ISSN 2020-9021

ICRRD HIGH INDEX RESEARCH JOURNAL

(An Initiative of International Center for Research and Resources Development)
Reg. No: Printed: 1347468-T, Online: 201901038138, www.icrrd.com

Environment, Migration and Adaptation Evidence and Politics of Climate Change in Bangladesh

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Received: June 24, 2019 **Accepted:** July 26, 2019 **Published:** December 16, 2019

Financed by

International Centre for Climate Change and Development (ICCCAD), Bangladesh

Abstract

Almost every year the people in Bangladesh face floods and cyclones that occa- sionally reach disastrous proportion. Bangladeshis have become used to living with such risks, yet their coping capacities are often stretched to the limits. At the same time, slower processes like riverbank erosion, increasing soil salinity, and changing rainfall patterns challenge people's adaptive capacities and impact the nation's agricultural productivity and people's own food security. In this context, labor migration helps people to diversify risks to their livelihoods and to take on alternative pathways to their future. Differentiated migration systems exist inside and beyond Bangladesh. Many people who lived off their land in the past have moved to cities for gainful employment, while others are regularly selling their labor force as agricultural wage workers in other rural areas. Many families are now living `translocal lives´ so that they are able to cope with diverse shocks to their livelihoods. Natural disasters and subtle climatic changes are experienced in rural and urban areas alike, leading to a transformation of people's vulnerabilities, and these changes have clearly left their marks on Bangladesh's migration system. The climate change discourse is in full swing in Bangladesh. Seeing the na- tion as a `test case´ for climate change adaptation, the Government of Bangladesh and its development partners have taken on numerous political initiatives to re- spond to the challenges posed by climate change, and to react to transformations in the international development funding landscape. But science also has an im- portant role to play in this process. Bangladeshi and international scholars are ac- tively contributing to an enhanced understanding of the environmental, social, economic, and political changes taking place in the nation. However, there is a gap between the acquisition of academic knowledge, the communication of its key findings and the mode of sharing this knowledge. This book aims to reach policy makers, scientists and the public in Bangladesh. The first chapter sets the scene for this book. It presents state-of-the-art academic knowledge on migration and translocality, on people's vulnerability to environmental change, and on climate change adaptation in Bangladesh.

1. Introduction

Before we discuss the more specific literature about climate change, environmen- tally-induced migration, and displacement in Bangladesh, it is important to define migration and outline basic migration trends in the nation. Although international migration flows from Bangladesh have increased steadily over the past three dec- ades and have thereby contributed significantly to social, economic, and political change in the nation and led to formation of a transnational social field that con- nects the Bangladeshi diaspora, temporary international labor migrants, and the society 'back home', we foc us on internal migration patterns, on urbanization, and the emergence of translocal spaces in the following.

What is migration?

Migration can be simply defined as the change in the place of residence of an in- dividual, a household, or group of people either by crossing an international bor- der – international migration – or by moving within the country of origin to an- other region, district, or municipality – internal migration (UNDP 2009). There is a continuum between short- and long-distance migrations; voluntary and forced migration--in terms of the freedom in the migration decision; temporary,

seasonal, and permanent migration; and the ability and willingness of migrants to return to their place of origin. In the climate change debate, migration can be seen as a manifestation of social vulnerability and both a result and a driver of continued impoverishment, but also as a successful adaptation strategy that enables families and communities to cope with disasters and live with environmental changes (McLeman & Smit 2006; Warner et al. 2010).

> "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" (IOM 2010: 4).

A number of concepts, models, and theories can help us understand the structural context in which people migrate, especially migrants' decision-making processes ranging from demographic models of the mobility transition, world system theory, macro-economic labor market theories, micro-economic decision-making models, the 'new economics of labor migration', behavioral theories, social network theo- ry, transnationalism and many others (cf. Massey et al. 1998; Castles & Miller 2003). Development studies look at migration processes through the lens of peo- ples' livelihoods and consider how households, i.e. social units that pool re- sources, collectively decide upon family members migration pathways, while ex- pecting remittances that support the households' resource base in the longer run in return. From a livelihoods perspective, individual assets and collective resources are taken into account as well as structural constraints, economic drivers, national borders, and legal settings in and through which migrants navigate (Haan et al. 2000; Etzold & Sakdapolrak 2012).

In many case studies of (environmental) migration – also in this volume – the explanation of complex migration processes is reduced to the most apparent 'push factors' that force people to leave their 'home' in reaction to structural conditions or an omnipresent threat, and to the 'pull factors' that entice some people to go to another place to optimize their life chances. We would argue that the listing of the push and pull factors of migration might be helpful (see Arsenault et al., Chapter 3), but that is clearly inadequate to fully understand the complexity and multi-causality of migrants' (households) decisions to temporally or permanently move to or to stay at a certain place. Besides a look at the individual capacities to move, and thus migrants' agency, further consideration should be given to the structural embeddedness of individual migrations and immobility in broader societal, eco- nomic, environmental, and indeed historical contexts. Individuals, families, and communities are rooted in specific places and livelihood systems with quite dis- tinct environmental histories; and they are organized, mobilized, or 'kept in place' through social networks, political structures, and institutions. Over time, multi- faceted migration systems emerge through multi-directional and repeated acts of migration, return, and re-migration, through the 'migration services' of mediating agents (so called 'migration entrepreneurs'), and through the translocal relations of people at places of origin, places of transit, and places of destination. Migration processes are complex, yet we should not shy away from their complexity.

Migration History and Patterns in Bangladesh

In Bangladesh, migration is a normal part of everyday life and closely connected to its historic ruptures and its economic development. People have been moving throughout the delta for centuries, but the lives of the majority of the population were sedentary and rural. Independence from colonial rule and the partition of British India in 1947 triggered the displacement of hundreds of thousands of Hin- dus and Muslims. While the former were forced to leave the territory of the newly created eastern province of Pakistan and went to India, the latter were displaced from the eastern parts of India and settled in East Pakistan.

At that time, Dhaka had about 336,000 inhabitants. In the 1960s, the national population began to increase quickly. With industrialization and economic growth, resource-poor villagers began to migrate to cities for alternative liveli- hoods. After a nine month long civil war, during which up to three million people lost their lives and ten millions fled to India, Bangladesh gained its independence in 1971. Dhaka, with 1.5 million inhabitants and the biggest city in the country, became the capital of the People's Republic of Bangladesh. In 1974, severe floods destroyed the harvests and grain stocks, which led to a rapid increase of the price of rice, and in the end to a famine all over the country (Sen 1981). One can only guess the number of people that were driven to Dhaka by mere poverty and acute hunger during these years. After the 1974 famine more and more people contin- ued to move from rural to urban areas, spurring urbanization and in particular the growth of the national capital (Haan et al. 2000; Afsar 2005; van Schendel 2009).

Since the 1980s, migration patterns in and from Bangladesh were affected by two major trends. On the one hand, rising oil prices and thus an increasing need for cheap labor power in the Middle East and in Southeast Asia led to the growth of international labor migration from Bangladesh. The number of laborers who left for work in the Gulf states increased tenfold from 25,000 in 1980 to more than 250,000 in 2010 (Siddiqui 2005; Rahman 2012). On the other hand, Bangladesh started to produce and export textiles in the early 1980s, which gradually changed its role in the global economy fundamentally. In 1985 roughly 120,000 people worked in 380 garment factories, while it was around 1.6 million workers in 3,200 factories in 2000, and even four million workers in 5,600 factories in 2013.[2] The garment factories are predominantly situated in and around the capital city, which fuelled the growth of Dhaka's economy and enhanced internal migration flows. This industrial boom also led to social transformations as young rural women, who did not migrate to urban centers in large numbers before, gained access to livelihood opportunities in the urban factories (Dannecker 2002; Salway et al. 2003; Afsar 2005; Islam 2005; World Bank 2007; Siddiqui et al. 2010). In between 1980 and 2010, Dhaka's population increased from 3.3 to 14.7 million peo- ple, largely due to in-migration (UN 2012). For most of the nation's history, Dha- ka has been the most important destination for labor migrants.

In 2010, Bangladesh had an estimated population of 149 million people. With 72 percent, the vast majority of the population still lives in rural areas, 28 percent reside in urban areas (UN 2012). But due to prevailing poverty and chronic food insecurity in many parts of the country, regular disruptions of rural livelihoods by natural hazards such as cyclones, floods, and droughts, more diverse economic opportunities in cities and prospering agricultural regions, centralistic educational structures, and improved transportation networks and cheaper communication technology, the life of many Bangladeshi families has become more and more mobile, and even translocal. The 2011 population census revealed that 12 percent of all households have migrants in their immediate family (BBS 2011). Most movements take place within the country and over shorter distances so that people can re-join their family after a while. A longitudinal study (1994–2010) undertak- en in 14 districts across Bangladesh found that 59 percent of all long-term moves occur within the same district, while 39 percent of migrants move outside their district of origin. Of these long-distance moves, 81 percent were to urban centers, 13 percent to international destinations, and six percent to other rural districts (Gray & Mueller 2012). Today, migration is an everyday practice in Bangladesh.

Translocality in Bangladesh

A too static picture of migration as permanent movement of a household from place A to place B should be avoided. Many Bangladeshi families organize their livelihoods dynamically across different places – they are living translocal and some even transnational lives in order to earn extra cash-income that is needed for daily consumption or agricultural investments, to overcome regular livelihood crises such as hunger during the annual lean season, to diversify risks and buffer shocks at one place such as a failed harvest due to irregular rainfall, or to invest in their own future. Migrants' everyday life is then characterized through their expe- rience of migration as well as their simultaneous embeddedness in it, and their social networks across specific local places (cf. Lohnert & Steinbrink 2005; Brickel & Datta 2011; Greiner & Sakdapolrak 2013; and Peth & Birtel, Chapter 6). In order to understand migration and translocality in and beyond Bangladesh, we need to consider three aspects in particular: existing migration systems, trans- local transfers as well as kinship relations and place-based identities.

First, besides international mobility (cf. Gardner 1995; Dannecker 2005; Siddiqui 2005; Rahman 2012), several labor migration systems co-exist in Bang- ladesh: permanent rural-urban and urban-urban migration, temporary migration to cities, and seasonal labor migration to agricultural regions. A study undertaken in Kurigram district in the North of Bangladesh, for instance, showed that labor mo- bility takes place within established migration systems and within existing social networks. People's access to migration opportunities and their choice of destina- tions reflects existing patterns of social inequality. Members from more affluent households are more likely to move to urban destinations for secure employment in the formal economy or for higher education. The rural 'middle class' either goes to cities like Dhaka to work in the garments industries, the construction sec- tor, or the informal economy. Such movements are normally self-organized or assisted by family members, or temporary moves to other rural destinations during the harvest seasons. Agricultural migration is facilitated by middlemen who nego- tiate wages with employers and organize transport, accommodation, and food for a group of labor migrants. But not everybody can benefit from such migration systems. The poorest people in rural communities often cannot afford the initial investments needed for migration, nor do they have access to necessary networks or even sometimes, the physical capability to migrate at all. These households remain 'trapped' in the rural space of vulnerability (Ahmed et al. 2012; Etzold et al. 2014; Peth & Birtel, Chapter 6)

Second, interactions and transfers within translocal networks are highly im- portant for migrant workers' families, the respective communities, and the econ- omies of migrant-sending- and money-receiving nations. Officially recorded re- mittances to Bangladesh have steadily increased over the past 30 years. In 2012, 'overseas workers' from Bangladesh sent home more than US $14 billion, which

accounts for more than 12 percent of its GDP.[3] There is no official data on the transactions of internal migrants, but the aforementioned study in Kurigram, one of the poorest districts in Bangladesh, revealed that the migrants' contribution to households' income is viewed as 'substantial' by more than half of the 150 survey respondents. Sending money has become easier, quicker, cheaper, and safer with the introduction of e-remitting and e-banking via mobile phones (Sterly 2015). Remittances are spent on migrant families' food consumption, debt repayment, health care and education, and business or agricultural investments (Ahmed et al., 2012; Peth and Birtel, 2014). Migrants do not only bring home money, gifts, and consumer products, but also new knowledge, ideas, values, and norms. Material and 'social remittances' (Levitt & Lamba-Nieves 2011) play important roles in the everyday lives and identity formations of translocal families and contribute crucially to economic, social and political transformations in Bangladesh (Gardner 1995; Dannecker 2005; Gardner 2009; Rahman & Fee 2012). Both types of trans- fers also leave their 'marks' in space as remitted money is invested back home to buy agricultural land or to build a house, or to buy mobile phones as lifestyles change due to newly introduced products.

Third, Bangladeshis generally "have a strong sense of home and rootedness" (Gardner, 2009: 233), which is maintained through kin connections and reaf- firmed through place-based identities. In a study of the "culture of slum dwellers," Kumar Das (2003) questioned a too-simplistic understanding of migration in terms of the most prevalent pull and push factors. He argues that networks that have developed between places of origin and the city, kinship ties and relations to political leaders do structure people's migration trajectories. 'Translocal social capital' can, in turn, become an important asset in times of crises as research on the coping strategies of Dhaka's slum dwellers during the 2007/2008 food price hike has shown (Zingel et al. 2011). Translocal relations are carefully maintained through transfers and through regular mobile phone calls. The home village is visited regularly, in particular, for traditional festivities. Even if people came to Dhaka decades ago, frequent reference to one's home is being made. Strong emo- tional bonds are not only reaffirmed among relatives, but also among people from the same village or district, who sometimes live in the same urban neighborhood and support one another, for instance, with finding a job or getting access to pub- lic services (Kumar Das 2003). Maintaining close relations to people at multiple places – people with similar origin in the urban neighborhood, other people in the home community and family members in the city, back home or at other place in the world – is a crucial aspect of translocal life. Specific socio-spatial construc- tions like the *desh*, the 'homeland' of transnational migrants, or the *bari*, the rural 'home village' of the family father, have thus not lost importance for Bangladeshi migrants' sense of belonging (Kuhn 2003; Gardner 2009; Etzold 2014).

2. ENVIRONMENTALLY-INDUCED MIGRATION IN BANGLADESH

Climate change has increased the risks for millions of vulnerable people around the globe as they are more frequently affected by natural hazards and exposed to subtle changes of their environment that might threaten their livelihood and food security. Migration can play an important role for vulnerable people, who seek to secure and diversify their livelihoods in the longer run, and who act in response to everyday insecurities and the additional challenges of climatic changes. Yet, we should not believe too simplistic – and possibly naturally deterministic – accounts of 'climate refugees' and 'environmental migrants', who have fled natural hazards and deteriorating environmental conditions. Complex migration processes cannot be 'determined' by nature. They are rather 'structured' by people's perceptions of environmental, economic and political changes, by their everyday experience, their social and cultural embeddedness, and by their (in)ability to see and take on livelihood opportunities. A social vulnerability perspective helps us to understand 'environmentally-induced migration' in Bangladesh in a more differentiated way.

Vulnerability to Climate Change

For Bangladesh, there is mounting evidence that natural hazards such as floods, tropical cyclones, and droughts increase in frequency and that creeping processes such as river erosion, sea-level rise, and salinity ingress continue unabated. More- over, temperature extremes are likely to increase in frequency and the already existing variability of rainfall is likely to be further exacerbated. More rainfall and run-off are expected during the monsoon months, while the already scanty rain- falls in the dry season are likely to decline further in the future. Together, these changes might result in and certainly add to persisting patterns of stress on specif- ic marine and terrestrial ecosystems, local water scarcity and land degradation, and regional food insecurity (IPCC 2007, 2014).

From a social vulnerability perspective, people's susceptibility to hazards and the structural causes of their vulnerability need to be examined, as well as their own actions (Wisner et al. 2003; Bohle 2007). The climatic shocks and slow-onset environmental changes expected for the future have the potential to damage the lives and livelihoods of millions of Bangladeshis. The rural population living in the southern coastal belt, in the drought-prone north or along the major rivers are particularly exposed to natural hazards and water-related risks (World Bank 2010). Agriculture-dependent rural livelihoods, in particular small-scale farmers and landless laborers, are most sensitive to climatic risks as these carry the addi- tional burdens of chronic poverty and food insecurity (GoB & WFP 2004; Ahmed et al. 2012). Besides investigating people's exposure and sensitivity to natural hazards and environmental crises, we need to pay particular attention to people's *adaptive capacities* in order to understand how they live with risks and uncertain- ties. This book examines the vulnerability to climate change by focusing on this latter `internal´ dimension of vulnerability. It is then not so much the absolute

extent of a flood, the destructive power of a tropical cyclone, or the length of drought spells as such, which are interesting for our investigations, but rather the actions and interventions that shape people's vulnerability to climate change. An actor's-centered perspective on vulnerability translates into the following exem- plary questions: Who is particularly vulnerable to being exposed to and impacted by a flood, for example? How can the affected people cope with the flood and its mid-term and long-term effects? What role do migration processes play in limit- ing or strengthening people's capacities to cope with and adapt to floods at pre- sent and in the future? Which societal and political structures frame the migration process and thereby also structure people's vulnerability or resilience?

Climate Change and Migration in Bangladesh – A review of the literature

In the academic debate about climate change, migration is often discussed as a coping strategy against rapid-onset natural hazards and as an adaption to slow- onset processes. If people leave a place because their livelihoods have been nega- tively affected by natural hazards or environmental changes, one might speak of "environmentally-induced migration" (cf. McLeman & Smit 2006; Warner et al. 2010; Piguet et al. 2011 for an introduction to the debate and its contested terminology). The International Organization for Migration (IOM) defined

> environmental migrants as "persons or groups of persons, who for reasons of sudden or progressive changes in the environment that adversely affect their living 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" (IOM, 2010: 4).

In order to understand migration in the context of climate change, Findlay and Geddes (2011) argued that one should first investigate pre-existing mobility pat- terns and livelihood systems, and then assess the 'additional burden' that climate- related risks pose for people. Considering the above sketched migration patterns, climate change cannot be considered *the* major cause for migration in Bangladesh. Nonetheless, climatic risks and environmental change have certainly altered the ways in which Bangladeshi people are pursuing their livelihoods, and has also been a significant factor contributing to people's migration decision.

In recent years, a growing body of literature on the relationships between cli- mate change, natural hazards and environmental risks on the one hand, and migra- tion, displacement, and mobility on the other hand has emerged. Bangladesh is one of the countries that is most frequently studied. To sort this field, one might best distinguish between different environmental drivers of livelihood changes and human mobility according to the spatiality and temporality of their impact. The report "Assessing the evidence: Environment, climate change and migration in Bangladesh" by the International Organisation for Migration (IOM 2010) used three categories for its assessment: mobility in the context of sudden-onset events, migration in relation to slow-onset processes, and the 'cascade' effects between environmental degradation, urbanization, human security and migration.

Displacement, migration, immobility and return in the context of natural hazards

For Bangladesh, ample empirical evidence exists on the effects of climate-related *sudden-onset events* or *natural hazards*, such as floods or tropical cyclones, on people's mobility (Paul 2005; Warner et al. 2009; IOM 2010; Poncolet et al. 2010; World Bank 2010; Mallick & Vogt 2012; Black et al. 2013; Penning- Rowsell et al. 2013). *Floods* are a fact of everyday life for many Bangladeshis. Bangladeshis are used to "living with floods." They have adapted to floods by raising their houses on plinths and adjusting their farming systems – in rural areas the seasonal rhythm of labor is adjusted to the agricultural seasons and the periods when floods are likely to occur. Nonetheless, excessive floods can become a natu- ral disaster. In the last 25 years, Bangladesh has experienced six severe floods causing 9,600 deaths. The floods of 1987, for instance, led not only to the loss of 2,000 to 6,000 lives, and the destruction of public infrastructure, private houses, and agricultural land, but also to temporary displacement of 45 million people resulting in persistent migration within Bangladesh (IOM 2010). The challenges of displacement during a flood and the benefits of migration patterns that emerge before and after floods need to be seen in the context of the coping strategies that are locally available for flood-affected people. Microcredits and micro-insurance might help people to overcome both the negative long-term effects of flooding and displacement (Akter & Fatema, this volume).

Tropical storms can 'hit' local communities hard and have the power to de- stroy properties, livestock, and people's lives. Yet, the mid- and long-term effects on food production, rural livelihoods, and mobility patterns can be even more se- vere (Kartiki 2011; Mallick & Vogt 2014). Paul (2005) provides evidence that micro-scale disasters such as a *tornado* that occurred in north-central Bangladesh led to migration. *Tropical cyclones* that are usually accompanied by high winds and storm-surges hit Bangladesh every three years on average. Since 1877, a total of 160 cyclones have formed in the Bay of Bengal and hit the Bangladesh coast. The Bangladesh Meteorological Department (BMD) reported that the combined death toll in those storms stands around one million people (Mallick & Vogt 2012). The more recent cyclones Sidr (2007), Alia (2009) and Mohasen (2011) affected millions of people in Bangladesh, but due to improvements in early warn- ing systems and disaster emergency help, the death toll was far smaller than in the great storms of 1970 and 1991. Cyclones can affect migration patterns through different pathways. On the one hand, there is evidence that many 'survivors' have been only temporarily and locally displaced from their homes and quickly re- turned; but on the other hand, thousands of other people lost their homes and live- lihoods and migrated to cities in search of shelter, employment, and secure lives (IOM 2010; Poncolet et al. 2010; Findlay & Geddes 2011). In a detailed analysis of rural livelihoods and people's post-disaster coping strategies carried out in Bangladesh's coastal zone, Mallick and Vogt found that one third of almost 300 households had one or more members – mostly men – who migrated temporarily to nearby cities. Because cyclone Alia also destroyed the employment opportuni- ties in their villages, these individuals left home right after the cyclone to search

for alternative sources of income (Mallick & Vogt 2012; Mallick, Chapter 7; Islam et al., Chapter 8). These findings show that landless and resource- constrained people in the exposed areas are often most severely affected by natu- ral disasters (Khun 2005). Yet, a high susceptibility to natural hazards does not necessarily lead to an increase in permanent migration. Based on a longitudinal study in Bangladesh, Gray and Mueller pointed out that "although mobility can serve as a post-disaster coping strategy, it does not do so universally, and disasters in fact can *reduce* mobility by increasing labor needs at origin or by removing the resources necessary to migrate" (Gray & Mueller 2012: 4).

As indicated, those people in poverty, who also live in exposed areas, are most severely affected by natural hazards, but this does not necessarily mean that most of them are also mobile. Even though many flee before a natural hazard to save their lives and others migrate after an environmental event and can indeed cope with its effect, others (have to) remain behind for social, cultural or purely economic reasons. Immobility is then a particular source of their vulnerability. Many families living under conditions of extreme poverty cannot benefit from migration to cope with a disaster or to improve their situation in the longer term; these families may experience significant barriers to migration that exist irrespec- tive of the particular hazards. They have neither adult male family members who could work as labor migrants, the required resources to facilitate migration, nor the access to the necessary migration networks. These "trapped populations" (Poncolet et al. 2010; Black et al. 2011; Black et al. 2013) are forced to adapt to disasters with the resources that are their locally available to them. They largely depend on post-disaster aid as well as mutual help and solidarity within the re- spective community. Yet, as resources are scarce right after a disaster, their recov- ery is likely to be longer and more difficult. Many enter and stay locked in sys- tems of dependency and indebtedness. The 'trapped populations,' among them many elderly without (healthy) family members and many female-headed house- holds, are then probably the people who are most vulnerable to natural hazards.

To sum up, mobility can be an important way to cope with a disaster and its long-term effects. Yet, the link between temporary migration after a disaster and an increase in permanent migration is neither direct nor clear (Gray & Mueller 2012; Joarder & Miller 2013). Moreover, the long-terms effects of people's post- disaster migrations are not well understood. On the one hand, migration can con- tribute to enhanced livelihood security, when households have gone 'translocal' in order to diversify their sources of income and to reduce their exposure to envi- ronmental, economic and political risks at one particular place. Migration can then be seen as an indicator of social resilience and adequate adaptive capacities to climate change (McLeman & Smit 2006). On the other hand, many migrant households do not benefit from migration as the earned incomes – and thus remit- tances – remain low, as initial periods of indebtedness cannot be overcome, and as the absence of (male) family members has negative effects on the broader family. In these cases, post-disaster migration can be seen as an 'erosive coping strategy' that even enhances the households vulnerability and limits their future potentials (Warner et al. 2012; Warner & Afifi 2014). Last, not least, the relation between

*im*mobility and post-disaster recovery, household vulnerability and long-term so- cietal development, and thus the foregone livelihood opportunities for 'trapped populations' must be kept in mind, too (Etzold et al., Chapter 5).

Human mobility in the context of more subtle environmental changes

While almost all Bangladeshis are exposed and sensitive to sudden-onset disasters that "hit" a particular area, slow-onset processes reveal a differential kind of vul- nerability to climate change. Although slow in its onset, *riverbank erosion* is a common threat to people living along the major rivers and on the many Char is- lands (the riverbed sandbars) and regularly forces people to move their homes to other nearby places or to migrate permanently to cities (Haque et al. 1989; Mutton & Haque 2004; Poncolet et al. 2010; Arsenault et al., Chapter 3). Since 1973, over 158,780 hectares of land has been eroded. More than 16,000 people living on the banks of the Jamuna, Ganges, and Padma have allegedly been displaced in 2010 alone (IOM 2010).

As river erosion, *coastal erosion* is a slow-onset process that intersects with other threats that the people living in Bangladesh's coastal zones face like *salt- water intrusion*, *storm surges* and *floods*. Even a 50 cm rise in sea-levels by 2050 could displace 26 million from coastal zones of Bangladesh (Biermann & Boas 2010; Gemenne 2011). On 11 October 2009, at the United Nations General As- sembly Bangladesh's Prime Minister Sheikh Hasina thus reiterated the danger posed by *sea-level rise*:

> "What is alarming is that a metre rise in sea level would inundate 18 percent of our land mass, directly impacting 11 percent of our people. [...] of the billion people expected to be displaced worldwide by 2050 by climate change factors … one in every seven people in Bangladesh, would be a victim".

Sea-level rise and *salt water intrusion* were first felt by farmers in the south-west of Bangladesh, not in terms of complete loss of livelihoods, but in terms of slowly decreasing yields that make it more difficult to sustain a purely agricultural-based life. Water-logging and the subsequent effects of soil salinization thus also con- tribute to an increase in out-migration. For agriculturally-based livelihoods, envi- ronmental stress is particularly acute when the soil quality deteriorates, when land has to be given up, or when it is lost completely. Given the absence of alternative livelihood options in many rural areas, permanent displacement is then the logical and often the last consequence (IOM 2010; Poncolet et al. 2010; Penning-Rowsell et al. 2013). Yet, it is the proliferation of the shrimp industry in south-western Bangladesh and a changing local labor market that drove out many former farm- ers, while other people were attracted to and actually migrated to this region (Ackerly et al., Chapter 2). These changing political economies, and indeed shifts in the local, regional and global political ecology, have to be addressed when we want to comprehend local societal transformations as well as changing livelihood systems and migration patterns.

In Bangladesh, the impact of *shifting seasons* and *rainfall variability* on local livelihoods and subsequent migration patterns has been studied the least. Previous research, however, indicates the importance of food security as an intermediate variable between climate change, natural hazards or environmental deterioration and people's decision to migrate or flee. As far as the supply of food is concerned, Bangladesh has shown resilience, coping, and adaptive capacity to deal with any kind of challenges stemming from global food markets, international trade agree- ments on climatic change. And there still seems to be an untapped potential to produce more food on even less land (Zingel, Chapter 4). Yet, most people in the nations' rural areas still depend on subsistence production and agricultural day- labor for their own food security. A good harvest and good income often depends on the availability of water in the right quantity at the right time. If farmers fail to respond to the variability in rainfall by using irrigation, they risk losing (parts of) their production. As poor subsistence farmers often cannot afford irrigation, but too little water during the critical crop-growing period decreases their food pro- duction. If no alternative employment opportunities are available in the neighbor- hood, labor mobility can become the sole option to secure a household's access to food (Poncelet et al. 2010; Findlay and Geddes 2011). According to Gray and Mueller (2012), a positive and significant relationship does exist between crop failures, which are primarily driven by rainfall variability, and long-term migra- tion. However, the propensity to migrate permanently due to crop loss, and thus food insecurity, differs strongly among rural households. In case of a severe drought, landless laborers do not lose their own production, but rather their work. They are more likely to migrate permanently in search of work than members from households who have lost their harvest, but hope to recover at home. Peo- ple's *sensitivity* to rainfall variability, which is a socio-economic determinant, and not their mere *exposure*, is then the key element to understanding their coping actions and their overall vulnerability to climatic risks. These findings have be verified in the "Where the Rain Falls" study that was carried out in 2011 in north- ern Bangladesh by CARE and the United Nations University Institute for Envi- ronment and Human Security (see Ahmed et al., 2012, Warner et al., 2012; Warn- er and Affifi, 2014; Etzold et al. 2014; Etzold et al., Chapter 5).

Playing the 'Numbers Game'

Number matters. Bearing in mind the postulated negative effects of climate change (IPCC, 2007; World Bank, 2010) and the environmental deterioration that stems from an unsustainable resource use, it is very likely that the number of mi- grants moving from from rural areas will increase in the future. Myers (2002) has prominently argued that 25 million people of the world were displaced in 1995 due to environmental disruptions; by 2050, 200 million people would be dis- placed. Zelman (2011), in turn, speaks of "50 million environmental refugees by 2050". Assuming a temperature increase of 4 degree Celsius by the end of twenty- first Century, Nicholls et al. (2011) state that up to 187 million people could be

forcibly displaced worldwide by sea-level rise and associated consequences. For Bangladesh, Biermann and Boss (2010) projected that 26 million people would be affected and displaced by storm surges and sea-level rise by the year 2050. And Ahmed and Neelormi (2008) estimated that 250,000 people might be displaced per year in the nation as a consequence of climate-induced hazards under a mod- erate climate change scenario.

Why should we treat such 'number games' with caution? First, all too often the blunt estimates simply lack an empirical basis and the methods of estimation or projection are neither displayed nor discussed. Second, vague estimates are circulated and thereby reinforced, while the original data sources and criticism on the validity of estimates or projections somehow get lost. What is left is the blank number, which might be manipulated for political purposes (Irfanullah 2013). Third, the exact reason why people are displaced – or do they migrate voluntarily?
– are often not considered adequately in the estimates. Gemenne (2011), for in- stance, argued that the existing estimates of the number of people likely to be dis- placed from flood-prone areas in Bangladesh do not adequately distinguish be- tween the different environmental risks (such as flooding, cyclones, sea-level rise, salinization, etc.) that people are exposed to. They also do not consider other cru- cial factors of migration or immobility, such as poverty levels, local economic transformations, political conflicts or alternative adaptation strategies. Fourth, the underlying assumptions of most estimates and projections are overly simplistic. People are displaced *by nature* for good: they leave once and for all, they do not come back, they do not move forward. Migration is thereby portrayed as a singu- lar and linear process. This is not only crudely environmentally deterministic and reductionist as all other social, cultural, economic, political and spatial factors that contribute to migration decisions are simply not considered. It also denies people their capacity to anticipate changes in their environment, to cope with shocks to their livelihoods, and to adapt to more structural transformations in the area where they live and at the many possible destination of migration. In short, there is no place for human agency in such projections. Fifth, too many projections use the numbers of thousands and millions of 'environmental refugees' in an 'alarmist scenario' to demonstrate that something is going wrong (Saul 2011; Mayer et al., Chapter 13). In the policy discourse, migration is thereby framed as something 'bad' or a 'failure of climate change adaptation' that needs to avoided, or at least better 'managed'. Criticizing such negative connotations and political manipula- tions, we argue that human mobility is a right for itself. Migration can also be seen as a good way to adapt to environmental, economic and political risks. Moreover, migration can also be considered a normal part of everyday life and not an exception that needs special political – and perhaps also, academic – attention.

3. POLICIES OF CLIMATE CHANGE AND MIGRATION

The climate change discourse is in full swing in Bangladesh. The nation might even be considered as the most prominent 'test case' for climate change adapta- tion. The government of Bangladesh and its development partners have thus taken on different institutional and infrastructural initiatives to respond to the challenges posed by climate change and to react to transformations in the international devel- opment funding landscape. But there is no straightforward solution to the chal- lenges posed by climate change. And there is no 'one-size-fits-all' approach avail- able for the protection of climate-induced migrants all over the world (Naser 2014). Since any kind of population displacement deals with many diverse issues like land, housing, employment, health, security etc., it does not seem effective to provide one single legal instrument or one specific kind of policy project to sup- port migrants that have been affected from climatic changes. The legal policy con- text for the migrants in Bangladesh is not different from this global scenario.

In Bangladesh, the laws, regulations, acts and policies are very sectoral. They are neither well-integrated, nor accustomed to deal directly with climate change issues. Policies to combat the consequences of climate change tend to be driven by disaster risk reduction policies. In this context, migration is often seen as a "failure of adaptation." The aim then seems to be to restrict migratory flows (IOM 2010, p. xiv). Overall, migration that relates to environmental and climatic chang- es is not appropriately addressed in national laws and policies of Bangladesh and not integrated into laws and policies related to the environment, climate change, disaster risk reduction (DRR), development and land management (Naser, 2014).

Tragically, the environment has also not been well protected under the Consti- tution of the People's Republic of Bangladesh; however, the recent Fifteenth Amendment to the Constitution included a provision regarding the conservation, protection, and development of the environment.[4] The environmental law or cli- mate change related laws in Bangladesh are based on statutory laws and by-laws, customs, traditional perceptions and practices, international conventions and trea- ties and protocols (Naser 2014). However, Bangladesh has adopted a number of laws and policies to combat natural disasters. Amongst them, the most important legislative acts that deal with environmental protection are the Environmental Policy (1992), Bangladesh Environment Conservation Act (1995), and the Envi- ronmental Conservation Rules (1997). A lot of supplementary policies, for exam- ple the Forest Policy (1994), Energy Policy (1995), Coastal Zone Management Policy (2005), Water Policy (1998), Fisheries Policy (1998), New Agriculture Extension Policy (1998), were also adopted. Besides these sectoral and supple- mentary policies, the government has introduced the National Conservation Strat- egy (NCS), National Capacity Self-Assessment (NCSA) for Global Environmen-

2 Constitution of Bangladesh. Article 18 A: "The State shall endeavor to protect and improve the environment and to preserve and safeguard the natural resources, bio-diversity, wetlands, forests and wild-life for the present and future citizens."

tal Management (2007), and the National Environmental Management Action Plan (NEMAP) (1995). All of these policy and strategic documents are dealing with environmental issues of the country, but a few of them make specific refer- ence to population displacement as a consequence of environmental disruptions and climate change (Naser 2014; Martin et al. 2014; Mayer et al., Chapter 13; Lopa & Ahmad, Chapter 14).

To address the consequences of climate change, the government has prepared two important documents: the National Adaptation Plan of Action (NAPA) of 2005 and the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) of 2009. Although the NAPA provides a vivid description of the main effects of cli- mate change in Bangladesh and offers a number of adaptation strategies to address the challenges posed by climate change, it does not recognize the adaptation po- tential of migration and does not highlight migration as an explicit adaptation strategy. According to Naser (2014), NAPA also lacks a long-term vision for planning and lack of a wide acceptability, as it was formulated with very little participation from affected communities. In contrast to NAPA, the BCCSAP seeks to integrate climatic changes into planning and programs that are relevant for sustainable development. It also addresses the potential effects of climate change on population displacement in Bangladesh and asks for a better monitor- ing of climate-induced migration and adversely affected populations. However, a further review of both the NAPA and BCCSAP is necessary to determine how these documents address population displacements and to protect migrants' and displaced people's human rights.

As a regional policy tool, the integrated coastal zone management program (ICZMP) established a 'coastal zone policy' in 2005 in order to protect and im- prove the coastal population's livelihood, environment and infrastructure. The ICZMP activities came, however, to a stop in 2007 and were included in the more 'comprehensive disaster management program' (CDMP) established in 2008 un- der the Ministry of Food and Disaster Management. The CDMP assumed all du- ties and responsibilities associated with disaster management for the entire coun- try. Since 2008, the CDMP has conducted several community-based risk assess- ments (CRAs) using participatory approaches. Those CRAs are presently collec- tively used as a guideline for planning and implementing comprehensive disaster risk reduction programs. The government also developed a 'climate change adap- tation plan' in 2008 and a 'standing order of disaster management' in 2010.

On an international level, the UN Guiding Principles on Internally Displaced Persons (IDPs) of 1998 needs to be mentioned. Based on existing human rights law and international humanitarian law, the principle might give protection to 'environmental migrants.' Additionally, the Hyogo Declaration and Framework for Action of the 2005 World Conference on Disaster Reduction asked each gov- ernment to improve or prepare national legislation and plans on the basis of in- formed participation of affected communities (Naser 2014; Khan, Chapter 15; Giupponi, Chapter 16).

In Bangladesh, 'climate-induced migration' could have effects on the suc- cesses of Millennium Development Goals (MDGs), particularly on poverty allevi-

ation. The second National Strategy for Accelerated Poverty Reduction Financial Years 2009-2011 (NSAPR-II), five year development plan (2011 to 2016) and Vision 2021 placed poverty reduction at the center of national policy in order to reach the MDGs. Particularly NSAPR-II introduced long-term strategies for ex- panding foreign employment by exporting laborers from Monga and other ecolog- ically vulnerable areas (Naser 2014). The Vision 2021 clearly points to the need for the inclusion and integration of DRR and climate change in all development plans. The Ministry of Food and Disaster Management of Bangladesh has 'stand- ing orders' on disaster management (1999), which lack the specification and the reference to human rights protections that climate-induced migration requires. In 2012, the Disaster Management Act was passed in Bangladesh to enforce disaster management rules, policies, and regulations. Under this act, both adaptation and DRR can be used as tools to build people's capability so that they need not rely on migration as an alternative income source or the tools could facilitate migration as an adequate adaptation strategy (Naser 2014).

Overall, the Government of Bangladesh is clearly aware of both the challeng- es of climate change adaptation as well as migration and climate-induced dis- placement. The government plays up the vulnerability of the Bangladeshi people in the international political arena (see Giupponi, Chapter 16) in order to gain ac- cess to the bilateral and multi-lateral climate funds that compensate for the loss and damages in the nation and that should be utilized for better climate change adaptation. Yet, not surprisingly, the journey from acquiring such funds to the translation of these multi-billion US$ funding tools into new policies, develop- ment interventions, and measures to enhance the local people's resilience to envi- ronmental changes and natural hazards, is a long and rugged one. Who benefits from this newly emerging international climate change adaptation funding land- scape? Is it the government and the responsible Ministries and aforementioned policies and programs as such? Is it only the governmental players, international and national development agencies or also community-based organizations and the local communities themselves? And do these funds really contribute to allevi- ating people's hardships in dealing with environmental hazards and more subtle climatic changes? Do they address people's (trans-) local livelihoods at all? And does enhanced spending in the field of climate change adaptation actually affect people's decision to stay or migrate? These questions cannot be fully answered in this book (Mayer et al., Chapter 13; Lopa and Ahmad, Chapter 14; Khan, Chapter 15; and Giupponi, Chapter 16), but they need to be raised and discussed in public.

4. OUTLINE OF THE BOOK

Our book has two sections. The first presents the results of empirical investiga- tions into the complex relations between environmental changes, migration and climate change adaption in Bangladesh. Nine chapters are subsumed in this sec- tion called "Evidence of Climate Change, Migration and Adaptation". The second section looks at the "Politics of Climate Change, Migration and Adaptation" and presents critical reflections of the overarching policy debates and discourses on 'environmentally-induced migration' in and beyond Bangladesh.

Evidence of Climate Change, Migration and Adaptation

The first section begins with a contribution by *Brooke Ackerly, Mujibul Anam and Jonathan Giligan,* who discuss the changes of livelihoods and the local political economy in south-western Bangladesh in chapter two. They argue that the structu- ral political-economic transformations in the region fundamentally link up with slow-onset environmental changes and rapid-onset disasters. Thereby many Bang- ladeshis are pushed into incorporating migration into their livelihood strategies. Chapter three by *Marie-Pierre Arsenault, Mohammed Nurul Azam and Sate Ahmad* explores the internal migration patterns of people living in the erosion prone Char areas of Northern Bangladesh. They have to be highly mobile as they frequently encounter floods and the natural loss of land. Migration is thus a nor- mal part of their life. Nonetheless, increased erosion and flooding in the context of climate change do contribute to changes of their already highly flexible livelihood system. In chapter four *Wolfgang-Peter Zingel* argues that, in the past, Bangladesh has shown its coping capacity and resilience to deal with multiple challenges. In this regard, food security is a fundamental question. Yet, too many people still suffer under conditions of chronic hunger, and some migrate to escape such con- ditions. Meeting the food demands of a growing population must be a major poli- tical goal. As far as the supply of food is concerned, there still seems to be 'un- tapped potential' to grow more food on less land – even under the conditions of climate change. In chapter five, *Benjamin Etzold, Ahsan Uddin Ahmed, Selim Reza, Hassan and Tamer Afifi* also address the issue of food insecurity and debate the major reasons for migration in the North of Bangladesh. They look at the per- ceptions and impacts of climate change, here addressed as increasing rainfall vari- ability, on people's food security and their decision to migrate or stay. They con- clude that the existing patterns of social inequality as well as the structural and systematic economic imbalances in the nation are the main drivers of migration in Bangladesh. Similar observations are found in chapter six, in which *Simon Ale- xander Peth* and *Serge Birtel* explore how the translocality paradigm enables us to capture the complexity of migrants' livelihoods and migration decisions. They argue that it necessary to overcome dichotomizing categories such as the 'push' and 'pull' factors of migration, or the conditions at people's 'places of origin' and 'destinations'. Instead, multi-sited research could help to better understand mul-

tiple insecurities, people's translocal lives and complex interactions in migration systems, in which climate change might play *a*, but not *the* dominant role.

In chapter seven *Bishawjit Mallick* explores the societal consequences of cyc- lone-induced disasters in coastal communities. He examines a number of pa- thways through which environmental disasters may lead to migration. His com- prehensive study identified the push factors behind those movements that occur immediately after a cyclone. He also addresses how migration decisions impact family relations and contribute to social changes in the cyclone-affected commu- nities and at the migrants' destinations. In chapter eight, *Ishrat Islam, Shakil Akther, Nushrat Jahan and Md. Imam Hossain* look at the socio-economic condi- tions of migrants, who had left rural coastal districts and then settled in Bangla- desh's urban centres. They conclude that climate-induced factors, like the destruc- tion of arable land and fishing equipment through cyclones, had led to a loss of income and capital. Environmental drivers forced the affected families to adapt their livelihoods, and were thus salient reasons for migration. Many people can, however, not secure their lives through their move to cities, but find themselves even in a worse socio-economic situation than before. The authors therefore sug- gest enhancing people's access to financial support right after disasters so that they are able to recover quickly and so that alternative income source can be cre- ated. In chapter nine, *Afifa Afrin* and *Helal Hossain Dhali* do also focus on the social consequences of climate-induced migration. They use a gender perspective to better understand how men and women are differently affected by environmen- tal change and hazards, and which adaptation strategies women use in this con- text. Their discussions with displaced women, who now live in Dhaka's slums after their migration from rural areas, show that migrations and changing liveli- hoods also envoke considerable transitions inside families and broader changes of societal gender relations. In chapter ten, *Sonia Akter* and *Naureen Fatema* present results of a large-scale household study, for which data was collected in six river- ine and coastal districts that are regularly affected by floods. One of the main ob- jectives of their study was to examine how micro-insurance take-up was influ- enced by the availability of and access to post-flood microcredit. Migration pat- terns are not directly addressed in this chapter, but their findings demonstrate that people who are used to 'living with floods' employ multiple formal and informal strategies to cope with floods and its effects, and quickly recover thereafter. Labor migration of family members might be considered as one way to diversify liveli- hoods and thus as an informal insurance mechanism against climate-induced risks.

Politics of Climate Change, Migration and Adaptation

Politicial debates as well as national and international policies related to environ- mental change and migration are focused at in the following chapters. In chapter eleven, *Architesh Panda* raised the issue of the transboundary nature of global environmental change and addresses the capacity of states to effectively deal with cross-border movements that might be evoked by climate change. He discusses the links between migration and vulnerability in the border regions of India and

Bangladesh and presents a framework to comprehend the 'interdependent vulne- rabilities' between both nations and the policies that are required to reduce peop- le's vulnerability to climate change. In chapter twelve, *Robert Stojanov, Barbora Duží and Ilan Kelman* address local experts' perceptions of environmental chan- ges, climate variability, and migration patterns in Bangladesh. They develop their argument on the basis of expert interviews. In turn, their paper includes several recommendations for the actors who they interviewed – people in the local admi- nistration, in public institutions and governmental agencies. Their suggestions focus at adaptation policies that help to protect the local population against the impacts of climate extremes. In chapter thirteen, *Benoît Mayer, Ingrid Boas, Jackson Ewing, Alice Baillat and Uttam Kumar Das* illustrate the need to form cross-sectoral governance policies that avoid an oversimplification of environ- mentally-related migration. They highlight the limits and dangers of a security- based framework, which sees environmentally-related migration as being 'deter- mined by nature' and as a 'societal problem' that needs to be solved. Not shying away from the complexity of the everyday politics of climate change, they call for policy coordination at all levels as a potential pathway forward. *Fowzia Gulshana, Rashid Lopa,* and *Mokbul Morshed Ahmad* describe how Civil Society Organiza- tions (CSOs) tackle climate change in Bangladesh, from contributing to adequate policy formulations to implementing adaptive actions. Their study in chapter four- teen presents some important facilitating factors and barriers for ensuring the par- ticipation of CSOs – and thus the voice of those people that are affected by clima- te change themselves – in the formulation of the national climate change policy, and in the implementation of adaptation projects.

In chapter fifteen, *M. Hafijul Islam Khan* addresses the difficulties of estab- lishing direct causalities between climate change impacts and migration, and the implications this has for policy and law. By carefully scrutinizing the linkages between adverse impacts of climate change and migration patterns, he opens up the required legal and policy avenues for dealing with climate-induced migration. *Belén Olmos Giupponi* concludes the section about the 'Politics of Climate Change' in chapter sixteen with a look at Bangladesh's contribution to the ongo- ing debate about environmental migrants in the international political arena. She argues that the country has been lobbying for the recognition of a specific status for climate-induced migrants at the UN Climate Change negotiations in order to obtain a better access to financial support of developed countries. Her chapter shows that it is not only the people in Bangladesh, who adapt to the impacts of climate change on a daily basis, but also the political leaders and ministries, who adapt to the climate change-induced transformations in the international develop- ment funding landscape.

In the final chapter, we once more reflect upon the key findings in this book. We highlight that migration must be considered as multi-causal social processes that cannot be fully understood by simply listing the most obvious push and pull factors. Moreover, living a translocal life has probably already become the nor- mality for most Bangladeshi families. Mobility and migration can thus not be seen as societal exceptions. We also re-iterate the need to think critically about our own 'framings', prevalent political discourses and our own language when we look at 'environmentally-induced migration'. We should not fall into the trap of environ- mental determinism and alarmist understandings of people's mobility, because the way we think about migration in the context of climate change and environmental degradation (whether it is a 'failure of adapation' or an 'adequate way of adapta- tion') has great implications for the formulation of policies, and thus people's lives. We therefore suggest some political responses that embrace people's mobil- ity and enhance their capacities to live with climate change – no matter whether it is in Bangladesh, or beyond.

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