief aid, with their needs being accounted for during distribution schedules.

The most apparent challenge was how to move towards decongesting IDP sites, when there was lack of land for a transit site and when the efforts of the local authorities (as well as their funding situation) were focused and earmarked for permanent relocation. As of April 2007, 2,071 IDP families (approximately 10,355 people) were residing in cramped conditions in 15 transit and evacuation sites in Albay. These families had no idea how long they would have to remain in such conditions. The IDPs continued to stay in schools, affecting the education of students in these schools. In recognition of this problem, IOM worked in cooperation with the UNDP, UN-HABITAT, and the City Government to identify more sites for transit centres and construct more such shelters. IOM worked with communities to prepare them for the relocation and also engaged with local authorities and organizations in capacity-building activities. On the more technical side, IOM helped to meet the challenge of identifying and negotiating transit-land use, assisted with transit-site preparation activities, undertook the procurement of shelter materials and oversaw the construction of temporary shelter units.

IOM assisted in early recovery and community development through the construction of community centres and health facilities. Upon the request of UNFPA, and in coordination with the Provincial Government of Catanduanes and the Provincial Health Office, IOM constructed 'barangay' health facilities in Catanduanes within the framework of UNFPA's disaster management programme. Furthermore, legal clinics that had been set up helped to safeguard the beneficiaries' rights and provide general legal assistance to strengthen the rule of law. Other pro-active services accompanying the reconstruction process included orientation, consultations, training and event preparation, medical missions and food security and livelihood enhancement exercises, such as vegetable-seed distribution and organic farming seminars. All projects in the residual relief and community development stage were designed to complement longer-term community development strategies, community empowerment and disaster preparedness. For example, shelters underwent typhoon-resistant modifications during the response efforts to Cyclone Durian. Here it can be seen that disaster risk reduction efforts were incorporated into disaster risk management activities to ensure sustainability.

3. Supporting Cyclone Affected Communities and Preventing Trafficking - Bangladesh

Following a series of assessments in Cyclone Aila's most affected regions by IOM, the UN, IFRC, NGOs as well as the Government of Bangladesh (GoB), IOM with DFID support provided shelter kits and non food items (NFI) for 24,000 internally displaced families in Dacope and Koyra Upazillas in Khulna Division. IOM also established a Displacement Tracking Matrix in order to obtain and share up-to-date information on the displacement situation. In agreement with the Shelter Cluster's working group and the GoB, the disbursed materials adhered to international standards adapted to the Bangladesh context.

IOM has addressed some of the most pressing needs of the displaced population living along embankments as well as in and around collective centres. In close coordination with relevant agencies such as WFP, WHO, UNICEF and with the UN Resident Coordinator, IOM has sought to address additional outstanding needs (health, food and sanitation) of these families through this coordination platform and its efforts. The displaced families benefiting from the project are those who live on the embankments as well as those temporarily displaced in public places in and around collective centres for whom return to their places of residence is not an option until critical infrastructure has been fixed by the GoB in and around their places of origin.

In the first phase of its intervention, IOM successfully completed the distribution of NFIs and shelter kits to the 24,000 families in accordance with the selection criterion established with two local implementing partner NGOs, Rupantor and Prodipan. In the intervention's second phase, IOM supported the creation of a coordination platform at local level, implemented protection and counter trafficking activities and continued to monitor the IDPs' settlements. Specific anti-trafficking initiatives included raising awareness on trafficking for community leaders/heads as well as community people. In addition to community meetings, 70 drama shows highlighting the dangers of trafficking were conducted in affected communities (attended by up to 500 people at each event), and 6,000 posters were distributed. A video documentary prepared to raise awareness at a national level of the relationship between environmental disasters, displacement and trafficking was also produced. Furthermore, IOM initiated the development of a Joint Position Paper on Cyclone Aila, focusing on Priorities for Action in coordination with other NGOs, UN agencies and IGOs working in the area, with the purpose of bringing to light the situation of the Aila affected communities and ensuring that concrete action is taken to meet their needs.

Conclusion

minimising risk, maximising benefit - towards a strategic approach to environment, climate change and migration in Bangladesh

As the evidence in this section shows, Bangladesh already has to cope with a wide range of environmental threats, from sudden-onset events such as cyclones and floods to slow-onset processes of environmental change and degradation. Many of these affect large portions of the country - for example, the entire coastal zone is at risk from cyclones and storm surges - while other risks are more concentrated in particular regions, such as the problem of saline intrusion in the South-West and droughts in the North-West. In combination with other factors, such as population growth and urbanization, these environmental events and processes have complex but significant effects on patterns of migration in environmentally vulnerable regions. In turn, these movements have a range of 'knock-on' or 'cascade' effects in areas of destination - which, for the majority of migrants, are villages, towns and cities within Bangladesh - raising a number of environmental and human security concerns, not least in the country's fast growing urban slums.

Not all of these are well understood at present and, as this report has identified, further research is needed in many areas. Despite this there is sufficient existing evidence to demonstrate the value of a greater focus on 'environmental migration' within national, regional and international policy discussions. And the fact that climate change is likely to exacerbate many of these issues through the 21st century gives this debate additional significance. However, while it remains crucial - morally and practically - to be aware of the long-term threat from climate change, this report has argued that the best way to prepare for the consequences of climate change in 2050 or 2100 is to improve the ability to deal effectively with Bangladesh's existing vulnerabilities now.

Mainstreaming migration into development, climate change and environment policy - and vice versa - should therefore be a priority issue for policymakers as they seek to plan for the challenges of environmental change and human mobility over the coming years. In this respect, increased investment in policies and programmes to protect people from environmental risks, reduce involuntary migration and support the displaced is clearly essential. However, as the evidence presented in this section makes clear, migration can also be a positive livelihood and adaptation strategy and there is considerable scope for supporting innovative, long-term measures to maximize the potential benefits for individuals, families and communities (both at areas of origin and destination). To do so, a strategic and coherent approach is needed at the national level that builds on and strengthens connections between environment, climate change and migration policies and practice, as well as between the humanitarian and development sectors. Government has a vital role to play in this process, as do other key stakeholders such as civil society, academia and development partners.

The policy dialogue held on 23 May 2010 in Dhaka provided a forum for discussion and debate on the environment, climate change and migration nexus in Bangladesh and potential policy options going forward. The evidence in this section was presented to set the scene for these discussions and the subsequent findings of the event are presented in Section Two. It should be emphasized that both the background evidence and the findings of the policy dialogue are preliminary in nature and intended to stimulate ongoing discussion. Indeed, to meet the challenges of environmental migration in Bangladesh, all stakeholders will need to contribute in terms of both ideas and actions throughout the coming years and decades. Only in this way will the country be in a position to develop an effective and strategic approach to migration in its environmentally vulnerable regions; one which truly minimizes the risks and maximizes the benefits of environmental migration.

SECTION TWO
EVENT REPORT – POLICY DIALOGUE

Introduction

The IOM policy dialogue on environment, climate change and migration in Bangladesh - organized in partnership with the BRAC Development Institute (BDI) - took place in Dhaka on 23 May 2010. The aim of the event was to contribute to the debate on the environment, climate change and migration nexus in Bangladesh and to encourage dialogue among government, civil society and development partners in delineating key issues and potential policy options going forward.

In the inaugural session opening remarks were made by Rabab Fatima, Regional Representative for South Asia, IOM; Diana Dalton, Deputy Country Representative, United Kingdom Department for International Development (DFID); and Chief Guest, Dr. Hasan Mahmud, State Minister, Ministry of Environment and Forest, Government of Bangladesh. Among other things, the Minister noted that Bangladesh may be the most vulnerable country to the impacts of climate change in the world, with the poor - especially poor women - likely to be affected the most. He pointed in particular to the challenges involved in providing shelter to those displaced by environmental disasters and called for the establishment of an international legal regime for climate-change induced environmental migrants.

After a technical presentation of the findings outlined in Section One by IOM and a summary of recent research by BDI on urbanization and climate change, participants contributed their thoughts on the key issues and themes that should be taken into account when considering environmental migration in Bangladesh. Following the opening plenary session, delegates divided into working groups to explore three issues in greater depth: sudden-onset events; slow-onset processes; and 'cascade effects' of environmental migration.

A summary of discussions in the opening plenary session and the findings of the working groups are presented below and should be read in conjunction with the evidence and policy toolkit presented in Section One of this document. Following this, a summary is provided of key points made by participants during the closing plenary session, in which delegates were invited to reflect on the issues raised in the working groups or to identify additional points not previously discussed. Finally, drawing on discussions from throughout the day, the report concludes with a set of potential 'ways forward' in terms of policy and action on the environment, climate change and migration nexus in Bangladesh.

Opening Plenary

Following a presentation of the key findings outlined in Section One of this report, participants were invited to contribute their initial thoughts on key issues regarding the environment, climate change and migration nexus in Bangladesh.

General points raised in the discussion included:

- The importance of learning from existing best practice in terms of environmental policies and programmes and to focus on current environmental challenges as well as the longer-term threats from climate change.
- The importance of incorporating a gender dimension into policies and programmes on environmental migration as well as taking into account the needs of other vulnerable groups such as children, the elderly, the disabled and the extreme poor.
- The need for a greater focus on the issue of internal migration alongside international migration.
- The need to take population growth into account in any discussion of migration pressures.
- The need to advocate for the inclusion of text on environmental migrants in any forthcoming international climate change agreement and to explore the potential for a legally binding regime on climate change induced migrants.
- The importance of processes of urbanization in relation to environmental migration.

More specific issues requiring significant attention in the Bangladesh context that were raised included:

- The need to develop policies and programmes to mitigate the risks of negative dimensions of migration including trafficking, the sex trade etc.
- The need to consider the relationship between loss of biodiversity and environmental migration, for example in threatened habitats in coastal areas.
- The importance of supporting households and communities affected by soil erosion.
- The significance of water resource management and, in particular, the need for dialogue with India regarding the issue of declining flow in trans-boundary rivers due to dams and increased water usage from unplanned development.
- The potential for 'skills matching' in relation to the labour requirements of destination countries (including a focus on skills development for environmentally vulnerable regions).
- The need for greater understanding of rising temperatures and processes of desertification and their relationship with patterns of migration.

Working Groups – key findings

i) Sudden-onset events

This working group discussed the linkages between sudden-onset events and population movements, including the expected impacts of climate change. It sought to identify key challenges of this nexus for Bangladesh and explore potential migration policy responses and their coherence with other policy fields, as well as the role of improved data, research and multi-stakeholder cooperation at the national, bilateral and regional levels.

The session began with a discussion of terminology and the notion of 'sudden-onset' events. It was suggested that, given the increasing preparedness of Bangladesh for disasters, no event is truly 'sudden' as events of this sort are now anticipated and planned for. It was also felt that assistance should not be solely focused on short-term disaster response, but should increasingly take account of medium and long-term timescales too. For instance, Aila is an example of a 'sudden' event that has become a long-term development issue. Following this preliminary discussion, participants focused on the five key issues set out below.

Q.1 In what areas should assistance be strengthened for populations vulnerable to sudden-onset events?

Areas that were highlighted included:

- Strengthening existing disaster preparedness structures (e.g. the Cyclone Preparedness Programme) and strengthening humanitarian assistance.
- Advocating for greater resource mobilization for both areas.
- Improving information dissemination on preparedness for different audiences (e.g. particular professions) and improving communication mechanisms (e.g. use of cell broadcasting in Bangla and community radio for early warning).
- Greater clarity on roles and responsibilities regarding sudden-onset disasters (including which agency has overall responsibility) and proper implementation of the Standing Orders on Disaster.
- Changing mindset/focus to not only save lives, but also safeguard livelihoods.
- Mainstreaming Disaster Risk Reduction into disaster and development projects.

Q.2 What is the potential role of migration management policies in this context? What are some of the examples of effective practices deployed at national and local levels?

Key issues raised included:

- Managing migration as a result of sudden-onset events is a key challenge and needs to be addressed more effectively in the future, both in terms of internal and cross border movements.
- The effects of sudden-onset events on human mobility should be addressed in future policies on disaster.
- Needs assessments should be carried out immediately following disasters, provide adequate data that reflects the real situation on the ground, and take account of displacement and other dimensions of human mobility.
- Assistance for displaced people should be a key priority following sudden-onset events and responses (by Government, NGOs and development partners) should acknowledge and address issues faced by displacees in real time.
- Access to services for the displaced is crucial - for example, children should be allowed to sit for exams in other schools when they have been displaced, and where schools are used as shelters, schooling should continue nonetheless.
- Prompt action should be taken to enable displaced people to return home and contingency plans should be in place for e.g. reconstruction of embankments.
- A proactive policy on migration and disasters is needed and, in this regard, the Comprehensive Disaster Management Programme is preparing a National Strategic Plan for Displaced People. Consideration should also be given to reviewing the Disaster Management Act to incorporate human mobility concerns through a participatory approach involving all relevant stakeholders.

Q.3 How can we move from emergency response to preparedness with respect to migration related to sudden-onset events?

The main points mentioned in this regard:

- The need to strengthen access to basic services (e.g. health, education, water and sanitation) and livelihoods in disaster-prone communities to make them more resilient.
- The need to improve institutional linkages between disaster preparedness and disaster response and the importance of strengthening linkages between emergency planning and long term development practices and projects.
- The need to build more cyclone and flood shelters and to make people's homes and other structures more climate resilient (e.g. consider piloting a 'climate resilient village').

Q.4 What needs to be done to ensure that climate change risks are adequately factored in? How would such planning fit into a broader strategic approach to migration and the environment?

The following issues were raised:

- The rural economy needs to be strengthened to ensure it is robust enough to cope with future challenges, for example through expanding job opportunities in rural areas and diversifying on and off farm activities and small scale industries.

- Disaster risk reduction needs to be mainstreamed into development planning.
- Environment impact assessments should be conducted for all development projects and climate change and/or environmental risks should be mainstreamed into all development programmes (in the same way as gender currently is).
- Greater use should be made of existing data (e.g. PRECIS projections and data from the Integrated Coastal Zone Management Programme) but more studies and better data are also necessary to effectively plan for future environmental, climate change and migration related risks and to ensure policies and programmes in these areas are based on hard evidence.
- Partnerships with communities should be at the heart of all approaches.
- In terms of climate change adaptation, a wide range of strategies and techniques will be needed to reflect the different vulnerabilities communities face across the country. Community adaptation practices and knowledge are crucial and should be effectively linked to institutional technical knowledge.
- During the second phase of the Comprehensive Disaster Management Programme (CDMP), a National Strategy for Climate Change Induced Displaced Persons will be prepared. In addition, CDMP will develop contingency plans for three areas affected by different environmental threats: a saline engulfed area; a river erosion prone area; and a waterlogged area. Consideration will be given to converting people's homes into shelters and a 'climate resilient village' (including a livelihood component) will be piloted.

Q.5 Who are the key stakeholders needed for the development of such proactive approaches? What are the respective roles?

Key stakeholders identified by participants included government (national and local), local communities, civil society, NGOs, development partners, the media and the private sector (including Chambers of Commerce).

ii) Slow-onset processes

This working group considered the implications of slow-onset environmental processes for the movement of people and population settlement patterns in Bangladesh, including emerging trends and expected changes linked to the effects of climate change. The group discussed major challenges arising in this context as well as policy tools and practical measures needed to address them.

Initial discussions focused on the findings of the 'Assessing the Evidence' paper and, in relation to slow-onset processes of environmental change, participants noted in particular the importance of water resources and access to water. Further, it was suggested that while the benefits of labour migration and economic migration are recognized – for example, in terms of remittances - where environmental factors play a role in migration decisions additional costs may be involved and that, in the context of planning for the long-term effects of climate change, it would be interesting to identify these costs.

Other comments from the working group included:

- The importance of desertification, in particular in the northern parts, and the subsequent limited access to water and the unequal distribution of resources which has resulted in urbanization and seasonal migration. The process is slow and not quickly or clearly evident.

- Consideration should be given to developing public insurance schemes to protect against potential losses due to environmental degradation or climate change, for example of livelihoods (e.g. crops). A possible first step would be to identify what international policies are there on this issue. A related policy agenda is the strengthening of the public safety net programme, for example to increase the old age allowance.

- The need for a policy framework to deal with the long-term challenges of climate change and migration. This should be given priority consideration and, if a decision is made to develop such a policy, it should build upon existing policies (for example in terms of healthcare or insurances).

- The potential for migration as a result of slow-onset processes of environmental change to contribute to development if properly managed. Given the timescales involved, win-win opportunities could be identified, both in terms of internal and international migration, and policies and programmes developed that strengthen migrants' livelihoods (for example in urban areas) and contribute to development at the household and community levels.

- The importance of a rights-based approach in developing policies on environmental migration and clarifying the rights of affected populations in terms of obtaining public services. The need for government accountability and political commitment was also noted.

- Good examples of interventions and adaptation strategies in Bangladesh and elsewhere should be collected, tested in small scale interventions and promoted (for example the promotion of sustainable livelihoods, water resource management and stabilization of land).

- Awareness raising on importance of more responsible and sustainable use of resources is critical, for example the use and management of common rivers between Bangladesh and India. Community level initiatives are important in this regard to create public awareness.

- In any response to climate change or initiatives to counter environmental degradation -whether policy developments or practical interventions - coordination and clearly identified roles are crucial (for government, NGOs, development partners and other key stakeholders).

- Many of these issues are cross-cutting or cross-sectoral and a comprehensive approach is therefore essential.

- Given the importance of these issues to the region as a whole, a forum is needed for discussing these issues at a regional level (for example SAARC).

iii) Cascade effects

This working group looked at various types of environmentally induced population movements as they affect the areas from which migrants originate, as well as in their temporary and permanent destinations. The group focused on the “cascade effects” most relevant to Bangladesh as well as the challenges and opportunities related to these effects. In addition, it discussed the options for improving policy, data and research as well as multi-stakeholder cooperation at all levels. Discussions were centred around three key questions as set out below.

Q.1 What are the main “cascade effects” of environmental migration in Bangladesh? How do these differ between 'shock-driven' migration- e.g. as the direct result of sudden-onset events- and more voluntary movements?

Key points raised by participants in relation to these questions included:

- There is little understanding about the cascade effects of environmental migration in Bangladesh at present, although it is clear that these movements – and therefore their effects - are predominantly internal.

- The distinction between voluntary/planned migration and reactive/forced migration is valid in relation to environmental migration as these kinds of movements have different consequences, as do internal and cross-border movements.
- International migration raises particular concerns regarding female migrants – not only in terms of the well-being of migrants themselves, but also their families (e.g. children left behind risk trauma or other negative social consequences).
- The 'hard' security dimension of migration – for example increased risk of conflict as a result of international migration – needs to be given adequate attention alongside broader concepts of 'human security' which take a wide variety of risks into account.
- The debate regarding international migration - both regional (and cross border) and longer distance - is based on very little concrete evidence at present.
- In Bangladesh, disasters are one factor in the mass movement of people from rural to urban areas, especially to Dhaka. Other district cities cannot cope with the pressure of large inflows of people and do not have adequate infrastructure to accommodate migrants.
- Natural disasters increase the vulnerability of the affected populations to trafficking.
- Internal migration may create challenges in the destination areas, for example in cities. However, urban migration and urbanization can also have benefits – the main issue is the need for urbanization to be sufficiently planned and managed.
- Other challenges include families left behind in coastal areas and the migration of river erosion victims, who are extremely poor (especially women), to coastal lands.
- It is difficult to separate the influence of pull factors (especially employment) and push factors (including environmental events or degradation).
- Adequate policy attention must be given to vulnerable groups, including women, children, the elderly, the disabled and the extreme poor.

Q.2 What are the specific challenges linked to various forms of rural-urban migration in Bangladesh? What is the expected impact of climate change? What are the implications for urban policy?

In relation to rural-urban migration, participants raised the following issues:

- The draft national urban policy currently awaiting approval should be finalized as soon as possible.
- Slum dwellers cannot get land 'holding numbers' required for legal access to utility services such as water and electricity. Legal recognition of slums and provision of a legal identity for slum dwellers is an essential first step.
- The government needs a decentralization policy. Currently administrative set up and government institutions are centralized, as are mechanisms for ensuring basic services such as access to water, education, health etc.

- The government should consider supporting those people who wish to return to rural areas where appropriate. However this should be voluntary in nature and will only work if proper livelihood options can be provided and the root causes of the original decision to migrate are addressed.

- Dhaka remains the only major urban centre in Bangladesh – regionalization of economic development is essential to ensure balanced growth in the future. This should involve the creation of economic 'hubs' in different regions and 'cluster villages'.

- The government has social security and safety net programmes in place but these only benefit those who have a permanent residence/address. Mechanisms are needed to ensure that such programmes also benefit the mobile population/migrants.

- Better implementation of existing policies (e.g. the Water and Sanitation Policy) would also contribute towards addressing current challenges, and a coordination mechanism is needed between agencies with responsibility for urban development and services.

- Internal migration also has significant beneficial effects – for example, the economic benefits and empowerment of those employed in the export oriented ready-made garment sector, who are predominantly women.

- Eviction of slums without an adequate resettlement policy and programme in place has a significant detrimental effect on human security of the affected groups, including increased vulnerability to trafficking and other forms of exploitation.

- An integrated policy on migration, displacement, etc. is essential as many of the issues raised above are cross-cutting in nature. This should support a more proactive approach to these issues which would address existing challenges and anticipate future ones.

- Southern parts of Bangladesh are heavily populated, while northern areas are less so. The government could consider encouraging people to move to the north by relocating public sector jobs to these areas and investing in industrial development.

- For many of the policies suggested above to be effective, the private sector must be involved in the discussions.

Q.3 What existing and potential effects may environmental change and degradation have on international migration? What are the policy implications?

In relation to international migration, the following points were raised:

- Predictions/assumptions that every time there is a natural disaster there will be mass migration across the border are inaccurate - there is no concrete evidence to show that such movements take place. However, given the proximity of many environmentally vulnerable regions to international borders, international migration in which the environment plays a role may occur in some cases.

- International migration is very important for Bangladesh but it has to be planned and managed in the longer run. This includes developing skills training programmes and considering introducing a quota for displaced persons in overseas employment programmes.

- Existing studies suggest that those whose livelihoods are undermined by environmental factors are less likely to migrate internationally due to the lack of means. The evidence also indicates that psychological, social and other factors keep many displaced persons close to their original homes.
- If rates of internal migration continue to rise (as a result of environmental factors, population growth etc.), the propensity for cross-border and longer distance migration will increase.
- To reduce trafficking and other risks faced by the vulnerable population, steps should be taken to promote human resource development and to facilitate safe and orderly international migration.
- There is a need to facilitate technology and knowledge transfer among countries in the area of mitigation of and adaptation to environmental hazards.
- The overall emphasis in international migration policy should be on planned migration, including exploring the potential to work with countries with responsibility for significant carbon emissions as possible destinations for migrants.

Final Plenary

In a final plenary session which was jointly chaired by IOM's Regional Representative and Mr. Saber Hossain Chowdhury, MP and Chairman of the All-Party Parliamentary Group on Environment and Forest, the findings from the workshop were presented and participants were invited to raise additional issues or identify key themes emerging from the day's discussions. Among the issues raised by participants during this session were:

- The importance of south-south cooperation on this issue – including both 'soft' and 'hard' technology transfer (e.g. irrigation techniques and 'cluster community development' from Vietnam, drought resistant seeds from Africa).
- The need to clarify roles and responsibilities among different stakeholders, for example between government and NGOs regarding delivery, monitoring, information sharing etc, to ensure greater coordination among all parties.
- The importance of basing approaches to environment, climate change and migration on hard evidence and the need to develop good national data on these issues going forward (including through protocols on data sharing).
- The essential role of good governance in ensuring effective policies and programmes are developed and that the government and other key stakeholders are able to mobilizing additional resources in a timely fashion and implement new programmes in this area on the ground.
- The significance of local government (including regional towns and cities) and the private sector and the need to involve them in any future discussions.
- The potential for innovative approaches to land allocation (e.g. unoccupied government owned 'khas' land) but also the sensitivity of any attempts to relocate significant numbers of people to new areas given people's preference to remain locally and the detrimental consequences of some previous initiatives (e.g. in the Chittagong Hill Tracts).

The Way Forward

Drawing on the extensive discussions throughout the day, a set of recommendations - **"Way Forward"** were developed and presented in the closing session. This included short, medium and long term priorities for future action on the environment, climate change and migration nexus in Bangladesh.

In ensuring effective and sustainable action in this area, the importance of involving all stakeholders going forward was noted, including adequate representation from the private sector and local government. The need for collaborative approaches at national level was highlighted, but also in regional consultative processes and on the way to major events like the Global Forum on Migration and Development and the next UNFCCC Conference of Parties in Cancun.

Five main pillars were proposed upon which to base future efforts in Bangladesh:

1. Raising policy and public awareness on the complex linkages between migration, the environment and climate change.
2. Undertaking and supporting research to broaden understanding and inform evidence-based policy.
3. Supporting the development of policy coherence at a national level in Bangladesh, including systematic mainstreaming of migration considerations, across all relevant sectors and in particular in development and humanitarian action.
4. Working to minimize forced migration but also to facilitate the role of migration as a planned adaptation strategy.
5. Bolstering humanitarian action with adequate resources to meet environmental and climate change related challenges.

On this basis, and to mobilizing the momentum from the policy dialogue, the following priorities for action were identified:

1. Bring together findings from the workshop, especially around policy options, best practice examples and research priorities, and disseminate to all stakeholders.
2. Present findings to:
   - Parliament/All Party Parliamentary Committee on Environment and Forest Affairs
   - Local Consultative Group/Sub-Group on Environment and other appropriate national or sectoral policy fora.
   - Appropriate regional and international fora.
3. Work with all relevant ministries to mainstream migration into appropriate national policies (e.g. Climate Change Strategy and Action Plan and five-year development plan) and ensure migration is mainstreamed in all future environment, disaster risk reduction and climate change policies and vice versa.
4. Establish appropriate mechanism for Government coordination to ensure a holistic approach on migration policy (including environmental, internal and international migration) and develop a national policy on migration.
5. Undertake in-depth analysis of current policy and programmatic responses to environment, migration and development and undertake research in identified priority areas.
6. Consider convening an international conference in Dhaka on Environment, Climate Change and Migration.
7. Investigate areas of opportunity identified in workshops and develop pilot project proposals (at least one in DRR and one supporting migration as adaptation).
8. Identify appropriate institution/fora to oversee regional research on environmental migration.

Bibliography

Abrar, C. and S. N. Azad

2007 "Coping with displacement. Riverbank erosion in North-West Bangladesh", Refugee and Migratory Movements Research Unit (RMMRU)

Afsar, R.

2003 "Internal migration and the development nexus: the case of Bangladesh".

2005 "Bangladesh: Internal migration and pro-poor policy in Migration, Development and Poverty Reduction in Asia", International Organization for Migration

2005 "Migration, Development and Poverty Reduction in Asia", International Organization for Migration (IOM)

Agrawala et al.

2003 "Development and Climate Change in Bangladesh: Focus on coastal flooding and the Sunderbans", Organization for Economic Cooperation and Development (OECD)

Ahmed, A. U. and S. Neelormi

2008 "Climate Change, loss of livelihoods and forced displacements in Bangladesh: whither facilitated international migration?", Centre for Global Change / Oxfam

Alam et al.

2008 "Gender, Human Security and Climate Change in Bangladesh"

Alauddin, M. and M. Hamid

1999 "Shrimp culture in Bangladesh with emphasis on social and economic aspects. Towards Sustainable Shrimp Culture in Thailand and the Region", Hat Yai, Songkhla, Thailand: Australian Center International Agricultural Research

Bangladesh Bureau of Statistics

"Bangladesh Bureau of Statistics Yearbooks - 1975, 2006 and 2007"

2008 "Statistical Pocket Book Bangladesh 2008"

Barnett, Jon R. and M. Webber

2009 "Accomodating Migration to Promote Adaptation to Climate Change", Swedish Commission on Climate Change and Development

Black, R et al.

2008 "Demographics and Climate Change: future trends and their policy implications for migration", United KingdomDepartment for International Development (DFID)

Brammer, H.

2010 "After the Bangladesh Flood Action Plan: Looking into the Future", Environmental Hazards, Volume 9, Number 1, 2010, pp118-130

Centre for Environmental and Geographic Information Services (CEGIS)

2007 "Long-term Erosion Processes of the Jamuna River"

2010 "Prediction of Riverbank Erosion along the Jamuna, Ganges and Padma Rivers in 2010"

Centre for Strategic and International Studies

http://csis.org/files/publication/sam_136

Charnley, S.

1997 "Environmentally Displaced Peoples and the Cascade Effect: Lessons from Tanzania", Human Ecology , 25(4)

Chars Livelihood Programme

www.clp-bangladesh.org

Chowdhury et al.

2009 "Migrating Away from a Seasonal Famine: A Randomized Intervention in Bangladesh", Human Development Research Paper 2009/41

Daily Star

"'No' to saline-water based shrimp farming", 9 April 2009

"Country gets new land", April 23 2010

"Farmers resist saline water based shrimp farming", 11 May 2009

Development Research Centre on Migration, Globalisation and Poverty

2009 "Staying Behind When Husbands Move: Women's Experiences in India and Bangladesh", DRC on Migration, Globalisation and Poverty Briefing No. 18, 2009

European Commission Humanitarian Aid (ECHO)

2009 "In Depth Recovery Needs Assessment of Cyclone Aila Affected Areas"

Emergency Disasters Database (EM-DAT)

www.emdat.be

Government of Bangladesh

1995 "Charland Socio-Economic Summary Report", Bangladesh Flood Action Plan, IPSAN

2005 "National Adaptation Plan of Action"

2007 "Estuary Development Programme Inception Report 2007"

2009 "Revised Draft, Second National Strategy for Accelerated Poverty Reduction"

Government of Bangladesh, Climate Change Cell

2006 "Bangladesh Climate Change Impacts and Vulnerability – A Synthesis"

Government of Bangladesh, Ministry of Food and Disaster Management, Comprehensive Disaster Management Programme

2007 "Consolidated Damage and Loss Assessment, Lessons Learnt from the Flood of 2007 and Future Action Plan"

Government of Bangladesh, Ministry of Environment and Forest

2009 "Bangladesh Climate Change Strategy and Action Plan (BCCSAP)"

Government of Bangladesh, Ministry of Environment and Forest, Climate Change Cell

2009 "Generation of PRECIS scenarios for Bangladesh (Validation and Parameterization)"

Government of Bangladesh, Ministry of Finance

2008 "Bangladesh Economic Review 2008"

Government of Bangladesh, Ministry of Water Resources

1999 "National Water Policy"

"Guidelines for Participatory Water Management"

Habibullah et al.

2009 "Participatory Water Management: A Strategy for Climate Change Adaptation in Coastal Bangladesh"

Hacque, C. and Zaman

1989 "Coping with Riverbank Erosion Hazard and Displacement in Bangladesh: Survival Strategies and Adjustments", Disasters (13(4)), 300-314

Hassan, A and M.A.R. Shah

2006 "Impact of Sea Level Rise on Suitability of Agriculture and Fisheries: A Case Study on Southwest Region of Bangladesh"

Hossain et al.

2003 "Surviving on their feet: charting the mobile livelihoods of the poor in rural Bangladesh"

Hugo, G.

2009 "Migration, development and environment", International Organization for Migration (IOM)

Hutton, D. and C. E. Haque

2003 "Patterns of coping and adaptation among erosion-induced displacees in Bangladesh", Natural Hazards (29), 405-421

2004 "Human vulnerability, dislocation and resettlement: adaptation processes of river-bank erosion-induced displaces in Bangladesh", Disasters , 28(1), 41-62

International Organization for Migration (IOM)

2007 "International Dialogue on Migration. Expert Seminar: Migration and the Environment' (Vol. No.10).IOM. (2009)", Migration, Environment and Climate Change: Assessing the Evidence

2009a "Migration, Environment and Climate Change: Assessing the Evidence"

2009b "Compendium of IOM's Activities in Migration, Climate Change and Environment"

2009c "Policy Brief - Migration, Climate Change and the Environment"

2010 (forthcoming)

"Mainstreaming Migration into Development Planning: A Handbook for Policy makers and Practitioners" prepared under the auspices of International Labour Organization (ILO), IOM, United Nations Development Programme (UNDP) and United Nations Children's Fund (UNICEF)

International Organization for Migration (IOM) and partners

2010 "Joint Position Paper on Cyclone Aila Affected Areas"

Intergovernmental Panel on Climate Change

1990 "IPCC First Assessment Report"

2007 "IPCC Fourth Assessment Report"

Integrated Regional Information Networks (IRIN)

"When climate change gives you a sinking feeling", 23 October 2008

"Cyclone Aila survivors take another hit", 7 April 2010

Islam, N et al.

2006 "Slums of Urban Bangladesh: Mapping and Census 2005, Dhaka", Centre for Urban Studies

Kabeer, N.

2003 "The Poverty Impacts of Female Employment"

Karim, M. F. and N. Mimura

2008 "Impacts of climate change and sea-level rise on cyclonic storm surge floods in Bangladesh", Global Environmental Change , 18, 490-500

Krantz, M.

1999 "Coastal Erosion on the Island of Bhola", Earth Sciences Centre, Göteborg University

Lein, H.

2009 "The Poorest and Most Vulnerable? On Hazards, Livelihoods and Labelling of Riverine Communities in Bangladesh", National University of Singapore

Local Consultative Group

2010 "Bridging the Urban Divide in Bangladesh"

Maligalig, D. et al.

2009 "Informal Employment in Bangladesh", ADB Economics Working Paper

Moral, J.B. and R. Rainis

2008 'The Nexus between Urban Poverty and Local Environmental Degradation of Rajshahi City', Conference Proceedings, STSS2008 Conference, Pahan: UiTM

Mortreux, C. and J. Barnett

2009 "Climate change, migration and adaptation in Funafuti, Tuvalu", Global Environmental Change

Munich Re's National Hazards Assessment Network (NatHan)

http://www.munichre.com/en/reinsurance/business/non-life/georisks/nathan/default.aspx

Nair, S. and S. Guleria

"Coastal and Sea Erosion", South Asian Association for Regional Cooperation (SAARC) Report: http://saarc-sdmc.nic.in/pdf/coastel.pdf

Paul, B.

2003 "Relief Assistance to 1998 Flood Victims: A comparison of the performance ofthe Government and NGOs", The Geographical Journal (169), 75-89

2005 "Evidence against disaster-induced migration: the 2004 tornado in north-central Bangladesh", Disasters (29(4)), 370–385

Rahman, M.

2000 "Emigration and development: the case of a Bangladeshi Village", International Migration, 38(4), 119-130

Ramachandra, S.

2005 "Indifference, Impotence and Intolerance: Transnational Bangladeshis in India"

Ratha, D and W. Shaw

2007 "South-South Migration and Remittances", World Bank Development Prospects Group

Ray, D.B. and R. Jolly

2006 "The Human Security Framework and National Development Reports", NHDR Occasional Paper 5, UNDP

Rayhan, I. and U. Grote

2007 "Coping with Floods: does rural-urban migration play any role for survival in rural Bangladesh", Journal of Identity and Migration Studies (1(2)), 82-98

Republic of Kiribati, His Excellency Anote Tong, President of the Republic of Kiribati

2009 "Statement of the President at the General Debate of the 64th General Assembly"

Reuveny, R.

2007 "Climate change-induced migration and violent conflict", Political Geography (26), 656-673

Secretariat of the African, Caribbean and Pacific (ACP) Group of States

"ACP Migration Facility" http://acpmigration.org

Selvaraju, R. et al.

2006 "Livelihood adaptation to climate variability and change in drought-prone areas of Bangladesh, Developing Institutions and options", Rome: UN FAO Rural Development Division

Smith, P.

2007 "Climate Change, Mass Migration and the Military Response", Foreign Policy Institute. Orbis, Volume 51, Issue 4

United Nations (UN)

2010 "Human Security: Report of the Secretary General", United Nations

United Nations Development Programme (UNDP)

2006 "The Human Security Framework and National Human Development Report", NHDR Occassional Paper 5

United Nations Development Programme (UNDP)

2008 "Human Development Report 2007-2008: Fighting Climate Change"

United Nations Population Fund (UNFPA)

2009 "State of World Population 2009: women, population and climate"

UN-HABITAT

2008/9 "State of the World's Cities"

World Bank

2007 "Bangladesh –Dhaka: Improving the Living Conditions for the Urban Poor"

2008 "Migration and Remittances Factbook 2008"

2010 "World Development Report 2010: Development and Climate Change"

Zaman, M.

1989 "The social and political context of adjustment to riverbank erosion hazard and population resettlement in Bangladesh", Human Organization , 196–205

Zaman, M. and R.E. Wiest

1991 "Riverbank Erosion and Population Resettlement in Bangladesh", West Practicing Anthropology (13(3)), 29-33

ANNEXES

ANNEX A: AGENDA

Policy Dialogue on Environment, Climate Change and Migration in Bangladesh

23 May, 2010
BRAC Centre Inn

9.00 - 9.15	Registration
Session 1 - Inaugural Session	
9.15 - 10.00	**i) Opening Statements** *Rabab Fatima* Regional Representative for South Asia, International Organization for Migration (IOM) *Diana Dalton* Deputy Country Representative, United Kingdom Department for International Development (DFID) Statement by Chief Guest: *Dr. Hasan Mahmud* State Minister,Ministry of Environment and Forest, Government of Bangladesh
10:00 - 10:15	Summary and Key Findings of **Assessing the Evidence: Environment, Climate Change and Migration in Bangladesh**, *Matthew Walsham*, IOM
10:15 - 10:30	Summary and Key Findings of **Urbanization and Climate Change,** *Ferdous Jahan*, Academic Coordinator, BRAC Development Institute (BDI)
10.30 - 10:45	**ii) Video Documentary on Cyclone Aila**
10:45	Launching of the Photo Exhibition
10:45- 11:00	Tea Break
Session 2 - Summary and Key Findings (Cont'd) Chaired by: *Saber Hossain Chowdhury MP.* Chairperson of All Party Parliamentary Committee on Environment and Climate Change	
11:00- 11:15	**i) Assessing the Evidence: Environment, Climate Change and Migration,** *Matthew Walsham*, IOM
11:15 - 12:00	**Open Discussion**
Session 3 - Thematic Working Groups	
12:00 - 13:30	**i)Working Group Sessions on Thematic Areas** **Working Group 1 (Sudden Onset Disasters):** co-chaired by *Abu M. Kamaluddin*, CDMP and *Dr. Nazrul Islam*, Senior Research Officer, Centre for Policy Dialogue (CPD)

	Working Group 2 (Slow Onset Events): co-chaired by *Syeda Rizwana Hasan*, Director, Bangladesh Environmental Lawyers Association (BELA) and *Philippe Boncour*, Head of International Dialogue on Migration, IOM **Working Group 3 ('Cascade' Effects):** co-chaired by *Brigadier (Retd) Shahedul Anam Khan*, Editor, The Daily Star and *Dr. Kamal Uddin Ahmed*, Joint Secretary, Ministry of Home Affairs, Government of Bangladesh
13:30- 14:30	Lunch
Plenary Session Chaired by: *Saber Hossain Chowdhury*, MP and Rabab Fatima, IOM	
14:30 -16:00	**Report from the Working Groups and Open Discussion**
Session 4 - Closing Session	
16:00 - 16:15	**The Way Forward:** *Philippe Boncour*, IOM and *Matthew Walsham*, IOM
16:15 - 16:30	**Closing Remarks**
16:30	Refreshments

ANNEX B: LIST OF PARTICIPANTS

POLICY DIALOGUE ON ENVIRONMENT, CLIMATE CHANGE AND MIGRATION IN BANGALDESH

23 MAY 2010
BRAC CENTRE INN
List of Participants*

Name	Designation	Organization
Farah Kabir	Country Director	Actionaid
Sajid Raihan	Manager	
Dr. Mallick	Research fellow	Bangladesh Centre for Advanced Studies
Dr MI Sharif	Senior Fellow	
Saber Hossain Chowdhury	Member of Parliament	Bangladesh Parliament
Tanvir S Joy	Member of Parliament	
Gyasuddin Molla	Member of Parliament	
Dr. Ferdous Jahan	Academic coordinator	BRAC Development Institute
Nur Newaz Khan	Assistant researcher	
Mahmudul Hasan	Assistant researcher	
Mehedi Hasan	Research Assistant	
Israt Jahan Poppy	Research Assistant	
Papia Sultana	Research Assistant	
Asim Kumar Roy	Research Assistant	
Faiz Sobhan	Research director	Bangladesh Enterprise Institute
Khurshed Chowdhury	Director General	Bureau of Manpower Employment and Training
Mohammad Rafi	Research coordinator	BRAC
Md Aminul Islam	Coordinator, Safe Migration Facilitation Centre Project (SMFC)	BRAC advocacy
Sheefa Hafiza	Head	BRAC advocacy and human rights
Sareka Jahan	International Climate Champion	British Council
Syeda Nazneen Ferdousi	Senior Press Officer	British High Commission
Shamain Mahbub	Programme officer	
Hasna Moudud	President	CARDMA
Seema Gaikwad	Advocacy coordinator	CARE
Md. Shafiqul Islam	Policy and legal analyst	Care Bangladesh
Md. Abul Khair	Project Coordinator	CARITAS
Abu M. Kamal Uddin	Climate Change Adaptation Specialist	Comprehensive Disaster Management Programme
Dr AKM Nazrul Islam	Senior Research Assistant	Centre for Policy Dialogue
Brig. Shahedul Anam Khan	Editor	Daily Star
Faisal Khan	Environment and Livelihood Advisor	DFID
Jim Mcalpine	Senior Programme Manager	
Diana Dalton	Deputy Head	
Helen Bryer	Deputy Programme Manager	

* Arranged alphabetically by organization.

Name	Designation	Organization
Eduardo Romero	Deputy Head	Embassy of Spain
Wahida Musarrat	Programme officer	Embassy of Denmark
Jahangir Hossain	Programme officer	FHI
Arathi Rao	Fulbright	Fulbright Scholar
Firdous Ara Hussain	Portfolio manager	GTZ
Nirjharina Hasan	Country director	Helpage International
Shaswatee Biplob	Social protection policy officer	
Ina Islam	Assistant Director	ICCCAD/IUB
Shirin Sultana	Training officer	International Committee of the Red Cross
Jerome Fontana	Project delegate	
Gaurav Ray	Disaster Management Coordinator	International Federation of the Red Cross
Hasiba Tasneem	Chief coordinator	Institute of Hazrat Mohd
Barrister Rizwana Yusuf	Director, Administration and Legal Department	
Brian Kelly	Humanitarian officer	IOM
Philippe Boncour	Head, International Dialogue on Migration Division	
Alamgir Chowdhury	Planning Advisor	IPSWAM
Md. Helaluddin	Head, Early Detection and Risk Reduction	Islamic relief
Hafizul Islam	Lawyer	Bangladesh Environmental Lawyers Association
Syeda Rizwana Hasan	Director	
MK Pasha	Public Relations Officer to State Minister	Ministry of Environment and Forest
Dr. AKM Rafique Ahammed	Personal Secretary to State Minister	
Dr. Kamaluddin Ahmed	Joint Secretary	Ministry of Home Affairs
ASM Khurshidul Alam	Deputy Secretary	
Shamsun Nessa	Executive Member	Naripokkho
Mizan R Khan	Professor	North South University
Shamima Chowdhury	Senior researcher	Press Institute
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Clara Rodriguez	Humanitarian response officer	UNFPA
Arthur Erken	Representative	
Craig Sanders	Representative	UNHCR
Carel De Rooy	Chief	UNICEF
Sabina Saeed	Project Associate	UNIFEM
Alex Dodson	Student/researcher	University of Texas
Katarina Soltesora	Student/researcher	University college London
Dr. AQM Mahbub	Professor	University of Dhaka
Alexander Garis	Economic commerce officer	US embassy
Shahara Hayat	Country director	VSO
KNMN azam	Project Coordinator	WARBE
Dr. Muhammad Zahidur Rahim	National consultant	WHO
SG Mahmud	National Programme Officer	

ANNEX C: Photographs on Environment, Climate Change and Migration in Bangladesh

Abir Abdullah obtained a Masters in Marketing (M. Com) from Dhaka University and completed his diploma in photojournalism from Pathshala in 1999. Abir has won many awards including the prestigious Mother Jones Award in 2001 for his work on Freedom Fighters (Veterans of the Bangladesh Liberation War in 1971), the 1st prize in the WHO contest, Switzerland 2002, 1st Prize in SAJA (South Asian Journalist Association) Photo Award 2005, and the 1st Prize under the national disaster category of NPPA, considered to be the top photojournalism award 2008.

Abir's work has been published in New York Times, Asiaweek, Guardian and the New Internationalist Magazine and other international publications. He was one of the photographers featured in the book BLINK, published by Phaidon, featuring 100 photographers worldwide.

He works as a photojournalist and Bangladesh correspondent of the European Press Photo Agency (EPA). He is also the Vice Principal of Pathshala South Asian Media Academy.

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Environment, Climate Change and Migration in Bangladesh:

Nature has never made it easy to live in Bangladesh. The country is situated in the low-lying Ganges Delta, formed by the confluence of the Ganges, Brahmaputra and Meghna rivers, and most of it is less than 10 meters above sea level. It is a country swamped by annual floods, with a coast battered by cyclones and tornadoes, yet an interior at times subject to drought. With nearly 150 million inhabitants, Bangladesh is also one of the most densely populated countries on earth. As warnings about climate change grow in intensity, Bangladesh is forecast as the scene of increasing numbers of climate migrants.

In low-lying areas it is not unusual to be knee-deep in water in flood season – some local crops, such as rice, depend on rising waters. But floods are becoming more extreme and unpredictable. Crops have been totally destroyed, livestock lost. Houses made from bamboo, straw and corrugated iron – made to be portable when the floods come – have been totally washed away. People have been forced to tear down their houses and move dozens of times as waters rise ever higher, and they return when waters recede to find their former land has gone completely. People are crowding into less and less land, and disputes are developing.

A woman cries as she looks for a safer place as water enters new areas after cyclone Aila hit in the south-west parts at Harinagar, Satkhira.

Victims of the cyclone Aila live on the embankment with makeshift shelters at Kalaboghi, Dacope, some 400 kilometres south of the capital Dhaka on 10 March 2010. At least 40,000 thousands people live on the embankment and face severe drinking water, food and sanitation problems.

A victim of cyclone Aila lives on the embankment in a makeshift shelter at Kalaboghi, Dacope

A woman wades through flood with some of her belongings, Paikpara, Bogra (240 KM north of the city). of people took shelter in the after they lost their houses due to severe floods that lasted for a week in the northern districts of the

Rubia (40) sits on a banana raft inside her house which is waist deep in flood water. Her husband is a farmer and they have three children. They came to this house five years ago after they lost their own land. 'Shifting house during floods or river erosion is hard but losing your land is a completely different experience, it is indescribable pain.' Kestiar Char, Sariakandi.

Anna (26) cooks food on a banana raft in front of her kitchen. They struggled with water for two weeks in the first phase of flooding and didn't move from their house. But they shifted to a new place in the second phase of flooding as their land was swept away by storm surge. Nandinar Char, Sariakandi.

Shephali and her brother sit inside their temporary shelter of plastic sheets along the road after losing their house to the flood. Chilmari, Kurigram.

Huge part of the land has cracked and is being slowly washed away by the river Jamuna. Hundreds of houses have been washed away by river erosion. Hashail, Munshigonj.

Khan (80) and his wife wait with the remains of their house and other things under the open sky after losing their land to river erosion. His sons and daily labourers carry one part of the rooftop to construct their new house near by. Khan had shifted his house fifteen times over the years. 'We saw the river take away our land but couldn't do anything. What could we do against nature? The river is becoming more destructive day by day.' Hashail, Munshigonj.

Water gushing in through a broken embankment after the cyclone Aila hit - leaving at least 200 dead and 100 missing at Gabura, Satkhira 26 May 2009.

Women work to rebuild an embankment in one of the regions hit by Cyclone Aila in Dacope, Khulna.

A woman walks past a makeshift shelter situated on the embankment in one of the cyclone Aila hit areas in Dacope.

A family travels to a safer location amid flood waters as water enters new areas after the cyclone Aila hit in the south-west parts in Harinagar, Satkhira, displacing thousands and forcing them to move.

Puspa Rani Roy stands at the edge of her eroded land. She lived here for fifteen years with her husband, two children and mother-in-law. 'This is our land and it will all be washed away by tomorrow. I have many memories with my family here. It is painful that we will never get back this land and will now become landless.' Hashail, Munshigonj.

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