Chapter 5

Climate Change and Mitigation in Bangladesh

Vulnerability in Urban Locations

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Introduction

The 2014 report on the Intergovernmental Panel on Climate Change (IPCC) acknowledges that, during the twenty-first century, climate change is projected to increase the displacement of people from both rural and urban areas, particularly in developing countries and among low-income groups (IPCC 2014b: 20). Households with a poor resource base situated in rural areas are more vulnerable to the shocks, stresses, and negative impacts of climate-related events (Warner et al. 2012; Siddiqui and Billah 2014; Islam and Siddiqui 2016). Bangladesh is one of the most vulnerable countries facing the adverse effects of climate change. The International Displacement Monitoring Centre (IDMC) data show that, from 2009 to 2014, around four million Bangladeshis were displaced due to different hazards (IDMC 2015). Based on a comparison of the census results regarding population growth in different districts between 2001 and 2011, Black, Kinveton, and Schmidt-Verkerk (2013) projected that, from 2011 to 2050, as many as sixteen to twenty-six million Bangladeshis will migrate from their place of origin due to flooding, storm surges, river bank erosion, and rising sea levels. This includes both the displaced population as well as labor migrants.

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The aim of this chapter is to develop an understanding of those who have moved to urban locations in the context of climate change and assess their gains and vulnerabilities in urban settings. The major research questions pursued in this study include, have the migrants or their households, through migration, been able to resolve some of the challenges that led them to decide to move in the first place? Can their migration experience be termed a successful adaptation practice?[1] How integrated are the new migrants in the urban locations? Do the migrants face new forms of vulnerabilities in their urban setting? What are the sources of those vulnerabilities? How do they resolve these?

This chapter is divided into six sections. The first section presents the aim of the chapter, outlines the major research questions and conceptual framework, and also describes the methodology employed in the research. The second section reveals various types of migration experience of the respondents. It also explains the situation under which the migrants or their households took the migration decision. The third section presents an assessment of the job and income situation of the migrants in the city. The fourth section evaluates their living arrangements in different informal settlements. The fifth section examines other human security concerns of the migrants. The sixth section draws the major conclusions and also provides some modest recommendations.

Conceptual Framework

This chapter is based on the understanding that climate change does not displace people directly but, rather, exacerbates various forms of vulnerability that contribute to displacement (Kolmannskog 2012). It also draws on the study by Jayawardhan (2017) that demonstrates that anthropogenic climate change affects most of the inhabitants of a community, yet socioeconomic inequalities make marginalized groups more vulnerable to it. When the vulnerability of affected persons reaches the threshold where life and livelihood in the areas of origin become unsustainable, then the individuals concerned are forced to leave their habitual residence (De Compos et al. 2019). This study does not explore the climate change–induced migration experiences of households from a relatively better-off economic background but concentrates on relatively poorer households who have been residing in various informal urban settlements in three cities. To understand the achievements and vulnerabilities, the analysis is based on the studies of Craig (2015), Uddin (2018) and Adger et al. (2020). This group of scholars finds that migration responses to climate change provide a new roof over the head of migrants while also offering new jobs

to many migrants, but at the same time they also expose migrants to new forms of vulnerabilities[2] in the destination areas. These studies show that migrants living in the urban areas tend to be located in low-lying, environmentally hazardous regions, coupled with inadequate facilities in terms of food, shelter, sanitation, and healthcare. The extent of this vulnerability differs among the migrants across locations, gender, age, ethnicity, region of origin, and income/occupation groups (Jones, Mahbub, and Haq 2016).

Craig (2015), Uddin (2018), te Lintelo et al. (2018), Rahman, Haughton, and Jonas (2010), Siddiqui et al. (2021), and Williams et al. (2016), who have studied informal settlements in Mumbai, Shanghai, Dhaka, Chittagong, and Durban, demonstrate that, in those areas, the residents face severe flooding, poor water quality, the prevalence of mosquitos, health vulnerability such as vector-borne diseases, exposure to communicable diseases, damp housing conditions, inadequate sanitation facilities, and so on. Rahman, Haughton, and Jonas (2010) and Chen, Chen, and Landry (2013) find a poor physical environment with a nonexistent solid waste disposal system in most of the settlements, resulting in the high prevalence of (water-borne) diseases among the children. Foresight (2011), Akter (2012), Sinthia (2013), and Randall (2013) reveal that households opted for migration to reduce their immediate social, financial, and environmental pressures and improve their capacity to manage shocks and stresses, and so they are likely to be trapped in their destinations and exposed to other forms of vulnerabilities. Recently, Adger et al. (2020) find that migrants think that they are better off and happier in their urban setting. Black et al. (2013) argue that, with or without the influence of climate change, some people will move to the urban areas for job opportunities. They can enjoy a better life when the urban infrastructures are developed and climate change adaptation funds can provide a source of finance for materializing this.

Methodology

We draw on data generated by the Refugee and Migratory Movements Research Unit (RMMRU) for a study on "Adaptation Strategies of Poor Urban Migrants in the Context of Climate Change: A Case Study of Informal Settlements," supported by the Deutsche Gesellschaftfür Internationale Zusammenarbeit (GIZ) GmbH. The research adopts a mixed-method approach. A particular interest of the study was to understand the nature of internal migration from rural areas to nearby cities. It deliberately avoided megacities, as a few large-scale studies have been conducted on conditions of migrants working in the megacities Dhaka and Chattogram. The three selected sites are situated in the northwestern region of Bangla-

desh.[3] The Millennium Development Goal (MDG): Bangladesh Progress Report 2008 notes that the northwestern region of Bangladesh carries a higher burden of poverty due to naturally triggered disasters (especially riverbank erosion and flooding) and is subject to a local phenomenon called *Monga*, interplay between a lack of jobs and food entitlement. The report identified that these two key factors contribute significantly toward creating a major rural urban migration flow from that region (GoB 2009).

Through conducting key informant interviews (KIIs) with members of the municipal corporations, government functionaries,[4] and inhabitants of the three cities, a total of twenty-three informal settlements were identified.[5] The research team conducted a quick survey of around twenty-six households in each informal settlement. The survey started from the left side of each settlement and enlisted every fourth house, stopping once twenty-six households had been listed. In total, the survey covered six hundred migrant households. By applying stratified random sampling, sixty-eight migrants were selected for in-depth interviews from the larger sample (six hundred). The fieldwork of this study took place over a three-month period (July–October 2014). Each of the selected households was interviewed twice. The initial interview provided specific information on rural-to-urban migration. The subsequent interview provided the householders with an opportunity to reflect further on their gains, risks, and vulnerabilities within the urban settlement.

Why Migrate?

The survey results of six hundred dwellers of informal settlements in Rajshahi, Natore, and Sirajganj reveal that almost all of the migrants in urban locations come from a very poor economic background. They hardly have any formal education, and almost all of them are married. Their current average family size is 4.26 members, 90 percent of them initially migrated at a very young age (22 years old), and at least half of them are now settled in the city and have their families with them. Some of them are temporary migrants, and a section of these are cyclical migrants. Their family remains behind in the rural areas when they migrate every month. Another section stays in an urban location, but these return home during the harvest season. The members of a section of these families engage in seasonal migration at a particular time to work in the brick kilns for six months. For a number of these, this is not their first destination. They previously moved to another urban location before arriving at their current one. During the interviews it was revealed that, on average, they have around sixteen years of migration experience.

For the majority, migration was not a sudden decision, and almost half of the migrants or their families had been considering migration as an option for a long time. The study finds that climatic stress is intertwined with the economic and social motivations underlying migration. One-third of the respondents had lost their homestead due to climate stresses (flood, drought, and riverbank erosion) as well as poverty. Eighty percent of them do not possess any agricultural land. The adult members of the households are desperate to earn an income, especially in the case of female-headed households. Abdul Latif's case sheds some light on how highly complex micro-, macro-, and mesolevel factors interact to produce the migration decision. Latif is originally from Chapainawabganj (in the northwestern district of Bangladesh), and he migrated, more or less permanently, to the city of Rajshahi with his wife and two sons seven years ago. He did not inherit any agricultural land from his father, and the only land he owns is homestead land. His village lies next to the India/Bangladesh border. In the village, he was unemployed. He, along with a few other villagers, used to work as an agricultural laborer on the other side of the border. He would cross the border in the morning, work all day, and then return across the border in the evening. Local people have always done this, long before the partition of India. Fifteen or sixteen years ago, the border security was tightened, and he and other workers faced difficulty in continuing to work. Then, he and his cousin joined a local *thikadar*,[6] who was himself a worker, and went to Rajshahi to engage in road work. For several years, he continued to work there for months at a time before returning home. In the meantime, he lost his homestead land to river erosion. For a further three years or so, he, his wife, and his children lived on land belonging to one of his relatives while he migrated back and forth in order to work in Rajshahi. The river eventually also submerged his relative's land, so, along with a few other families, the family moved to Rajshahi permanently. A few of his neighbors from the village accompanied him. For the last seven years, he has lived in Rajshahi in the Bhodra lakeside settlement.

In drought-affected areas, those with agricultural land faced difficulties in continuing with cultivation due to the downward trend in the groundwater level. Rich households could afford to continue to cultivate the land by paying a higher price for irrigation water. Families also were prompted to migrate if they had extended family or neighbors living in urban locations who passed on information about available jobs or offered an initial place to stay. In Rajshahi, like Latif, several other respondents also initially migrated with the support of *thikadars*. When asked why they chose this particular city, the main reasons inevitably included its proximity to their place of origin and access to information about the city through their social network.

Fear of the unknown also deterred some from moving longer distances to cities. Those who still had family members close by preferred not to travel too far in order to safeguard their house and family who remained in the rural areas. This explains why the majority of the migrants (64 percent) are from the same or neighboring districts. The possibility of having a roof over their head and access to a livelihood plus the availability of jobs in the urban locations are among the major driving forces behind their migration decisions. Nonetheless, this economic desperation is influenced or, to some extent, caused by climate change, disasters, and social as well as demographic circumstances. Moreover, the pull factors such as rapid urbanization and the consequent need for labor force play an equally important role to the push factors in the areas of origin. Mediating factors, such as access to social networks at the destination, also play a role. The following sections examine the situation of migrants in urban locations with the aim of understanding how many of the targets (that motivated them to migrate) have been achieved. We will analyze this on five grounds, namely: access to jobs, access to housing, access to drinking water, access to hygienic sanitation, and access to electricity and personal security.

Access to Livelihoods at the Urban Locations

Generally, through migration, most migrants manage to find work. A large number of them work in the service sector. Their jobs include: rickshaw, auto rickshaw, and van puller; bus and auto-tempo driver or conductor; hotel/restaurant boy; garage/workshop laborer; cook; cleaner; security guard; carpenter; scrap collector; private tutor; etc. In Chala *upazila*, a subdistrict of Sirajganj, some migrants work in the loom industry, while others are employed in the rice-processing mills, flour mills, jute mills, etc. Members of some of the households of the Haiadarpara railway colony settlement of Sirajganj seasonally migrate to other districts, traveling as far as Chattogram, Rangamati, and Khagrachari (southeastern districts) to work in the brick kilns for a period of six months at a stretch under a contractual arrangement. They also participate in earthwork. During the harvest period, the members of some of these households migrate to Tangail, Manikganj, Jamalpur, Sylhet, and Sunamgonj. A small percentage of the members of these households have migrated permanently and are employed in the readymade garment and other manufacturing and textile industries in Dhaka, Savar, Konabari, Gazipur, Narayangonj, and Narshingdi. The income of households with one or more seasonal outmigrant is comparatively higher and more secure compared with other types

of migrant households. Although the migrants find jobs in the urban areas, the majority of these positions, apart from a few, are informal sector jobs. The level of income earned from these jobs is very low. These migrants' average monthly household income is only Bangladeshi Taka (BDT) 7,382 (US$96). With an average family size of 4.26, most of these households live below the poverty line, so the question is whether they migrated only for a job or whether they wanted a decent job with a reasonable salary that would allow them to live at least above the poverty line.

Now let us try to understand the nature of the jobs performed by some of these migrants. Getting a job is not a spontaneous event. Cyclic migrants do sometimes face problems finding work. It is not always assured. Some of them wait a few days, even up to a week, before securing employment. During our interview with Rafiq in Shatopolli Adarsha Gram of Natore, he stated that he had been waiting as long as twenty days. In some instances, the migrants even return home without finding work. Consequently, the migrants suffer financial losses while seeking employment. They have to bear their food and accommodation expenses. Most of those who have remained in the city permanently are not engaged in stable jobs. They face termination without notice. If, for any reason, a migrant cannot find work, he or she cannot earn anything that day.

Some of the tasks performed by the migrants are unhygienic and injurious to health. The risks vary according to the type of job performed. Those who work in the tanneries of Sirajganj are extremely vulnerable to breathing problems, asthma, and skin disease. Those who work as scrap and metal collectors, particularly in Rajshahi, gather waste items such as, torn sandals, dust, hair, polythene, broken glass, plastic bottles, etc. The sharp edges of these materials make them prone to suffering accidents, and they are also exposed to broken glass, syringes, and other toxic materials. These families also involve their children in their scrap collection work.

Now we will discuss the conditions of the migrants' residence in the urban areas and attempt to understand the risks associated with the urban living conditions.

A Roof over My Head

Forty years ago, a few migrants started one of the first informal settlements named Uttar Patuapara settlement in Natore. It is located by the side of a long canal that passes through the municipality. The canal is connected to the Padma River. Over the years, the canal has become narrow. This is due both to the loss of water flow caused by Farakka Barrage[7] on

the Bangladesh-India border and also to the unauthorized land grabbing by some locally influential people. The inhabitants of this settlement have never experienced eviction. Although temporary, the settlement has electricity, taps with drinking water, and sanitation facilities.

The migrants who have been living in informal settlements on railway land have experienced multiple evictions. With the help of influential politicians, subsequently, they have returned to the same area and been able to rebuild their shanties. The aim of local politicians in helping this low-income population is to ensure their support at political events such as processions and rallies. Permanent migrants also try to maintain good relationships with politicians as they try to secure a national voter identity card (ID) from the location where they are currently residing. The local politicians assist them with this endeavor in order to use them as a voter bank.

Migrants are keen to obtain an ID in their current place of residence in order to access the services provided by the government's social safety net measures. This is necessary also in order to obtain loans from the local banks or nongovernmental organizations (NGOs). One of the sites of Natore is a good example of a government initiative for ensuring safe, sustainable shelter for migrants. The government allocates land, and the migrants build houses on it. These houses are well built. The NGOs, under a microcredit program, provide loans to these migrants. Some also borrow from moneylenders. Those who live on government-allocated land do not face the fear of eviction. In the words of a fortunate migrant, they have not only been able to ensure a stable house but have also increased their position in society. A female head of a migrant household in Natore stated, "Please don't call us slums-dwellers . . . we have prestige. . . . My elder son is now studying at BUET [Bangladesh University of Engineering and Technology, one of the top universities in Bangladesh]. We arranged a good marriage for my daughter. . . . They are now living a happy life . . ."

In Rajshahi, the main settlements are located beside the Padma River, adjacent to the railway lines. Recently, the city government invested in the renovation of the city, and many migrants have been displaced because of these development initiatives. The city mayor states that he plans to build houses for those who have been displaced. During our interviews with the migrants, they stated that since eviction they have been living by the roadside and on public and private vacant land. In Sirajganj, the migrants mostly settle on the banks of the Jamuna River, on the side of the embankment, and on unused railway property. The local residents also build shanties on unused government land, and migrants pay rent to live in these shanties. Migrants who live on the embankment and by the road-

side feel insecure because of the location of their houses. Another migrant, Nadia, also from the Bongram settlement in Rajshahi, stated, "I'm scared that my young son might have a road accident. . . . When I hear the heavy trucks moving at night, I wake up scared that they might crash into our shelter and kill us." These comments reflect the migrants' different types of vulnerabilities.

Two kinds of shelter exist in all locations. The relatively better ones are made of tin and have a concrete floor. The poorer ones are constructed of mud, thatch, or bamboo. All of the houses are very small, being 266.34 square feet on average. Over 70 percent of the households do not own the house in which they currently live. As the migrants are aware that they might be evicted at any time, they are not willing to spend large sums of money building their houses, or on or long-lasting repairs. The floating migrants build their shanties out of cheap, low-quality materials like bamboo and plastic. Every year, the residents need to spend money to repair their shanties because these cheap materials decay so quickly. They also have to repair their shanties particularly after storms. Nonetheless, some of them consider themselves lucky to have a roof over their head. Nikheel Kanti resides in a very poor-quality shanty but thinks that, in the future, his family will be able to move into a better one.

Environmental concerns are also significant in the urban locations. In all three areas under consideration, migrants settle at the riverside, which is prone to flooding and river erosion. In these areas, due to the low quality of housing materials, these migrant households suffer badly during extreme weather conditions. One migrant Abdul, from the informal settlement located beside the Rajshahi Railway Station, stated ironically, "Weather cuts both ways for us. During the winter we suffer from cold spells and during summer from extreme heat." Migrants also face human-made environmental stresses in their dwellings. Rojina, the wife of a migrant who resides in the Padma residential area of Rajshahi, stated that "in the last twenty years, first, I lived with my parents and now with my husband's. We never saw strong thunderstorms like we had last year that caused great damage to our dwelling. We had to find extra money to do the repair work. Now, we must always be prepared to rebuild our shanty again in cases of excessive rain and storms." In Natore's Shatopolli Adarsha Gram, those living at the side of the canals of Turag River are exposed to industrial waste produced by the Carew chemical company. Due to chemical reactions, their tin sheds become rusty very quickly. The dwellers have lost their ability to catch fish due to water pollution.

Some of the migrants identified other forms of insecurity in their settlements. Children's exposure to drugs is one of these. Lipi of Shohidgonj settlement of Sirajganj has two small children, and she stated that she would

like to move to a more secure place where her children would not be exposed to drugs. In order to obtain protection, migrants need to have a good relationship with the local politicians. These politicians, in exchange, want them to participate in political events. Taking part in these events can be risky. A few women migrants in Sirajganj and Natore, on the other hand, are concerned about their physical and sexual security. Women also expressed the insecurity of leaving their young children indoors when they are working outside. Lata leaves her daughter unattended while she goes to work in a nearby house. She stated: "My employer told me there are bad people who kidnap children." Sultan, the wife of a rickshaw puller, lives with her family in Dhulipara settlement of Sirajganj. She stated: "I'm scared during the night when my husband's busy pulling a rickshaw. My two daughters are unsafe, as an unknown man with a bad intention may enter our home. . . . One day, I was terrified when two gangs were fighting each other and suddenly damaged my house." Compared to male migrants, women migrants as well as male migrants' wives expressed more concern about the physical and sexual security of their children.

Access to Drinking Water, Sanitation, and Electricity

Tube wells remain the predominant source of drinking water for migrant households in all of the locations. Pipe water is available in a few locations. In Sirajganj, those who live on the riverbank find it difficult to obtain safe drinking water during the monsoon floods. Some of the tube wells become submerged by water, forcing migrants to travel a long distance to obtain drinking water and spend extra money for a rickshaw or boat to transport the water. Sadeq, a migrant from Zelepara settlement of Sirajganj, stated: "There are houses that have tube wells, but the owners are unwilling to allow us to use them as this may reduce the longevity of the pump. They lock up their tube well with iron chains."

In Rajshahi, it is also difficult to access safe drinking water. However, those living in the city center have access to the city corporation's water supply. Sometimes, they also visit houses in the nearby residential areas to obtain water that people kindly provide. But during the summer it is very difficult to obtain water because the water supply also falls. One migrant from Borda lakeside settlement of Rajshahi has access to a tube well. He revealed a new problem, as it seemed to him like the groundwater level had fallen, so for the last five to six years, during some seasons, it became difficult to obtain water through the tube well. Recently, the Natore municipality has begun to supply pure drinking water in the summer. The lo-

cal NGO officer and key informants state that Natore does not suffer from a shortage of water as the area has one of the largest water bodies of the country named "Chalan Beel."[8] However, at the three study sites, the conditions of the tube wells are very poor, and some are out of service. People there are waiting for influential political leaders or government officials to set up new tube wells. Again, the problems associated with accessing safe drinking water are worse for those living at the riverside than those living in the city centers.

The sanitation system has been identified as one of the biggest problems in the settlement areas. The houses that are built or rented by the migrants on the government-allocated land in Natore have proper water-sealed toilets. The rest of the settlement dwellers face a shortage of toilets. More than half of the respondents use a common (community) latrine. In Sirajganj, those living at the riverside have only a few community toilets for a large number of users. For those living on the embankment, it is very hard to find space to set up new latrines. In some cases, they use the riverside as their toilet. Many households have created a temporary toilet beside their kitchen. These toilets have grave consequence for hygiene, as some of these areas are flooded very easily. In Rajshahi, all of those who live by the roadside use open spaces, and others use private and community latrines. Migrants who have received a voter ID are now lobbying the influential political leaders to set up latrines for them. Not only is the number of toilets insufficient but their quality is also poor. In all three locations, half of the latrines are not water sealed. Lima, the wife of a migrant from the Dadapur road settlement of Natore, stated that "my daughter is two years old. She suffers off and on from an upset stomach. When we visit our village, she suffers less. One of my neighbors told me not to allow her to play in the common open space, as it is too close to the toilets. I think she's right. The community toilets here are open latrines."

More than 80 percent of the respondents have electricity in their houses, while 20 percent use kerosene for lighting. Those who live on the riverbank in Sirajganj cannot access electricity, while those who live on the embankment do so via illegal connections and must regularly bribe the local power supplier. In Rajshahi, those who live in the city areas have electricity, but those who live at the riverside do not. In Natore, most houses can access electricity. When the migrants were asked to reflect on what they liked most about urban living, access to electricity is appreciated the most by those who have it, as, according to them, it helps their children to study; however, power cuts are common. Nafisa from the Narodnodi settlement of Natore complained that power cuts occur at odd times, usually when the children need to study.

Summary and Conclusions

This chapter has attempted to shed light on the lives and livelihood of climate-affected poor internal migrants living in informal urban settlements. The aim of this chapter was to understand their perceptions of their gains and losses as a result of migrating. In other words, it has attempted to assess their evaluation of the outcome of their migration decision: did they think that they would be able to use migration as a successful adaptation tool to overcome some of the climate-related and other stresses they faced in their areas of origin that led them to migrate in the first place? In retrospect, was this the best choice? What are the challenges and vulnerabilities that they face in their new urban life? More importantly, do they feel that those vulnerabilities can be reduced?

The chapter began by exploring the role of climate change–related stresses in inducing migration. It became obvious from the statements of the migrants and their life partners that their migration decision has been a culmination of the interplay of many complex factors, including macrolevel realities such as the hurried, unplanned border settlement between India and Bangladesh by the British rulers during the partition of India, where the agricultural land is located on one side and the villages where people live are located on the other side; individuals' experience of the loss of their homestead land to river erosion or the financial inability of an individual to continue farming due to the increased cost of irrigation, against a backdrop of the slow-onset climate change of increased drought and its effect in lowering the groundwater level; exposure to information about job opportunities in urban areas; and access to help provided by the *thikadars*. The study finds that migration to urban locations has provided better job opportunities for the migrants—they can earn an income by pursuing various trades, although these generate modest sums for their subsistence. The migrants perceive this as fulfillment of the most important target of their migration, which is income adaptation. Those who lost their homestead land can now have a roof over their head. Some of their children attend school, while others have even managed to send their children to the best universities in the country. To them, these are great achievements compared to what would have happened if they had remained in their villages. Given all of their options, the majority was of the opinion that moving to the urban location was a better choice than staying put in their villages. But do they think that it is enough for them? Perhaps not—they aspire to many other things.

With some exceptions, these migrants are predominantly employed in the informal sectors, and their average income is around US$96. The average family size is 4.26 people. A simple headcount calculation would

show that the majority of them live below the poverty line. Some jobs are hazardous, while others expose them to respiratory, skin, and many other types of diseases. The jobs that they perform are essential for the city, but their working conditions are poor. They live with a dream of formalizing their services to the government. They also hope for the passage of a minimum wage policy, as they wish to enjoy basic labor rights.

On average, the size of the current homestead of these migrants is only 270 square feet. A large number of migrants live with the constant fear of eviction. One-third have gradually moved into improved housing, and the rest also aspire to move out of their current shanties. Many new migrants end up living in environmentally unsustainable areas. Those who live in the riverside settlements regularly experience flooding, polluted water, bad odors from garbage, etc. Dwellers in some of the settlements currently cannot access safe drinking water year round. In the established settlements, the migrants have access to hygienic toilets, but, for many others, the insufficient number of toilets and unhygienic positioning of those that do exist have exposed many to health problems. Migrants who have access to electricity deeply appreciate it and stress its importance for their children's education. Unfortunately, many of them fear that the electricity lines might be disconnected at any time, as they are illegally installed.

The study also reveals that the experience of living in the informal settlements varies based on the location and gender of the respondents. In some locations, access to drinking water is a huge problem, while in others it is not; similarly, the situation regarding access to electricity is also location specific. Major differences have been observed among men and women when asked to prioritize the problems in their urban lives. Men stress job-related problems, while the women focus more on problems linked to personal safety and security, sexual harassment, a lack of childcare facilities, etc.

An important finding of the research is that the migrants do not always passively take whatever is available in the settlements but are willing to accept challenges to improve their situation. On various occasions, certain migrants have demonstrated their agency. Through influencing the local politicians or city mayor, they have been able to introduce electricity into their dwellings, or negotiate water-sealed toilets, and also lobby for the installation of new tube wells.

This leads to the conclusion that, based on the macro- and microlevel individual realities, influenced by the environmental, demographic, social-economic, and political surroundings operational in both the origin and destination locations, and mediated by intervening agencies and networks, a percentage of the villagers would stand by their decision to mi-

grate. More importantly, migration can be one of the many adaptation choices for people faced with climatic stresses. To make migration choices more effective, the traditional policies of regarding rural-to-urban migration as a threat or problem of urbanization should be replaced with a more accommodative policy framework. Instead of explaining rural-to-urban migration only from the push perspective, the urban pull factors should also be taken into consideration. The growth hubs of Bangladesh are located in the urban areas. These growth centers require a workforce. That is one of the reasons why the country is rapidly becoming urbanized. Therefore, urban planners need to think in terms of creating space for service providers. The study has particularly explored alternative cities instead of the two megacities of Bangladesh. This has allowed us to argue for the decentralization of the growth centers to avoid overcrowding in a few cities. If the country is committed to achieving the Sustainable Development Goals (SDGs) target 11, related to creating safe, sustainable, and inclusive cities for all, then policies must be in place to eliminate precarious work and the living conditions of new migrants in the urban locations.

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Notes

1. In this chapter, we follow the definition of adaptation employed by Working Groups II and III in the IPCC (The Intergovernmental Panel on Climate Change) *Fifth Assessment Report*. They define the term as "the process of adjustment to actual or expected climate and its effects." IPCC is the United Nations body entrusted with periodical evaluation of the scientific premise of climate change, its associated impacts and risks ahead, and solutions for adaptation and mitigation. Since its inception in 1988 it has been producing state of climate change–related

assessment reports periodically. IPCC *Fifth Assessment Report* (AR5) published in 2014 presented the climate change–related scientific knowledge, new results, and updates since the publication of the IPCC *Fourth Assessment Report* (AR4) in 2007. The IPCC Working Group II (WGII) assesses the impacts, adaptations, and vulnerabilities related to climate change. The IPCC Working Group III (WG III) mainly deals with climate change mitigation, or assessing methods for reducing greenhouse gas emissions in the atmosphere. For details see, IPCC 2014a.

2. The term "vulnerability" describes the degree of exposure to risk, stress, and shock as a result of the adverse effects and consequences of the livelihood and socioecological systems (Masten 1994: 7; Adger 2000: 348).
3. Bangladesh is divided into seven divisions: Dhaka, Chittagong, Rajshahi, Sylhet, Barisal, Khulna and Rangpur, each of which is itself subdivided into 64 districts or *zila*. These districts are further subdivided into 493 sub-districts or *upazila*, each with its own police station (except for those in the metropolitan areas), and are further divided into several *unions* made up of multiple villages.
4. Interviews were held with the mayors and ward commissioners of Natore Municipality and Sirajganj Municipality and the chief executive officer and ward commissioners of Rajshahi City Corporations.
5. In Natore Municipality area: Shatopolli Adarsha Gram, Uttar Patuapara, Jhautola, Kandivita, Moddhopara, Dadapur road, Station Rail, Mirpara Narod Nodi, and Chalan Beel. In Sirajganj Municipality area: Haidarpara Railway Colony, Kamrapara, Dhulipara, Chowdhuripara, Zamtola, Notun Vangabari, Shohidgonj, KhademerPul, Zele Para, and Rishi Para. In Rajshahi corporation area: Bhodra lakeside, Bongram, Padma Residential area, and Rajshahi railway station.
6. A contractor or middleman.
7. Farakka Barrage was installed across the Ganga River located (Murshidabad district Indian state of West Bengal), roughly 18 kilometres far from the Shibganj border of Bangladesh.
8. Chalan Beel is a wetland in Bangladesh and located across Singra and Gurudaspur *upazilas* of Natore District as well as its outspreads in some *upazilas* of Pabna and Sirajganj Districts.

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