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ASSESSING THE IMPACTS OF CLIMATE-INDUCED MIGRATION ON WOMEN'S
HEALTH IN BANGLADESH

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ABSTRACT

In the coming years, the effects of climate change will become increasingly dire. In many parts of the world, this will mean an increase in the number of people migrating in response to sudden and slow onset climate events. Bangladesh, a country particularly vulnerable to climate change, is expected to see a significant increase in the number of climate migrants by 2050. In this thesis, I assess the recent academic literature on the climate change and migration nexus in Bangladesh and find that much of the existing literature focuses on: (1) the different drivers impacting migration; (2) the ways in which migration can be used as an adaptation strategy; and, (3) the vulnerabilities of coastal communities and low-income communities. In conducting this review, the thesis demonstrates a gap in the current research when it comes to the impact that climate-induced migration has on women, another particularly vulnerable community. Furthermore, the limited academic research does not explain the ways in which climate migration impacts women's mental and physical health. Thus, in the second half of this thesis, I conduct a review of secondary sources to determine how women's health is affected by climate migration. The research indicates that female migrants and those left behind when their husbands migrate are at risk of increased sexual abuse and harassment, more prone to contracting diseases, and often suffer from food insecurity. Despite this, the current policy recommendations do not substantially discuss the need for policy geared toward supporting and protecting women in the face of increased climate migration. Future research attention is needed to address how climate migration is impacting women – a particularly vulnerable, but understudied, group in Bangladesh.

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Chapter 1

Introduction

Climate Migration Background

In 2020, the effects of climate change are becoming clearer and more pronounced (NASA, 2019). As we look toward the future, we can expect that climate change will include a rise in global temperatures, increased rainfall in parts of the world and more severe droughts in others, and more frequent extreme weather events (IOM, 2009b). As a result, it is expected that human displacement and migration will increase (IOM, 2009b; IPCC, 2014). While climate change alone may not directly force people to move, the International Organization for Migration (IOM) explains that the environmental impacts it creates can amplify people's pre-existing vulnerabilities, making it no longer sustainable to live in certain locations (IOM, 2009b). Specifically, the IOM (2009b) states that there are at least four different ways in which climate change is expected to impact human mobility. First, natural disasters will intensify. Eventually a threshold could be reached in the habitability of a location, forcing people to move. Second, rising temperatures and increasing drought will impact access to clean water and agricultural production. People will need to move in order to secure access to critical resources. Third, sea level rise will leave coastal areas uninhabitable and it will cause many island states to sink, affecting the millions of people living along or near the coast. Fourth, people will likely end up competing over natural resources, resulting in conflict and ultimately displacement.

Within this thesis, several different types of migration are mentioned in the context of climate-induced migration. Table 1 below defines the various types of migration seen here, including internal, international, seasonal, rural-urban, voluntary, and forced migration.

Table 1. Types of migration featured within this thesis. Source: National Geographic Society (2015a).

Migration Type	Definition
Internal migration	Migrants move within their home state/country/continent
International (or external) migration	Migrants move to a different state/country/continent
Seasonal (or circular) migration	Migrants move from one location to another with each season, typically in response to climate or labor conditions
Rural-urban migration	Migrants move from rural areas to urban areas, typically for livelihood reasons
Voluntary migration	Migrants choose to move
Forced migration	Migrants do not have a choice in moving; typically forced by natural disasters

The number of climate migrants we can expect to see in the future is highly variable, as it depends in large part on the global response to climate change. In 2018, the World Bank Group published a report titled *Groundswell: Preparing for Internal Climate Migration*, which modeled three potential scenarios for the number of internal climate migrants expected in 2050 within three major regions: Sub-Saharan Africa, South Asia, and Latin America (Rigaud et al., 2018). The three scenarios were referred to as the pessimistic scenario, the more inclusive development scenario, and the more climate-friendly scenario. The pessimistic scenario was the reference case, which consisted of high greenhouse gas (GHG) emissions with unequal development pathways. The more inclusive development scenario also had high GHG emissions but had

improved development pathways. Finally, the more climate-friendly scenario had lower GHG emissions but unequal development. The report found that under the pessimistic scenario it is expected that by 2050, an average of 117.5 million (and as many as 143.3 million) people could be forced to migrate internally (within their home country) because of climate change, just within these three major regions. Even under the other two scenarios, we can expect to see significant increases in climate migration by 2050. The more inclusive development scenario projects an average number of 85.1 million internal climate migrants, while the more climate-friendly scenario projects an average of 51.1 million internal climate migrants by 2050.

While migration may appear to be just a consequence of climate change, the *Groundswell* report expressed that “migration can be a sensible climate change adaptation strategy if managed carefully and supported by good development policies and targeted investments” (Rigaud et al., 2018, p. 182). This position was similarly expressed in the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), which noted that while migration can serve as a response to extreme weather events and climate change, it can also serve as an effective adaptation strategy (IPCC, 2014).

Bangladesh Background

For this thesis, I have chosen to focus on Bangladesh specifically because it is recognized as one of the countries most vulnerable to climate risks (Yu et al., 2010). Bangladesh’s vulnerability stems in part from its low-lying elevation and high population density (IOM, 2009a). As of 2019, the population of Bangladesh was 168.1 million – growing at an average rate of 1.1% over the last 10 years (UNFPA, n.d.). It is expected that the population will stabilize

at approximately 200 million (UNDP, n.d.). Bangladesh is currently the eighth most populated country in the world, with one of the densest populations (UNDP, n.d.) at a density of 1,240 people per square kilometer, as of 2018 (World Bank, 2019). Bangladesh's population density is especially high in low-lying urban and coastal areas (Rigaud et al., 2018). Though much of Bangladesh's population is dependent on agriculture (47% as of 2010), the country has been rapidly developing (Rigaud et al., 2018) and urbanizing (Call et al., 2017).

Along with its high population, Bangladesh is generally known for its low-lying elevation and the frequency with which it is hit by cyclones. Nearly all of Bangladesh lies within 50 meters of sea level – as seen in Figure 1 below from Rigaud et al. (2018), which shows the elevation of Bangladesh in meters. Approximately 10% of the country is within a meter of sea level (IOM, 2009a), and two-thirds of the country is less than five meters above sea level (World Bank, 2012). Thus, Bangladesh is very exposed to sea level rise and storm surge (Rigaud et al., 2018). On average, a severe cyclone will hit Bangladesh every three years (Subhani & Ahmad, 2019), and as temperatures rise, cyclones are expected to increase in severity (Rigaud et al., 2018).

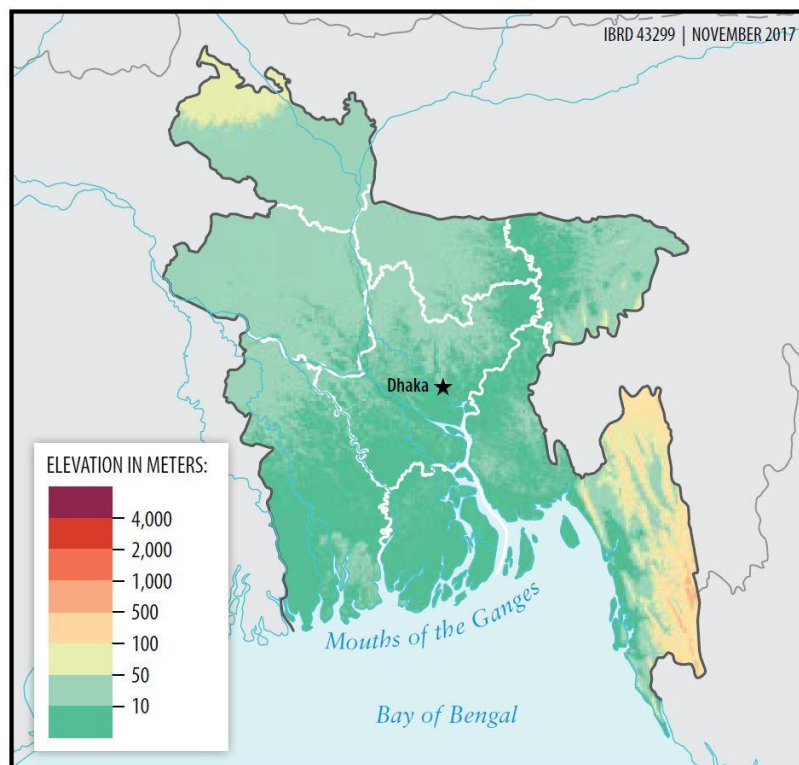


Figure 1. Elevation in Bangladesh. Source: Rigaud et al. (2018).

Climate Change Impacts and Migration

Bangladesh’s unique characteristics make it particularly vulnerable to climate change, as explained by the IOM, which states that “Bangladesh is one of the countries in the world most vulnerable to the impacts of climate change due to its predominant location on a flood plain, low elevation, high population density, high levels of poverty and the direct dependency of its population on natural resources” (IOM, 2009a, p. 192). The Germanwatch Global Climate Risk Index 2020 ranked Bangladesh seventh in its list of countries most affected by climate change between 1999 and 2018 (Eckstein et al., 2019). The Germanwatch Index focuses specifically on extreme weather events, as opposed to gradual changes like rising sea levels. Thus, the Climate

Risk Index (CRI) score it calculates is meant to represent the level of exposure and vulnerability that a country has to extreme events.

The majority of Bangladesh lies in the Ganges-Brahmaputra-Meghna Delta, which consists of a large network of streams and river channels that flow into the Bay of Bengal (Encyclopaedia Britannica, 2013). A World Bank report from 2013 explains that deltaic regions and coastal cities, like areas in Bangladesh, are especially at risk from climate related events such as rising temperatures and sea levels, as well as increased river flooding and intense tropical cyclones (World Bank, 2013). Bangladesh is already experiencing the effects of climate change, with warmer summers, longer cold spells, and increasingly irregular rain patterns – which have resulted in both floods and droughts (IOM, 2009a). Additionally, with rising sea levels, Bangladesh is seeing that coastal areas are suffering from river bank erosion, salinization, and arsenic poisoning (IOM, 2009a; WHO, 2014). Salinization in Bangladesh occurs in the form of saltwater intrusion caused by increasing sea levels and is made worse by human interventions, including increased groundwater pumping for agricultural, industrial, and household use (Bernzen et al., 2019). In Bangladesh, arsenic contamination of groundwater is very high, with millions of people having suffered from arsenic poisoning (Smith et al., 2000). Exposure to arsenic is further intensified by increased flooding, which particularly affects socioeconomically disadvantaged groups, such as rural communities (WHO, 2014).

Many of the environmental factors explained above have been identified as migration drivers in Bangladesh, including soil salinity (Chen & Mueller, 2018), dry spells (Carrico & Donato, 2019), floods and river bank erosion (Islam, 2018), sea level rise (Rakib et al., 2019), and cyclones (Mallick et al., 2017). When analyzing the aftermath of cyclone disasters, one study found that approximately 34% of households had at least one family member migrate, and that

migration was used as a tool for adaptation (Mallick et al., 2017). Another study, which focused on Kutubdia Island located off the coast of Bangladesh in the Chittagong Division, found that in the aftermath of coastal disasters (such as coastal erosion and flooding), only 5% of the members from the households in their study chose to migrate (Rahman et al., 2015). These studies tell us that climate events can affect mobility in various ways and to various extents depending on the context. However, it is clear that climate-induced migration is expected to increase in the future (Rigaud et al., 2018).

Looking Forward

The World Bank's *Groundswell* report mentioned earlier also modeled the expected number of internal climate migrants that Bangladesh specifically will see in 2050. Under the pessimistic scenario, an average of 13.3 million (with as many as 19.9 million) Bangladeshis are expected to migrate internally due to climate change by 2050 (Rigaud et al., 2018). Bangladesh alone makes up more than one-third of the average number of internal climate migrants (35.7 million) expected in South Asia by 2050. Under the more inclusive development scenario, Bangladesh is expected to have an average of 6.7 million internal climate migrants by 2050. Under the more climate-friendly scenario, an average of 3.6 million internal climate migrants are expected in Bangladesh by 2050. The report explains that the decreased number of climate migrants in the more inclusive development and more climate-friendly scenarios "suggest[s] that development pathways targeting lower inequality and lower global emissions trajectories will help reduce pressures on people's livelihoods and the associated scale of climate migration" (Rigaud et al., 2018, p. 144). The report also notes that if we follow the pessimistic scenario in

Bangladesh, we may see that climate impacts become one of the most significant drivers of internal migration by 2050. It is expected that the increasing number of climate migrants will lead to increased pressures placed on land, natural resources, infrastructure, and institutions (Rigaud et al., 2018). A report from the IOM also notes that “the outcome of such rapid and unregulated internal migration could increase tension over available resources in the destination areas” (IOM, 2009a, p. 193). The IOM (2009a) expects that internal migrants could experience social exclusion and marginalization.

In looking towards the future, another study found that inundation from mean sea level rise specifically is expected to cause nearly 900,000 people to migrate in Bangladesh by 2050 (Davis et al., 2018). Based on the most conservative (0.44 meters) and extreme (two meters) scenarios of expected sea level rise, Davis et al. (2018) predict that by 2100, direct inundation from sea level rise could lead to the migration of 731,000 to 2.1 million people. Davis et al. (2018) also emphasize the strain that migration will put on resources and institutions. Based on the expected number of people who will be displaced in 2050, they calculated that nearly 600,000 jobs, 200,000 residences, and 784×10^9 food calories will need to be created.

The *Groundswell* report also found that we will likely see major in-migration (migration into a region) occur in west Bangladesh, specifically in areas of the Ganges River basin that have irrigated and rainfed cropland (Rigaud et al., 2018). Meanwhile, major out-migration (migration out of a region) is expected to occur in northeast Bangladesh, where most rice-growing areas are located (Rigaud et al., 2018). Urban areas, like Dhaka and Chittagong, are also expected to be hotspots for out-migration, as they are located in deltaic and coastal areas and are thus vulnerable to rising sea levels and storm surges. It has been estimated that an increase in sea level by one meter could result in the loss of over 4,800 square kilometers of land, with storm surge making

land even more uninhabitable. Likewise, a two meter increase in sea level combined with storm surge is expected to submerge approximately 12,150 square kilometers of land. This would make up approximately 8% of the country's land.

Climate Change and Women

In Bangladesh, women are disproportionately vulnerable to the effects of climate change because they have limited access to resources and are typically not involved in decision-making (Ministry of Foreign Affairs, 2018). Women are more dependent on natural resources because of their household responsibilities, which include gathering fresh water (Ministry of Foreign Affairs, 2018). As a result, they are typically more greatly impacted by salinization and drought (Ministry of Foreign Affairs, 2018). When climate-related events occur, such as floods and cyclones, women often suffer more than men, as they have limited access to information about the events (Ministry of Foreign Affairs, 2018). This is because this type of information is usually shared in public spaces, and women are typically not allowed to leave their homes unless they are accompanied by a male relative (Ministry of Foreign Affairs, 2018). Additionally, women are often not taught to swim, so they are usually left waiting in their homes during a flood and are thus put in a very high-risk situation (Ministry of Foreign Affairs, 2018; Wright, 2014). This, in part, explains why following the severe cyclone that struck Bangladesh in 1991, more women died than men (Ahmad, 2012). Approximately 140,000 people died as a direct result of this cyclone, and it was reported that the female to male death ratio was 14:1 (Ahmad, 2012).

Thesis Outline

As we have seen, women are disproportionately affected by climate change. Thus, as I assess climate change and migration in Bangladesh, I aim to pay particular attention to the impact of climate migration on women. Specifically, this thesis engages with the following overarching question: What are the gendered impacts of climate migration, and in what ways are women disproportionately affected by climate-induced migration? In the following section of this thesis, I conduct a review of the academic literature written in the last five years on climate change and migration in Bangladesh. From there, I determine that there is a gap in the research surrounding how women are impacted by climate-induced migration. In Chapter 3 of this thesis, I aim to fill that gap in a review of secondary source reports that specifically discuss how women's mental and physical health is impacted by climate-induced migration. Finally, I conclude by discussing the current policy recommendations suggested by key international organizations, and their lack of a detailed discussion on the gendered impacts of climate change.

Chapter 2

Climate Change and Migration in Bangladesh

For the purpose of this thesis, I focused on the literature written within the last five years – from December 2014 to December 2019 – that specifically discussed climate-induced migration in Bangladesh. This timeframe was chosen to correspond with the publication of the most recent Assessment Report from the Intergovernmental Panel on Climate Change (IPCC), which was released over the course of 2013 and 2014. Much of the research in the last five years has discussed the joint role that environmental, social, and economic factors have played in the migration of Bangladeshis. Additionally, recent research has emphasized the importance of framing migration as an adaptation strategy to climate change, and it has placed a spotlight on particularly vulnerable groups, such as coastal communities and impoverished households. However, little research has focused on the vulnerability of women, and the ways that they are specifically impacted by climate-induced migration. It is this gap in the current research that I plan to address in this thesis.

Migration Drivers in Bangladesh

Over the past five years, a substantial amount of research has discussed and tested the significance of environmental factors when it comes to making migration decisions in Bangladesh. Many scholars argue that the decision to migrate is complex and driven by multiple factors (Abir & Xu, 2019; Alam & Miller, 2019; Islam & Shamsuddoha, 2017; Martin et al., 2017; Saha, 2017). In their argument, they reference the work of Black et al. (2011), who

described five main categories of migration drivers in the context of climate change: environmental, political, social, economic, and demographic (Figure 2).

Migration Drivers

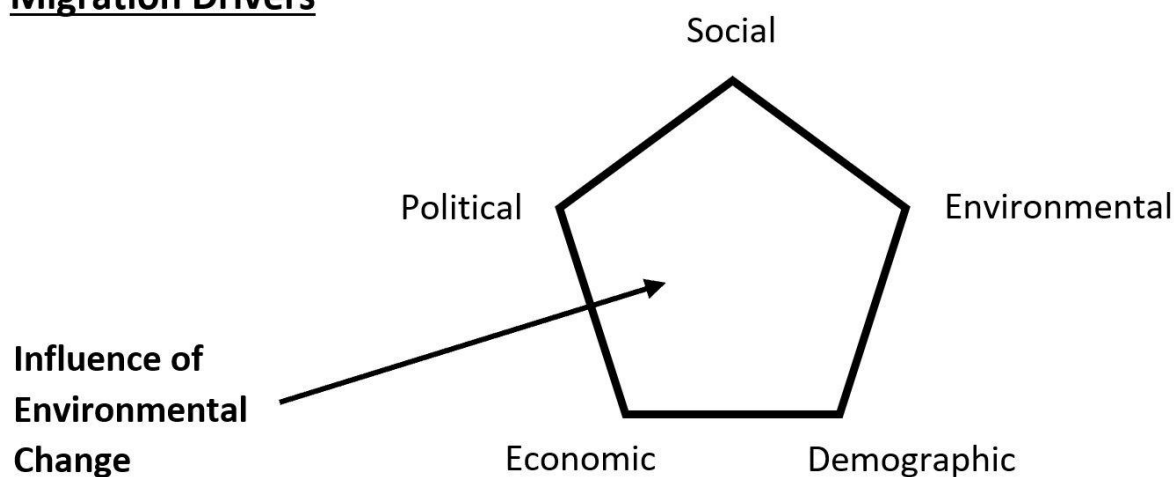


Figure 2. Migration drivers and the influence of environmental change on these drivers. Source: Adapted from Black et al. (2011).

Black et al. (2011) argue that the social, political, environmental, economic, and demographic drivers of migration are all influenced by environmental change. In their theoretical framework, they describe each driver in terms of several contributing factors, which are listed in Table 2. Environmental change can influence these factors in different ways, including by reducing access to ecosystem services or by affecting employment opportunities. These drivers are closely linked together, and they can interact in different ways to impact migration decisions (Black et al., 2011; Islam & Shamsuddoha, 2017). In addition to being influenced by these five main drivers, Black et al. (2011) also highlight two other factors affecting the migration decision-making process: personal and household characteristics (such as age, sex, language, ethnicity, religion, wealth, marital status, education, and preferences) and intervening obstacles

and facilitators (such as the political and legal framework, moving expenses, social networks and connections in diasporas, technology, and recruitment agencies). Thus, the decision to stay or migrate is multifaceted and complex, and it is affected by a wide range of factors.

Table 2. Factors associated with each of the five main migration drivers. Source: Black et al. (2011).

MIGRATION DRIVERS	CONTRIBUTING FACTORS
Social	Education Family
Political	Discrimination/persecution Governance/freedom Conflict/insecurity Policy incentives Direct coercion
Environmental	Hazard exposure Ecosystem services (land productivity, habitability, food/energy/water security, etc.)
Economic	Employment opportunities Income/wages/well-being Producer prices Consumer prices
Demographic	Population size/density Population structure Disease prevalence

Migration is often driven by both “push” and “pull” factors – where push factors are forces that drive people to migrate away from a certain place and pull factors are forces that draw people to immigrate to a certain place (National Geographic Society, 2015b). Recent research particularly emphasizes that migration is not just driven by environmental push factors, but that the decision to migrate is linked to social and economic push and pull factors as well (Islam, 2018; Islam & Shamsuddoha, 2017; Stojanov et al., 2016; Stojanov et al., 2017). Different

scholars have come to different conclusions as to which factors were dominant in Bangladeshis' migration decisions. Bernzen et al. (2019) studied the role that environmental stressors play in migration decisions among rural communities in coastal Bangladesh. Using a regression analysis, they found that climate was not the dominant factor in deciding to migrate. Rather, the presence of abundant and flexible resources played a more important role in migration decisions. Similarly, a study carried out in the Shyamnagar region – located in the southwestern part of Bangladesh's coastal area – found that economic factors typically predominate over environmental and climate factors when it comes to migration decisions (Kocar, 2016). The main exception to this, however, was in the case of a natural disaster striking the region. Notably, Kocar (2016) found that in the Shyamnagar region, there is not yet evidence of any voluntary climate migration. When climate migration does happen, it is forced. Forced migration appears to be especially evident among the homeless community in Bangladesh – with large numbers of homeless people being displaced in the wake of environmental disasters. Kocar (2016) explains that “forced climate migrations occur only occasionally as an extreme form of adjustment [to natural disasters] of the affected population,” while voluntary climate migration “is characterized by a higher degree of selectivity” and is longer lasting (p. 19). Voluntary migration is used as a preventative measure and, unlike forced migration, is not a direct and immediate response to natural disasters. Although Kocar (2016) did not find evidence of current voluntary climate migration in the Shyamnagar region, of the residents interviewed for this study, 90% were convinced that they would have to move in the future because of the consequences of environmental changes.

In a study of the Khulna District, Saha (2017) examined the factors that caused households to migrate as a unit following Cyclone Aila, which struck Bangladesh on May 25,

2009. The research concluded that households primarily migrated as a result of livelihood stress caused mostly by the inability to secure a stable income and the destruction of houses during the cyclone. Prior to migrating, these households had tried to adapt after the cyclone hit by using different coping strategies. However, the livelihood stress they faced was ultimately too much to handle, and they were forced to migrate as a last resort. As explained by Saha (2017), “widespread migration from affected areas will occur when relief does not compensate for a loss of livelihoods or if livelihoods are not restored by the end of relief initiatives” (p. 522).

Contrary to the studies just discussed, Abir and Xu (2019) found that, in the regions of coastal Bangladesh they studied, environmental factors – as opposed to economic, political, or social factors – were the main drivers of migration. The environmental factors that had the most influence on migration decisions included loss of shelter, extreme events (such as cyclones, floods, droughts, and erosion), and decreasing soil fertility and food shortage. Along with environmental factors, Abir and Xu (2019) also found that economic factors (such as low income and unemployment) played a statistically significant role in migration decisions. However, it was the environmental factors that triggered the economic factors to begin with, and thus ultimately triggered migration. These authors found that social factors (such as family conflict and how welcomed migrants were by relatives and NGOs) and political factors (such as political safety and how welcomed migrants were by the government) did not have a significant relationship to the decision to migrate.

The results of the aforementioned studies support the notion that the decision to migrate is complex and dependent upon many different factors. Which factor ultimately predominates will vary based on the context, including the preexisting vulnerabilities present within each household and community.

Migration as an Adaptation Strategy

In the last five years, many scholars have discussed the concept of migration as an adaptation strategy, especially in the case of Bangladesh (Call et al., 2017; Davis et al., 2018; Mallick et al., 2017; Martin et al., 2017; Naser, 2015; Naser et al., 2019; Saha, 2017; Subhani & Ahmad, 2019). This concept was expressed by Martin et al. (2017), who argued that migration in the face of climate change can serve as an effective adaptation strategy by helping to provide households with better standards of living and by increasing their resilience. However, migration is not an easily attainable adaptation strategy for all households. Call et al. (2017) found that for households in Bangladesh without adequate financial resources and a sufficiently stable livelihood, there are substantial barriers to using migration as an adaptation strategy. Since not all people can afford to migrate, it is important that the government implement policies to support this form of adaptation so that those living in vulnerable areas are able to move before they are forcibly displaced.

Scholars such as Martin et al. (2017), Naser (2015), and Naser et al. (2019) argue that there is a need for policy realignment in Bangladesh, as the majority of current policies do not emphasize the link between climate migration and adaptation. They argue it is necessary to place greater recognition on the benefits of framing migration as a form of adaptation to climate change (Martin et al., 2017; Naser, 2015; Naser et al., 2019). Policies should be created to help people living in environmentally vulnerable areas who choose to migrate in advance of severe environmental degradation to their land (Naser et al., 2019). Naser et al. (2019) explain that policy tools can help these people by increasing the accessibility of the human, financial, and social capital they will need in order to migrate. To do this, the authors suggest that “the Bangladeshi Government should provide necessary information, a strengthening of remittance

channels and reduction of costs for transaction, protection against human security risks and longer-term skills development in environmentally vulnerable areas” (Naser et al., 2019, p. 183). This will help people to diversify their livelihood strategies and therefore increase their resilience to climate change.

In the examples that follow, scholars found that the results of their research supported the idea that migration in response to climatic events can be used as a tool for adaptation. In the study mentioned earlier by Saha (2017), families living in affected areas after Cyclone Aila hit were ultimately forced to migrate due to stress to their livelihoods after they could no longer secure an income. In this situation, migration was forced and therefore not a means of adaptation. However, as a result of their migration, a considerable number of households found that their economic conditions improved. Saha (2017) argues that this shows that migration has the potential to be used as an adaptive response to environmental events. Similarly, a study carried out in southwestern coastal Bangladesh found that after Cyclone Aila, migrant households had more success recovering from socioeconomic losses (such as income, housing, food consumption, and loan repayments) than non-migrant households (Subhani & Ahmad, 2019). Thus, Subhani and Ahmad (2019) argue that it would be a better strategy for households affected by climatic events to migrate, since these results suggest that migrating can help improve the livelihood of affected households. A different study, by Mallick et al. (2017), also looked at the southwestern coastal region of Bangladesh – this time focusing on communities affected both by Cyclone Sidr in 2007 and Cyclone Aila in 2009. The communities they studied were physically and socioeconomically vulnerable prior to these cyclones. They found that a significant number of people had been displaced and migrated to cities in order to find livelihoods and support their

families, who they had left behind in the in the affected villages. According to Mallick et al. (2017), these results proved that migration had been used here as a means of adaptation.

These studies all support the contention that migration can be used as a means of adapting to climate change. However, it must be noted that not all communities have equal access to this adaptation strategy. Without proper policy to support migration, vulnerable communities may have no choice but to remain on their land until forced to move by environmental or climate related events.

Vulnerable Communities in Bangladesh

As previously described, Bangladesh is one of the most vulnerable regions to climate change and is particularly susceptible to climate-induced migration (IOM, 2009a). Within Bangladesh, some communities are considered to be more vulnerable to the effects of climate change and associated migration than others. Recent literature has highlighted some of these communities, such as coastal and low-income communities, but has placed little emphasis on the vulnerability of women and how they are affected by climate-induced migration.

Coastal Communities

Many scholars in the last five years have chosen to study and sample from coastal areas in Bangladesh, such as the Satkhira and Khulna districts, as they examine climate change and migration (Abir & Xu, 2019; Bernzen et al. 2019; Chen & Mueller, 2018; Kocar, 2016; Mallick et al., 2017; Rahman et al., 2015; Rakib et al., 2019; Saha, 2017; Subhani & Ahmad, 2019). One of the key reasons for studying coastal Bangladesh was expressed by Bernzen et al. (2019), who

stated that they chose to study this region because “it is the most vulnerable area of Bangladesh in terms of exposure to cyclones, storm surges, river bank erosion, soil salinization, and other climate-change-driven environmental hazards” (p. 5). Adding to the vulnerability argument, Rakib et al. (2019) found that in the coastal communities they studied, the communities had a much lower adaptive capacity than their migration risk score, indicating that they were particularly vulnerable. Rakib et al. (2019) measured the migration risk of coastal communities using an indexing technique that included components such as sensitivity, exposures, adaptive capacity, scarcity of drinking water, health crises, and additional health costs. The authors explained that this index method has been used in many different studies to assess factors such as socioeconomic vulnerabilities and livelihood in places where there is not available data. Thus, Rakib et al. (2019) found this method to be beneficial for their study because they lacked baseline data.

These coastal communities are particularly affected by environmental hazards, which can play a significant role in their decision to migrate. For example, Abir and Xu (2019) found in their research that environmental factors were the main drivers of massive displacement in Bangladesh’s coastal region because the coast is especially vulnerable to natural disasters. As the sea level rises or the river bank erodes, the land disappears and those living in coastal communities really have no option but to migrate (Abir & Xu, 2019). Additionally, sea level rise is associated with other hazards, such as salinity hazards, health hazards stemming from the consumption of contaminated water, and scarcity of drinking water (Rakib et al., 2019). Rakib et al. (2019) argue that if these hazards persist in coastal communities – specifically those with socioeconomic vulnerability, like the regions they studied – these communities may see the emergence of social crises, which would further increase the migration of coastal communities.

Due to their exposed location and dependence on natural resources, coastal communities are also highly vulnerable to cyclones (Subhani & Ahmad, 2019). In 2009, damage to coastal communities from Cyclone Aila included prolonged waterlogging, which led to an increase in salinity in the water and the soil (Subhani & Ahmad, 2019). This ultimately damaged approximately 90% of the livelihood options for those living in the southwestern coastal regions (Subhani & Ahmad, 2019). This threat to livelihoods lasted for several years after Cyclone Aila struck, which led many people (especially male members of affected households) to migrate in search of other income opportunities (Subhani & Ahmad, 2019). Looking forward, we can expect that these climatic events will continue to induce forced migration from the coastal areas of Bangladesh to nearby urban centers (Ahsan, 2019).

Low-Income Communities

As mentioned in the previous sections, income level can play a significant role in the migration decisions of households and their vulnerability to climate change. In Bangladesh, it is the poorest people who are typically most affected by climate change (Naser et al., 2019). Because these communities tend to be reliant on ecosystem services for their livelihoods, they end up being both more exposed to weather events and are less able to diversify their incomes when they need to (Islam & Shamsuddoha, 2017). Their vulnerability and lack of resources make it harder for poor and marginalized households to recover after the shock of an environmental event, such as a cyclone (Saha, 2017).

Some scholars have found that poor and marginalized communities are less able to participate in planned (often international) migration as a means of protecting themselves from

the effects of climate change and diversifying their household income through remittances (Naser et al., 2019; Islam & Shamsuddoha, 2017). Meanwhile, those with greater human and social capital are able to plan their migration in a controlled manner following an environmental shock (Subhani & Ahmad, 2019).

While low-income communities are less likely to participate in voluntary migration, they are typically more likely to be subjected to forced migration as a result of natural hazards or climate change (Islam, 2018; Kabir et al., 2018; Saha, 2017; Subhani & Ahmad, 2019). When studying the char people – a very poor and vulnerable group – Islam (2018) found that threats related to climate change and natural disasters, as well as preexisting economic and social vulnerabilities, ultimately led to the forced migration of the char people from one char-land to another. Char-lands are defined by Islam (2018) as “islands which adjoin rivers, but which are unshielded from the main land” (p. 576). Similarly, in the previously mentioned study by Saha (2017), in the wake of Cyclone Aila, poor and marginalized households were forced to leave their villages and migrate after struggling to recover from the shock. Saha (2017) concluded that when poverty and marginality exist prior to an extreme event like a cyclone, the environmental change then ends up playing a significant role in the migration decision of these already poor households. Naser (2015) supports this claim by arguing that environmental migration is rooted in poverty and unemployment and that the poor are less able to adapt to environmental events because they have fewer resources. This link between income and ease of adaptation was discussed briefly in the adaptation section above and is also expressed by Subhani and Ahmad (2019), who argue that it is harder for poor, vulnerable people to adapt to severe situations like cyclones, which forces them to migrate suddenly. This is because they have smaller social networks, difficult socioeconomic conditions, and limited access to technology, education, and

other sources of information that would help them adapt. However, contrary to these findings, Call et al. (2017) emphasize that the results of their study in Matlab, Bangladesh “do *not* find that vulnerable populations such as women and the poor are consistently more likely to be displaced under environmental extremes” (p. 164, emphasis in original).

Women

When it comes to studying the vulnerability of women in relation to climate-induced migration in Bangladesh, the existing research is limited. In order to ensure that this review was comprehensive, I extended my search timeframe from the last five years to the last 10 years. Of the articles that discuss women in the context of climate change and migration in Bangladesh, most focus on how women are considered to be both economically and socially vulnerable due to gender discrimination and societal norms, which can restrict their ability to migrate and adapt (Call et al., 2017; Cazcarro et al., 2018; Islam & Shamsuddoha, 2017; Martin et al., 2014; Naser et al., 2019; Sams, 2019). The limited research suggests that men are more likely to migrate than women (Call et al., 2017) – especially poor women (Islam & Shamsuddoha, 2017). Several of the studies also discussed how the responsibilities of women greatly increase when their husbands migrate, leaving them to take care of the family with limited resources (Ingham et al., 2019; Islam & Shamsuddoha, 2017; Martin et al., 2014). However, very few articles focus on the actual mental and physical health risks faced both by migrant women (Sams, 2019) and women who are left behind when their husbands migrate (Ingham et. al, 2019; Islam & Shamsuddoha, 2017).

The results from a study of the southwest coastal region of Bangladesh indicate that female climate migrants are more vulnerable than their male counterparts because of gender discrimination and restricted socioeconomic conditions (Sams, 2019). Sams (2019) argues that Bangladesh's patriarchal society has created a system in which women are likely to be "poorer, less educated, have a lower social status and have limited access to and control over natural resources" (p. 57). Martin et al. (2014) also discussed the gendered nature of climate change vulnerability – citing social norms, gender inequality, and reproductive responsibilities as factors restricting the mobility and survival options of women; thus, making them disproportionately vulnerable to environmental hazards. Additionally, in the Ganges-Brahmaputra-Meghna Delta, Bangladeshi women typically experience gendered restrictions on their mobility, often driven by cultural and religious factors, which makes them particularly vulnerable to natural disasters (Cazcarro et al., 2018). In the past, when houses in Bangladesh were flooded, many women did not leave their homes because it was not culturally appropriate, or because they lacked the necessary swimming skills (Cazcarro et al., 2018). Another study found that in rural Bangladesh, gender inequality was a constraint to migration (Kartiki, 2011). In this study, women were never the ones to make migration decisions, and they very rarely migrated independently.

Islam and Shamsuddoha (2017) found that in families where the husbands had already migrated for work, women were less able to migrate because they were responsible for the rest of their family and it was not guaranteed that they would be able to find a source of income if they migrated. They also discussed how in rural areas men tend to migrate during lean periods to find work in urban areas for a few weeks. During this time, women are left more socially and economically vulnerable, but are responsible for caring and securing food for the family. Unfortunately, with the climate changing, the lean periods have become longer and longer. As a

result, men are staying away for longer, but oftentimes only leave enough money with their family to last them a few weeks. Thus, the women have had to find a way to generate additional income, while already taking care of all the housework. However, generating income and working outside the home is not always culturally acceptable for women.

Similar to Islam and Shamsuddoha (2017), Martin et al. (2014) and Ingham et al. (2019) discussed the shift in household responsibilities that occur when men migrate, and the negative impacts faced by women. Martin et al. (2014) found that men typically do not take their family with them when migrating in order to protect them from the less than ideal living conditions. However, this leaves women with the increased responsibility of heading the household and protecting local livelihoods, while still living in areas that are often at risk of environmental threats, such as cyclones. In their study of flood-related migration, Ingham et al. (2019) found that men will migrate to find work but leave women and children to stay in the village without any resources, thus greatly restricting their mobility. Without their husbands, women must take on a new role, which requires them to perform additional tasks that call for increased mobility. In this new role, women also become the household decision makers – something that many women in this study indicated they were uncomfortable doing due to cultural norms. Additionally, while men typically send money home, Ingham et al. (2019) found that it was often not enough to meet the needs of their families. As a result, women often sacrifice their own health and nourishment so that they have enough resources for their children and elderly relatives. Ingham et al. (2019) argue that the Bangladeshi government needs to create policies that recognize and support the increased responsibilities that women must take on when their husbands migrate. Women need to be able to operate in traditionally male spheres without being restricted by cultural norms.

In addition to women depriving themselves of proper nourishment in order to feed their families (Ingham et al., 2019), women face other health risks (both mental and physical) as a result of their husbands migrating, and from migrating themselves. Islam and Shamsuddoha (2017) note that those who are unable to migrate – typically women, children, the disabled and the elderly – are at particular risk of starvation while they remain trapped in unsafe locations. They also described how when their husbands migrate, young women are at risk of trafficking and sexual exploitation (Islam & Shamsuddoha, 2017). Sams (2019) also discussed some of the physical and mental health issues that migrant women face after a natural disaster. Similar to Ingham et al. (2019), Sams (2019) found that after a disaster, women were more likely to suffer from food insecurity than men because they would feed their children first when food was scarce, sacrificing their own health. Additionally, women found themselves more susceptible to waterborne disease due to their role in the household, including cooking and cleaning with the contaminated water. Sams (2019) also reported that female migrants (as well as male migrants) experienced serious mental health concerns after migrating – including anxiety and fear surrounding their search to find secure shelter and employment. Some women also reported that they had been physically assaulted by their husbands, and some female migrants reported verbal abuse in the workplace.

It is clear that climate-induced migration is taking a toll on women, especially already marginalized women. Compounding this issue is the fact that women are especially vulnerable to climate change hazards because of the discrimination and inequality they face, and the restrictive gender roles imposed upon them (Naser et al., 2019). Despite this, while plenty of research has been done on coastal communities and socioeconomic impacts, there has been limited research studying women as a vulnerable group in the context of climate change and migration in

Bangladesh. Within this understudied field, even less research has focused specifically on the mental and physical health impacts that climate-induced migration has on women. Of the scholars that have discussed the mental and physical health concerns faced by women, they usually – apart from Sams (2019) – only mention these health issues as a very small part of their research.

Chapter 3

Impact of Climate-Induced Migration on Women's Health

The topic of women, and women's health more specifically, in relation to climate-induced migration in Bangladesh is under-researched in the academic literature. In an attempt to fill this gap, I have compiled a review of the available secondary source data that discusses the impact of climate-induced migration on women's mental and physical health in Bangladesh. These secondary sources include reports published by the World Bank, UN Women, the International Organization for Migration (IOM), and the International Centre for Climate Change and Development (ICCCAD). The findings from these reports indicate that female migrants are especially at risk of increased trafficking, sexual exploitation, and abuse (IOM, 2015; Rigaud et al., 2018; Walsham, 2010). Similarly, women who stay home while their husbands migrate face an increased risk of sexual abuse and harassment (Rabbani et al., 2015; Walsham, 2010). These women also face the additional risk of increased illness and nutritional deficiency. They struggle with the increased burdens and responsibilities associated with being the primary caretaker and income-provider. This role often leads to increased stress and mental health concerns. However, in many cases, both female migrants and women who stay behind while their husbands migrate find that this new role provides them with the chance for increased empowerment and autonomy.

Female Climate Migrants

There is currently limited data available on female climate migrants in Bangladesh – potentially because women are less likely to migrate than men. However, among the sources that discuss female migrants, there is a general consensus that women are particularly at risk of being

taken advantage of, both through labor and sexual exploitation (IOM, 2015; Rigaud et al., 2018; Walsham, 2010). It appears that the greatest health threat to female climate migrants stems from physical and sexual abuse.

A report from the International Organization for Migration (IOM) explains that women in Bangladesh who migrate internationally face several hardships once they reach their destination countries (IOM, 2015). These include long working hours and irregular payments, as well as physical and sexual abuse. The issue of abuse came up in another IOM report (Walsham, 2010). This report stated that “human security concerns are also a significant issue at migrants’ places of destination,” and specifically that “gender-based violence is also endemic”— particularly citing physical abuse perpetrated by husbands against their wives (Walsham, 2010, p. 27). Additionally, a report published by the World Bank on internal climate migration in Bangladesh noted that when women migrate, their risk of experiencing sexual violence increases (Rigaud et al., 2018). This report also states that female migrants are at risk of becoming victims of human trafficking (Rigaud et al., 2018). Human trafficking often occurs when migrants with limited access to resources and networks of support turn to third-party intermediaries like recruitment agencies for information on relocation options and employment (David et al., 2019). As explained in an IOM report, these recruitment agencies “will be able to leverage their superior control of resources to exploit migrant workers with relatively low cost and risk” (David et al., 2019, p.10). The female migrants in Bangladesh are a particularly vulnerable group, and those migrating as a result of natural disasters are often made more vulnerable to trafficking because of the economic and social disruption caused by the disaster (David et al., 2019).

In addition to these health concerns, it was also found that when female migrants get sick, they often do not have the time or ability to see a doctor and thus are left to treat themselves

(IOM, 2015). Additionally, a report from UN WomenWatch expressed that “the migratory consequences of environmental factors result in higher death rates for women in least developed countries [such as Bangladesh], as a direct link to their socioeconomic status, to behavioural restrictions and poor access to information” (UN WomenWatch, 2009, p. 5).

Some of these threats are especially prominent among poor women and low skilled female workers. A report from the World Bank found that poor female migrants who do not have existing social networks are vulnerable to violence (Ahmad, 2012). Additionally, those who are both poor and low skilled are typically restricted to working low wage jobs in poor conditions (Ahmad, 2012). Similarly, another World Bank report noted that low skilled female migrants can face an increased chance of their work being exploited for low wages (World Bank, 2011). These women also face an increased risk of violence (World Bank, 2011). Ahmad (2012) also explained that in many cases, poor migrants (both male and female) are still not able to avoid climate-vulnerable areas even after migrating. These migrants typically live in unhygienic, low-lying slums that are susceptible to environmental hazards (Ahmad, 2012). Female migrants living in slums are particularly vulnerable to exploitation and abuse (Bahauddin et al., 2016).

Women Left Behind

In Bangladesh, men tend to use sociocultural norms as a means of preventing women from migrating (Dannecker, 2005; Rigaud et al. 2018). As a result, women are typically left behind as men participate in migration. In the absence of their male family members, women face concerns of trafficking, exploitation, abuse, and harassment (Rabbani et al., 2015; Walsham, 2010). These women also face several other physical and mental health concerns, including

increased risk of disease, severe stress from increased responsibilities, and food scarcity (Massey, 2009; Rabbani et al., Rigaud et al., 2018).

Women who are left behind are often looked down upon by the rest of society (Rabbani et al., 2015; Wright, 2014). The day-to-day discrimination that women already experience as a result of social norms and practices is made even worse once men migrate (Rabbani et al., 2015). These women are at risk of assault and harassment (Rabbani et al., 2015), as well as trafficking and sexual exploitation (Walsham, 2010). A study by UN Women of women who have been left behind found that 60% of the communities in the study reported that the harassment of women (including verbal abuse) had occurred (Rabbani et al., 2015). Theft was also found to be a common concern among women whose husbands had migrated. Some women even reported that they struggled to sleep at night (sometimes going several nights in a row without sleeping) because they had a constant fear of being robbed. This, in turn, negatively affected their health. This fear, in addition to the harassment they faced, left many women experiencing mental trauma. The UN Women report noted that “these women explained that the stress was unrelenting, and frequently, they would have mental breakdowns, from which it was very hard to recover” (Rabbani et al., 2015, p. 24).

When men migrate, their families lose a consistent source of income – relying instead on remittances that do not always come (Rabbani et al., 2015; Rigaud et al., 2018). Oftentimes, the men who have migrated are unable or unwilling to send money back to their families (Rabbani et al., 2015) In fact, 85% of the women interviewed for the UN Women report said that they either do not receive enough support, or receive no support at all from their migrant husbands (Rabbani et al., 2015). This same report found that only about 13% of women said that their husbands were actually sending them back money (Rabbani et al., 2015). As a result, women’s

responsibilities greatly increase as they must find other ways to support their families and livelihoods, while also dealing with an increase in their childcare responsibilities (Massey, 2009; Rabbani et al., 2015). Rabbani et al. (2015) studied the impacts of migration upon women and found that many women are not able to find work and even those who can often do not receive a stable income. Many women struggle to balance taking care of their families with the stresses of needing to find work outside the home. This stress is damaging to their physical health – often leading to the increased occurrence of disease and, thus, the additional burden of increased healthcare costs. Additionally, because many women do not typically receive enough money from their male migrant family members, and because they struggle to or are not allowed to earn an income on their own, many women resort to taking out loans. However, it was reported that these women are often harassed by their creditors and are under immense pressure (both mentally and physically) to repay their loans quickly. This further adds to the stress these women already felt from their increased household responsibilities.

When men participate in temporary migration and leave their families behind, women and children in poor households are often faced with food shortages and health concerns related to financial insecurity (Massey, 2009). The reality of their precarious financial situation leaves many women at risk of experiencing nutritional deficiencies (Massey, 2009; Rabbani et al., 2015). The women interviewed by Rabbani et al. (2015) in the UN Women report commonly complained of hunger and their inability to support their families. Women find themselves eating less and working more as a result of their restricted income and the fact that women are expected to feed their families first, before they themselves can eat. Of the women interviewed in the UN Women report, 90% said that following their husbands' migration, they were most concerned about sustenance, including food, clothing, rent, and other daily expenses (Rabbani et al., 2015).

Additionally, these women who have been left behind tend to get sick more frequently and they experience more health complications resulting from existing health conditions. This is thought to be a result of the increased stress they experience from having to take care of their family while also trying to earn money outside the home, and it is thought to be compounded by the issue of food insecurity and poor nutrition (Rabbani et al., 2015).

Silver Lining: Female Empowerment

Despite the many problems associated with migration for women, the research suggests that there is a silver lining: female empowerment. Both among female migrants and women who are left behind as their husbands migrate, female empowerment appears to be an unintended but positive result of climate-induced migration.

For women, it was found that migrating from rural to urban areas can provide them with the chance to have greater control over their own lives (Ahmad, 2012). As explained by Ahmad (2012) in a World Bank Report, “Urban women are less socially constrained; they enjoy greater mobility, freedom in choosing a husband and access to information, especially about their own rights. They also have more institutional contacts. All of these factors make them more self-reliant, independent, and empowered” (p. 15). Additionally, there are a range of economic, social, and legal opportunities available to women in urban areas (compared to women in rural areas), which can help to increase their adaptive capacity and decrease their vulnerability (Ahmad, 2012). Notable economic benefits and empowerment were found in association with the garment sector in particular, which is made up largely of female workers (Walsham, 2010).

Overall, migration can often benefit women by providing them with diverse opportunities and increased rights (World Bank, 2011).

Similar empowerment is found among the women who are left behind while their husbands migrate. Even though their workload has increased, many women find that their autonomy increases in the absence of men, as they are able to control their own work and take on a decision-making role regarding household issues (Massey, 2009; Rigaud et al., 2018). Women have found ways to cope with the problems they face when men migrate, which has ultimately led to them becoming more independent and less reliant on their husbands' income (Rabbani et al., 2015). As expressed by the UN Women report, "when faced with adversity, these women have managed to persevere, proving that regardless of the traumatic situations they live in, migration has made possible a whole new approach to female empowerment" (Rabbani et al., 2015, p. 32).

It is clear from these reports that women face significant physical and mental health concerns related to climate-induced migration – including the increased risk of sexual and physical abuse, stress and mental trauma, and disease and nutritional deficiencies. However, it is also clear that this relationship is not being highlighted in the current academic literature. While academic sources discuss the increased responsibilities that women must take on when the men in their family migrate, they generally do not dive deeper to explore how this different role really impacts women. Even within secondary sources, there is very limited information about the relationship between women and climate-induced migration in Bangladesh – and even less information is available regarding women's health in this context. As we look forward with the expectation that climate migration will increase in Bangladesh, it will be critical to understand

how migration really impacts people – especially women, who are already in a vulnerable position by nature of Bangladesh's patriarchal society.

Chapter 4

Conclusion

The recent academic literature on climate change and migration in Bangladesh shows that the ways in which women are impacted by climate-induced migration are currently understudied. The research instead focuses primarily on the different migration drivers and how they are influenced by climate change, the ways in which migration can be used as an adaptation strategy, and the increased vulnerability that coastal and low-income communities face. While the vulnerability of women has been discussed in some of the research, these discussions are minimal compared to the other areas of study mentioned. Furthermore, there has been very limited academic research in recent years that focuses on the impact that climate-induced migration can specifically have on the mental and physical health of women.

Recent research points to five main migration drivers – social, political, environmental, economic, and demographic – which can all be influenced by environmental change. Many scholars have pointed specifically to the complex ways in which environmental push factors and social and economic push and pull factors interact with each other to influence the decision to migrate. Scholars have also discussed how migration can be used as an adaptation strategy – helping to increase the resilience and improve the standards of living of those who migrate. However, planned migration is not always an available option for those in some of the most vulnerable communities. The three vulnerable communities discussed here (coastal communities, low-income communities, and women) highlight the ways in which different communities can be individually impacted by climate change and associated migration. Through looking at these

different communities, it also becomes clear there is a difference in the level of attention they have received in the academic literature.

Many scholars have based their research specifically on coastal communities, as these communities are particularly affected by environmental hazards because of their geographic location. Their increased exposure to hazards such as cyclones and salinization can play a significant role in the decision for coastal community members to migrate. Coastal communities, low-income communities, and women all tend to rely heavily on ecosystem services for their livelihoods, which make them more vulnerable to climate change. However, low-income communities and women typically have limited resources and decision-making power and are thus more restricted in their ability to migrate in the wake of environmental hazards or in preparation for climate change. Though women appear to be under-researched in this area, the research that has been done indicates that gender discrimination and societal norms have left women in Bangladesh socially and economically vulnerable, and less likely to migrate than men. In households where husbands migrate and leave their families behind, women experience a shift and an increase in their household responsibilities.

To fill the gap in the academic research surrounding women (and specifically women's health) in relation to climate-induced migration, I turned to secondary sources. From these sources, it became clear that, in Bangladesh, female migrants and women left behind when their husbands migrate suffer from an increased risk of sexual abuse, exploitation, and harassment. Additionally, these women often experience stress from the increased responsibility of having to support their whole family. These women also tend to suffer from nutritional deficiencies, as they often experience food scarcity due to their limited income. On top of that, social norms encourage women to feed the rest of their family before they themselves can eat. However, if

there is one benefit to this increase in responsibilities, it is that women whose husbands have migrated (as well as female migrants) often experience an increase in autonomy and empowerment.

The limited research available shows that women's mental and physical health can be severely impacted by migration in Bangladesh. As the effects of climate change become more and more prominent, we are expected to see an increase in climate-induced migration. However, if these impacts are not being brought to the forefront of the literature, there is likely less of a chance that they will be considered when governments and international organizations create policy recommendations for mitigating the impacts of climate migration. Thus, it is critical that academic and secondary source literature highlight the specific ways in which vulnerable, marginalized communities – including women – will be negatively impacted by climate-induced migration.

Paths Forward: Assessing Policy Recommendations

In the last few years, international organizations have placed greater emphasis on the need to dedicate policy to the climate change and migration nexus – something that, according to the IOM, was not being done just 10 years ago (IOM, 2017). To determine if these organizations focused their policy recommendations on women or women's health in relation to climate-induced migration, I conducted a review of recent policy recommendations from relevant organizations. Specifically, I looked at reports published within the last five year from the International Organization for Migration (IOM), the World Bank Group, and the Office of the United Nations High Commissioner for Human Rights (OHCHR). While all reports mentioned

either gender or women in their recommendations section, these comments were generally vague and did not address the explicit ways that women are adversely affected by climate-induced migration. None of the reports suggested recommendations to protect women's health, and only one report noted that policies should be made to protect migrants from abuse (but it did not specify gendered abuse). Below, I discuss the limited ways in which these reports did include recommendations related to women or gender.

The World Bank Group's 2018 report mentioned previously – *Groundswell: Preparing for Internal Climate Migration* – focused on slow onset climate impacts in Sub-Saharan Africa, South Asia, and Latin America to make projections about future internal migration driven by climate change (Rigaud et al., 2018). The authors laid out several takeaways from the report that they believe policy makers should address while planning and preparing for climate-induced migration in the future. One of these takeaways is that “targeted interventions can be deployed in the short and medium term to support migrants” (Rigaud et al., 2018, p. 183). Within this takeaway, it is stated that programs should be established to facilitate informed migration decisions. Specifically, they state that there should be policies in place to protect migrants from abuse. However, as mentioned before, this recommendation does not differentiate between the abuse faced by male versus female migrants. Additionally, while this report does not go into detail on recommendations that could help the women left behind during male-migration, it does state that policies should be implemented to help improve the financial decision-making process of both migrants and the families left behind.

The *Groundswell* report also highlights the need for action across three key areas to help decrease the amount of people being forced to migrate in response to climate change (Rigaud et al., 2018). These three areas are:

- 1) Start rapidly decreasing global GHG emissions today.
- 2) Make climate migration a central part of development planning.
- 3) Start investing to create a better understanding of internal climate migration.

Within the second area, it is noted that development frameworks should consider the ways that communities can adapt in place as a way of preventing distress migration/displacement. The authors listed several components of successful local adaptation, which include educating and empowering women. However, they do not elaborate on this point by explaining how they might empower women or how doing so would lead to successful adaptation. It is also noted that development frameworks should consider how they can best prepare the areas sending and receiving migrants, as well as how they can support the migrants themselves. Within this section, it is noted that “the urban poor and women require special attention to ensure delivery of basic services and infrastructure in an inclusive manner” (Rigaud et al., 2018, p. 187). While it is good that women are specifically being mentioned in these action areas, the actual recommendations are somewhat vague when it comes to why women need special attention, how supporting women will help when it comes to addressing climate migration, and what exactly should be done to support women. Additionally, the *Groundswell* report excludes any mention of women’s health when it comes to recommendations for addressing and mitigating climate migration in the future.

The IOM released a report titled *Migrants and Migration Policy in the Context of the Adverse Effects of Climate Change and Environmental Degradation*, in which they discussed the need to better understand the relationship between migration, the environment, and climate change (IOM, 2017). The report mentions how men and women are impacted differently by environmental and climate migration based on their social contexts, and that this aspect of

gendered migration should be accounted for when developing policies. Additionally, the report lists several recommendations and suggested actions to consider when addressing climate and environmental migration. Of the 11 suggested actions listed in this report, one specifically mentions gender, stating that organizations should “promote rights-based and gender-sensitive approaches to policy development, taking into account differentiated vulnerabilities and promoting a participatory approach to affected populations” (IOM, 2017, p. 5). Similar to the *Groundswell* report, while it is important that gender is mentioned as an aspect to consider in policy-making, what is actually being suggested here is not very concrete and does not draw any real attention to the specific ways that women are impacted by climate migration and how this can be addressed.

The IOM also developed a report for the United Nations Framework Convention on Climate Change (UNFCCC), which included a section on potential areas of recommendations related to human mobility and climate change (IOM, 2018). The recommendations are broken up into two sections: recommendations for governments, and recommendations for other stakeholders (such as international agencies, the private sector, civil society, and academia). The recommendations for governments include establishing, strengthening, and adapting policies and frameworks to address environmental- and climate-influenced human mobility, and working with key stakeholders on said policies (among other recommendations). Within the recommendations for other stakeholders, gender is briefly mentioned. It is recommended that stakeholders further map and analyze the nexus between human mobility and climate change in relation to other relevant policies, including gender equality policies. Gender equality policies are listed among 11 other relevant policies that should be considered in relation to climate and mobility, such as policies addressing the rights of indigenous peoples, and national policies on

human rights. The mention of gender here is not explained further, and it is not specified how women and men are affected differently by climate migration.

The final report assessed here was from the Office of the United Nations High Commissioner for Human Rights (OHCHR). It included a summary of the recommendations that had been discussed at the OHCHR Expert Meeting, which focused on human rights protections for international migrants impacted by the slow onset effects of climate change (OHCHR, 2017). Many of the recommendations had to do with protecting and ensuring access to justice for cross-border migrants. While these recommendations emphasized the importance of protecting the rights of the most vulnerable communities, they were not very explicit about listing women as one of those vulnerable groups. The recommendations were broken up into nine main categories, and altogether there were 36 specific recommendations listed. Of the 36, only one mentioned gender, recommending that national laws and policies associated with climate action be developed “through meaningful consultation with and participation by affected persons and their representation organizations taking into special consideration gender equality and the short and long-term needs of vulnerable groups” (OHCHR, 2017, p. 7). As with the other reports, gender equality is mentioned, but not deeply explored. It is interesting that this set of recommendations, which is centered around protecting human rights, does not lay out recommendations to specifically address the human rights violations that female migrants face, such as trafficking and sexual exploitation. The report also only focuses on migrants, and not those affected by migration through being left behind. By excluding this group, the report misses the opportunity to suggest recommendations for how to protect the rights of the women left behind, who are often abused and taken advantage of in the absence of their husbands.

It should be noted that this is not a fully comprehensive review of policy recommendations – I have selected what I found to be the most recent and relevant reports published by organizations that are prominent in the climate migration field. However, from these reports, it is clear that there is room for improvement when it comes to gender-oriented recommendations. While all reports mentioned gender or women at least once, these mentions were generally brief and vague. They did not capture the ways in which women are impacted by climate migration, and they did not include or explain specific ways to protect women from the negative effects of climate migration. When women were mentioned, it was generally in the context of female migrants, not the women who are left behind. Additionally, there was no discussion of how policies could be implemented to reduce the health threats that female migrants and the women left behind face as a result of climate-induced migration. Future policy recommendations should be more explicit about how they can support female migrants and women affected by migration, as well as why it matters that women (and other vulnerable communities) be supported in this process. Policies need to be put in place which recognize the vulnerable position of women – especially in countries like Bangladesh with male-dominated cultures – and must support the mobility of women as they take on additional responsibilities in order to survive. It is also critical that women are part of the discussion when it comes to drafting new policies, as their experiences and perspectives are key to creating effective policies.

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ACADEMIC VITA

Christina S. Boutselis

EDUCATION

The Pennsylvania State University, Schreyer Honors College
Bachelor of Science in Earth Science & Policy
Minors in Energy Business & Finance and Political Science

University Park, PA
Graduation: May 2020

Reykjavik University
The Green Program

Reykjavik, Iceland
May 2017 – June 2017

WORK EXPERIENCE

Department of Energy and Mineral Engineering
Grader

Penn State University
August 2019 – December 2019

- Responsible for grading weekly homework assignments for 66 students in an Energy Business and Finance class

District Office of PA State Senator Daylin Leach
Legislative Intern

King of Prussia, PA
May 2019 – August 2019
June 2017 – August 2017

Constituent Services Intern

- Researched legislation, including potential climate policies and the Senator's bill on a polystyrene ban
- Responsible for constituent correspondence regarding environmental and energy related matters
- Conceptualized and launched new constituent newsletter, The Blueprint, designed to provide constituents with a better understanding of the Senator's bills and how they will impact Pennsylvanians in their daily lives

The Energy Co-op

Philadelphia, PA
July 2019 – August 2019

Communications and Operations Intern

- Researched and wrote a blog post on proposed community solar legislation in Pennsylvania
- Conducted research on potential new members and local competition
- Updated and consolidated company onboarding policy

Kaye Biogeochemistry Lab

Penn State University
May 2018 – May 2019

Research Assistant

- Collected and analyzed data on nutrient cycling in agricultural settings to assess the benefits of cover crops on corn grain crops, specifically through processing soil for nitrate and ammonium extraction and analysis

Dynamic Energy

Wayne, PA
June 2017 – August 2017

Business Development Intern

- Vetted and analyzed solar panel project leads, determining lead quality and applicability prior to entering into salesforce.com
- Developed solar rooftop layouts for commercial structures using HelioScope solar design software

LEADERSHIP & INVOLVEMENT

Residence Life

Penn State University
August 2017 – May 2019

Resident Assistant

- Utilized programs, bulletin boards, check-in conversations, and duty tours to maintain a positive and safe living environment for 39 female first-year students

Presidential Leadership Academy

Penn State University
April 2016 – May 2019

Member

- Selected as one of 30 students from a competitive pool of 200+ applicants to participate in the PLA Class of 2019, which fosters leadership and critical thinking skills through courses taught by the President of Penn State and the Dean of Schreyer Honors College, field trips, and networking opportunities across the United States

Armenian Student Association

Penn State University
September 2015 – May 2019

President (2018-2019), Vice President (2017-2018), Secretary (2016-2017)

- Organized meetings, speaker series, and events to discuss Armenian culture and to share Armenia's history with other students

The Climate Reality Project

Penn State University
March 2018 – May 2019

Research Committee Member

- Worked with Penn State's chapter of The Climate Reality Project to formulate a research paper outlining the steps needed for Penn State University (University Park) to become a 100% carbon neutral campus

HONORS

Dean's List

9/9 Semesters

Penn State University Provost's Award

Fall 2015 – Spring 2019

President's Freshman Award

Fall 2015