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Climate Change and Health Vulnerability: A Focus on Displaced

Women and Children in Dhaka's Slums, Bangladesh

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List of Acronyms

BBS   Bangladesh Bureau of Statistics

BCCSAP   Bangladesh Climate Change Strategy and Action Plan

BRAC   Bangladesh Rural Advancement Committee

CBB   Child Bride to Bookworm

CSR   Corporate Social Responsibility

ESG   Environmental, Social, and Corporate Governance

FGDs   Focus Group Discussions

IFC   International Finance Corporation

IOM   International Organization for Migration

IPCC   Intergovernmental Panel on Climate Change

M&E system   Monitor and Evaluation System

NGO   Non-Governmental Organization

SPSS   Statistical Package for the Social Sciences

UPPR   Urban Partnerships for Poverty Reduction

WCDR   World Conference on Disaster Reduction

Acknowledgement

This research journey actually makes me struggle a lot, during the entire process a lot of hesitation, self-doubt comes to me. During the past five months, every time when I met my classmates and friends, the first sentence automatically in our mind to ask was: "How was your RP"? I even had the feeling that the happiest moment in our master journey would be the moment that we finished our RP and presentation and got a kind of positive feedback, then finally "hard work paid off." Before I started my master, I was also thinking about maybe I could have the potential to have my PhD in the future soon, it's not that difficult, since some people around me got fully funded PhD offer directly after their master study. However, it really just sounds like or looks like. I need to thank for this academic journey that I spent much effort to do research, I had the clearer understanding that doing academic research is really a serious thing, we really need to be down-to-earth, we are supposed to responsible for what we write, what we find, we need to consider the words during writing, since nuances indeed makes differences.

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Abstract

Climate change is a pressing issue regardless of geographic location or economic status, the impacts of climate change radiate to every corner of the world, among them, developing countries suffer the most due to their lack of relevant resources to support strategies or measures to be implemented. Environmental Degradation, rising sea levels, extreme weather events happen a lot and thus also cause the people's displacement. Bangladesh, as one of the most vulnerable countries to climate change due to its geographical location and population size, is at the frontline to be conducted research on "climate-induced migration". Dhaka, as the densely populated and capital of Bangladesh, has been chosen as an example for this research. There are many types of climate disaster, considering what climate events often happen in Bangladesh, this research define climate-induced disasters are: cyclone, flood, drought, riverbank erosion, tornado, salinization (caused by rising sea levels), tidal surge, and coastal waterlogging for this research specifically. Due to climate change, a large quantity of people who live in coastal areas in Bangladesh are forced to leave their original place and many of them choose Dhaka as destination.

This paper reveals the "rural to urban" displacement consequences after people moving from coastal areas to urban areas, the situation is not as what they predict before they come, instead, confronted with various challenges and barriers in the new environment, by telling the story in the urban slums to show the real and cruel reality for those who managed to migrate, have they living a better life? What are the factors behind. This research focuses on the health challenges faced by women and children, who are the two of the most vulnerable groups within slums in Dhaka, mainly use the secondary data based on documentary analysis, existing literature to analyze and get a picture of what are the impacts of climate change-induced displacement contribute on health challenges faced by residents of Dhaka's urban slums, what specific vulnerabilities are identified for women and children in this context? how do these conditions compare with "non-climate-induced migration" in the slum. What strategies have been implemented to mitigate the impact on health issues among climate-induced migrants (specifically on women and children)? By doing this research, it highlights the importance that under climate change and rapid urbanization, it is of great significance to pay more attention on the more "vulnerable" group - "climate migrants" and separate them with other types of migration. In the end, this paper also recommends a new angle as "green reintegration" for various stakeholders to take actions collaboratively and working on the better adaptation to climate change in Bangladesh. This is the time to take action.

Keywords: Climate Change, Displacement, Health, Women and Children, Governance, Sustainable Development, Policy Analysis, Green Reintegration

Relevance to Development Studies

When we discuss about the contemporary discourse of development studies, it is essential that we should not overlook the universal impact and transformative power that climate change has brought to humans, especially for the fact that the intersection of climate change and migration is increasingly at the forefront of development studies. The core of development studies lies in understanding, addressing issues and then implementing relevant strategies to cope with both opportunities and challenges of socio-economic changes within a continuously evolving world. Within this paradigm, this research seeks to explore the situation for climate-induced migration happening in Bangladesh to offer both the academia and public policy makers a deeper understanding of the shifting dynamics of governance, urbanization, and resilience.

At its core, development studies mainly focus on examining the socio-economic and political changes of society, climate-induced migration is exactly a vivid reflection for these changes. Climate change, characterized by extreme weather events, rising sea levels, and changing weather patterns, presents a multidimensional challenge that intersects with various aspects of societal development and governance. As the impacts of climate change intensify, a consequent surge in human migration transforms original and receiving areas' demographic structure. This interplay raises problems such as resource management, urban planning, and social cohesion, which are fundamental issues within development studies discipline. In light of these circumstances, understanding how people live in communities perceive these issues becomes exceedingly vital.

Climate-induced displacement not only poses challenges for different migration patterns, but also rests with how states and institutions respond. This research use Bangladesh as a focal point to show how nations and local governance structures evolve and adapt to the changing environment. This kind of exploration is directly relevant to governance and development policy which emphasizes how policy frameworks could be agile when faced with unprecedented challenges. In development studies, urbanization is always a key area to focus on, along with more and more costal area populations move to urban areas, there is no deny that urban infrastructure undertake increasing pressure which brings the issues like urban planning, housing, sanitation, resource distribution. The specific situation in Bangladesh provides a typical case study to illustrate how displacement influenced by climate change and consequently rapid urbanization in Bangladesh needs more detailed strategies.

Development is not only about economic growth, but also about equity and inclusiveness. The stuck population in the coastal areas of Bangladesh highlights the plight of those who have been left behind. Addressing the challenges that they face is not just a matter of migration, but also relates to the broader goal of ensuring equity, justice and human rights in the development paradigm. Climate change and its effects,

like displacement, are challenges that know no borders. They require international cooperation and dialogue. This study is about a broader dialogue on how regional and international institutions can come together, share knowledge, and co-create solutions. Given the interconnectedness of today's world, such collaborative strategies are the essence of modern development studies.

The relevance of this research within the field of development studies lies in its potential to show insights into how governance structures are adapting to a changing global landscape. By dissecting the mechanisms and strategies incorporated by governments and international bodies to address climate-induced displacement, this study seeks to contribute to the larger discourse on sustainable development. The integration of migration into climate change policies reflects a proactive approach to mitigating potential crises, fostering resilience, and promoting social equity and inclusivity in a world grappling with unprecedented challenges.

In conclusion, the study of climate-induced displacement in Bangladesh is not only an in-depth exploration of a regional issue, but also a symbol of the broader challenges facing the world. By bringing it into the context of development studies, we could recognize and address the complexity of the socio-economic, political, and environmental changes that define our times. This research not only contributes to the advancement of academic knowledge, but also provides practical avenues for global policymakers, strategists, and development practitioners.

1. Introduction

1.1 Background of the Study

Before delving deeper into this research, it is essential to establish a broader context to provide readers with a basic overview for the global challenge of climate change. Understanding this broader context will help in comprehending the continuous evolution of climate change and its historical background in Bangladesh. Furthermore, it is important to explore the implications on the urban areas and migration patterns afterwards within the country. This will lay the foundation for the later contextualization and pave the way for understanding the pressing issues that Bangladesh is facing, and it will highlight the need for focused attention from researchers and policymakers on a wide scale.

Global Challenge of Climate Change

It's time to take action, "Climate change does not care about and respect border; it doesn't matter who you are: rich and poor, small and big. Therefore, this is what we call 'global challenges,' which require global solidarity," spoken by Mr. Ban for his speaking as a UN Secretary-General (Ki-moon, 2011). Our planet's climate has fluctuated historically, here use the word "our" that most of the people always claim so, we unconsciously already thought we humans "own" the earth and we could do everything we want, it is this anthropocentric perspective often blind us to what is going on. Climate change in the past few decades is an urgent issue that affects every corner of the world, and no one could escape from that. The burning of fossil fuel causes the release of CO_2 and GHG, huge amounts of industrial processes, human activities such as deforestation have worsened the situation. Thus, temporary rise, polar ice and glaciers are melting, sea level rise, shift in biodiversity ecosystems, extreme weather events like drought, flood and wildfires are more often, however, these are just some of the manifestations of climate change crisis. It is crucial for people to have the awareness that climate change is not merely an environmental issue, it is also deeply intertwined with various aspects of human daily life, including socio-economic development, political stability, social equity, public health, just to name a few. The impacts of climate change extend beyond the natural environment, affecting economies by disrupting industries such as agriculture, and exacerbating inequalities as vulnerable populations bear the brunt of its effects. Politically speaking, climate change can lead to conflicts over resources, influence migration patterns, and challenge the governance capacities of nations.

Historical and Current Landscape of Climate Change in Bangladesh

While the entire planet is suffering from the impacts of climate change, its effects are unevenly distributed across different regions, some areas are more evidently affected by climate change compared with other regions due to their geographical location, and Bangladesh stands out as a typical example.

Bangladesh, which is located at the confluence of the Ganges, Brahmaputra, and Meghna rivers, this special geographical position as a delta means that most of its terrain is flat and low-lying and almost below the sea level. This makes Bangladesh especially vulnerable to a variety of natural disasters. Historically speaking, this region has experienced numerous extreme weather events like droughts, tropical cyclones, riverbank erosions, and unexpected floods. With the intensification of the global climate change crisis, these phenomena have become more severe and frequent. Bangladesh is one of the most densely populated country around the world, with a large proportion of the population in Bangladesh makes a living by relying on agriculture, the agrarian economy here depends heavily on predictable monsoon patterns. However, the agricultural cycles mode has been disrupted with variable rains and flooding right now because of the changes in monsoon patterns, this disruption poses a severe challenge to traditional agricultural practices, forcing many farmers to seek alternative livelihoods. Coastal communities in Bangladesh are particularly affected by the gradually rising sea levels, which exacerbates the salinity of their freshwater sources. This Salinization threatens both agricultural productivity and drinking water supplies.

The socio-economic implications of these environmental changes in Bangladesh are profound. As traditional farming becomes less viable, rural-coastal areas' populations are increasingly displaced to urban areas in search of work, leading to urban overcrowding and heightened pressure on infrastructure and services. Moreover, the political landscape is also affected, as the government must navigate the challenges of disaster response, resource management, and economic adaptation. There is an urgent call for Bangladesh to implement meaningful and comprehensive strategies to mitigate these impacts from climate change crisis.

A General Overview of Migration Patterns in Bangladesh

Migration has always been a significant survival strategy for habitants in Bangladesh. Historically, such migration activities usually are seasonal related or due to specific reasons. Before the advent of large-scale transportation after industrialization, famers in Bangladesh had to move based on the rhythms of planting and harvest, their moving is really dependent on the agricultural cycles, during the off-seasons, many farmers also moving to other places and choose to take another side-jobs to backup for more economic support (Akram et al., 2017). Natural disasters like drought, flood or cyclone may also force the entire family to temporarily relocate. However, in the past few decades, it is noticed that the nature and scale of migration in Bangladesh are undergoing a fundamental shift.

It is predicted that with the rising sea level, Bangladesh will potentially lose up to around 11% of its land and 15 million with thus displaced by 2050 (Rojas, 2021). Such shocked figures are not just the statistical numbers, it's gradually become the reality among people in Bangladesh. Once thriving coastal areas are facing the fact that most of which become uninhabitable. As a result of sea level rises, freshwater resources are eroded with saline which makes many agriculture-based areas unsustainable and people who live and rely on that land are forced to leave their lands. With the costal or rural areas people are forced to leave and try to find their new habitats in urban areas, it also has significant impact on socio-economic development and cultural implications.

As one of the most densely populated countries around the world, Bangladesh is experiencing the rapid urbanization (Riaz Uddin, 2016). However, urbanization here in Bangladesh is not just a byproduct of economic growth that witness the development of this country, it also in a sense that indicate the increasingly shelter-seeking mechanism for internal migration in Bangladesh. Cities like the capital Dhaka or other big cities like Chittagong, and Khulna are witnessing an exponential rise in their populations (Akinde, 2023) , however, this phenomenon is not what people think that these migrants are attracted to urban areas due to better working conditions or seeking personal career development, instead, a large proportion of these communities are compelled to move since their costal or rural homes are no longer at a livable condition under the pressure of climate change crisis.

The influx of people brings severe problems. Dhaka, already one of the most densely populated cities in the world had been confronted with the dilemma of overburdened infrastructure, shortage of housing and worse pollution (Rahaman et al., 2023). New migrants often find themselves stuck in the slums of cities and actually encounter challenges that they haven't dealt with before. From getting the safe water to adapt to the new cultural environment alone to a stable employment salary, even though they still in their own country, they still feel a sense of separation, this rapid urbanization is slowly reconfiguring the socio-cultural dynamics of the country.

While discussions are always ongoing among climate-induced displacement which regards migrants who are moving, it is worth noting that vulnerable groups remain largely invisible, the trapped populations. These could be the individuals, families or even the communities who are unable to move from their increasingly hostile habitats due to economic, family responsibility, cultural or even gender reasons. For many people in Bangladesh, the displacement indeed is a necessity to combat climate change crisis, but it still seems like a luxury that they are unable to access. Crop yields are continually decreasing, freshwater sources becoming saline, hurricanes are more frequent (Pender, 2016). These pose the multifaceted challenges for trapped populations in Bangladesh and shed the light that we should bear in mind: not everyone is able to escape from the climate change crisis.

1.2 Problem Statement

For Centuries, planting, harvesting and fallow systems that based on agriculture cycles has not only provided the livelihood, but also shaped the social cultural rhythms of coastal rural areas life. The agrarian essence of Bangladesh is rooted in its fertile plains and nourished by the interconnected rivers; ravenhowever, this historically predictable cycles has greatly influenced by erratic monsoon pattern brought by global climate change and has real impact to the daily life. Unpredictable rainfall patterns affect crop yields, directly threatening food security. Drought results in declining soil fertility and compelling farmers either to invest in more expensive farming or abandon farming altogether. These agricultural cycles instability lead to the unbalance of socio-economic status in coastal rural areas and escalating debt, driving migration and in some cases, inciting societal unrest.

Urbanization is usually seen as a good sign of development (Pradhan et al., 2021), but under the context of Bangladesh, it represents a complicated paradox. Major cities, especially the capital, Dhaka, are seeing an unprecedented influx of migrants. This migration flows, however, is not purely driven by better economic opportunities but is a forced response to environmental degradation and results afterwards. Here, there is distinction is made towards the movement: non-climate-induced migration and climate-induced displacement, we will mainly focus on the people who displaced by climate change. Salinization of freshwater and coastal erosion disrupt agriculture and thus pushing many people to seek refuge in urban areas. Yet, with the sudden surge of migration, current infrastructures are not sufficient enough to accommodate these people. The ramifications are evident: Slum expansion stretches the already limited resources and overwhelms public services such as healthcare and sanitation. Migrants often encounter unstable and more difficult living conditions in urban slums, characterized by poor sanitation, limited access to clean water, and inadequate healthcare facilities. These conditions result in a series of health issues, ranging from infectious diseases to chronic conditions exacerbated by the slums' environment. Among the most affected are women and children, who in particular bear the brunt of those health challenges due to the gender and age vulnerabilities. Given this context, it is crucial to explore the specific health impacts of climate change-induced migration on the residents of Dhaka's urban slums, with a focus on the distinct vulnerabilities faced by women and children.

From a global perspective, the discussion surrounding climate migrants (refugees) is more and more debatable, currently there is no consensus on a binding international legal framework to protect those people affected by climate change, although international organizations like IOM is always standing at the frontline to call for rights and status recognized for these people, comprehensive international support still has a long way to go. Within Bangladesh, the government has taken some initiatives like the BCCSAP to address various complicated issues, they built cyclone shelters,

embankments to make efforts on that. However, due to the complexity of this issue and combined with limited resources, to design comprehensive solutions is still with many hurdles.

1.3 Research Questions

As discussed above, these issues are just the corners of the issues, the problems that need to be addressed are far more complicated and multifaceted. It is oversimplified if just compartmentalize climate change crisis in Bangladesh as merely an environment issue, is focusing solely on sustainability as main direction enough? Absolutely not. The challenges touch every facet of life. Traditional agriculture livelihood is threatened, new urban economies are supposed to cope with the overpopulation, governments have to make the difficult decisions to balance sustainability and development or how to achieve both as a whole. Bangladesh's climate challenge is magnified by its unique vulnerabilities under the context of global climate crisis and thus with the objective to understand how climate change displacement influence people who live in the coastal and urban areas and what are the current responses and how effective have they been, I propose the research questions:

To conduct a nuanced and multifaceted investigation, this research is developed around the following main question and two subsequent questions:

Main Research Question

What are the impacts of climate change-induced displacement contribute on health challenges faced by residents of Dhaka's urban slums, what specific vulnerabilities are identified for women and children in this context?

Sub-Research Questions

1. What key factors are identified as barriers for women and children in slums at Dhaka and how do these factors affect them to get better health service?

2. What strategies implementing to mitigate the health impacts of climate change on women and children, and how effective have they been?

1.4 Justification and Relevance of the Study

Historical studies often center on the rich agrarian culture in Bangladesh, which always rooted in the fertile plains and nourished by the interconnected rivers. But with industrialization, with more and more severe global climate change crisis, there is no exception, Bangladesh included, all these past narratives are also changing the way they expressed, from fertile to barren, from seasonal monsoon patterns to unsteady cyclones.

While a large amount of literature has documented how climate change have directly impact people's life, limited research probes the more hidden implications: the relationship between climate-induced displacement, urban pressures, trapped populations in coastal areas and profound socio-economic consequences behind as well.

The primary motivation for this research is to deepen the understanding of climate change in Bangladesh context by exploring multi-dimensional impacts of climate change. Although it is not novel to recognize that climate change is an issue that far transcending merely environmental problems, this study is going to provide a nuanced analysis on how climate change and consequent displacement is linked with socio-economic, political, and cultural dimensions, by doing so, it will provide a more comprehensive and contextual understanding of climate change in the setting of Bangladesh. Only focusing on how to achieve sustainable development or how to adapt and mitigate the consequences of climate change is never enough to address the various challenges.

As what mentioned earlier, urbanization is usually seen as a positive sign of development, but urbanization in Bangladesh now is at the nexus of a paradox. Massive influx migrants into urban areas is not only an economic seeking, but also a forced choice to flee from the devastating environmental issues. However, literature predominantly frames that as an isolated migration issue, often overlooking the potential economic, political and policy implications. By analyzing the unprecedented urban issues that migrants may cause, this research seeks to contextualize urbanization in Bangladesh as a combination of aspirations, challenges, and survival strategies. In Parallel, the plight of "trapped populations" demands more attention and priority, there should have a shift from regard them as merely passive victims to acknowledging what resilient ways could provide to these people, amplify their voices and reviving their life in their homeland again.

Furthermore, while most of the existing studies emphasize the aftermaths of climate change in Bangladesh from a top-down perspective, this research tries to use a bottom-up vision to highlight the direct grassroots experiences among those affected populations to perceive how they struggle with various challenges. By focusing on these firsthand experiences directly by utilizing secondary data from existing interviews and surveys conducted in Dhaka, aggregating and interpretating varied data, this research will highlight on-the-ground challenges and reality of "climate-induced migration and offering evidence-based recommendations to inform the policymakers in Bangladesh as well as academia to pay more attention on "climate migrants" in Bangladesh where more targeted interventions are needed, also through this research of climate change and displacement in Bangladesh, also to give more inspiration and thinking for the global policymakers and academic experts to take "climate-induced displacement" into "development plans".

2. Literature Review

When conducting the literature review, we always need to make sure to understand what's the meaning behind. That means, to build a clear understanding of the conceptual framework, to have an idea which perspective we could start with and make analysis further. Then we need to think about within this framework what theories that we should include. As we build this framework, it's clear that we cannot move forward without considering two key pillars: climate change adaptation theories and migration theories. These will act as the guiding lights in our exploration, helping us navigate the sea of information and views that surround these pressing global issues. But it's not enough just to mention these theories; we need to delve deep to understand their intricacies, their implications, and their limitations.

As we navigate through the vast sea of research and documentation available on the interlinked topics of climate change adaptation and migration, it becomes increasingly clear that these are not isolated phenomena, but complex, interwoven narratives that shape the very fabric of contemporary society. The task at hand is not just to collate various pieces of literature but to knit them together in a way that reveals a larger, more nuanced picture. We aim to bring together the diverse range of voices and perspectives encountered in the existing literature, with the ultimate goal of forming a cohesive and comprehensive understanding.

2.1   Conceptual Framework

To give answers to the research questions, this section will first provide theoretical considerations about Climate-induced Displacement, "Push and Pull" theory, health, governance as concepts that used to frame this research and also better to aid the readers to understand the context.

Climate Change-Induced Displacement

Migration and Displacement are two terms often used interchangeably, but they refer to distinct phenomena. 'Migration' typically refers to the movement of persons who are away from their original residence, either within their home country or across international borders. It could involve both positive (like moving to looking for a new job, seeking better living conditions) and negative (escaping from political oppression, violence) implications, across various scales and for diverse reasons (Castles, de Haas, & Miller, 2013). Whereas 'displacement' specifically points to the forced movement of persons who have been forced to flee or to leave their original places as a result of conflict, violence, natural or human-made disasters. Climate change-induced

displacement falls primarily under the category of disaster-induced displacement and refers to the forced movement of people due to adverse climate-related impacts such as rising sea levels (IPCC, 2014), extreme weather events (UNHCR, 2015), and gradual environmental degradation (Black et al., 2011).

"Push-Pull" Theory

The "Push and Pull" theory is a fundamental concept in migration studies that helps explain the dynamics of human movement. This theory categorizes the factors influencing migration into two main types: push factors and pull factors.

The "Push and Pull" theory was firstly introduced in the late 19th century by the British demographer E.G. Ravenstein (Rees & Lomax, 2020). In his work, "Laws of Migration" (1885), Ravenstein claimed that migration is governed by certain laws, some of which involve the forces that push individuals away from their place of origin and the forces that pull them toward a destination (Ravenstein, 1885; 1889). His work laid a great basis for the later scholars to understand the various factors that influence migration decisions. "Push factors" are conditions that drive people to leave their original place, these factors are usually negative, for instance: economic hardship (low wages, high unemployment rates, economic development level and instability that force individuals to seek for better opportunities elsewhere) Michael P. Todaro (1969) noted that in many developing countries, limited job opportunities in rural areas compel individuals to migrate to urban centers in search of better economic prospects; environmental degradation (natural disaster, climate change effects, depletion of natural resources that make living conditions untenable) Black et al. (2011) highlighted how increasing frequency and severity of environmental events due to climate change drive migration from affected regions; political instability (political repression, human rights violations); social factors (poor educational level and lack of healthcare facilities, inadequate infrastructure); demographic pressure, where overpopulation leads to resource scarcity, further exacerbates the need for individuals to migrate. Cohen (2004) observed this phenomenon in regions with high population growth but limited arable land or water resources. While "pull factors" are the more likely the opposite of the "push factors", pull factors are conditions that attract individuals to a new place to reside. Which include better economic opportunities that attract migrants seeking better livelihoods, more accessible social amenities and etc. Urban areas with well-developed infrastructure are particularly attractive (Skeldon, 1997). Additionally, family and community ties can facilitate migration by providing support networks that ease the transition to a new location. Boyd (1989) emphasized that the presence of family members or established communities from the migrant's place of origin can significantly reduce the psychological and logistical burdens of migration (Kirmayer et al., 2010).

The "Push-Pull" theory has been widely used to migration scenarios such as: rural-to-

urban migration, environmental migration. However, it is not without its critiques, for example: the focus on initial migration movements neglects the phenomena of return migration and the cyclical nature of migration, which are important aspects of migration dynamics. Cassarino (2004) argued for the need to understand return migration and the factors that influence migrants' decisions to return to their place of origin.

Health

Health is a concept that goes beyond the mere absence of disease or infirmity. Definition of "Health" according to the World Health Organization (WHO) is "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (WHO, 1948). This definition emphasizes the interconnectedness of various dimensions of health, recognizing the fact that health includes physical, metal and social aspects. Physical health pertains to the proper functioning of the body and its systems. Common indicators include body weight, nutritional status, physical activity levels, and the presence or absence of chronic conditions such as diabetes, cardiovascular diseases, and infectious diseases (Hales, 2017). Mental health involves emotional, psychological, and social well-being. It affects how individuals think, feel, and behave, and it determines how they handle stress, relate to others, and make choices (WHO, 2013). Indicators include stress levels, emotional resilience, and access to mental healthcare services (Kessler et al., 2005). While social health relates to the agency to form satisfying interpersonal relationships and adapt to social situations, its indicators include social support networks, community involvement, social capital, and the quality of relationships within families and communities (Berkman & Kawachi, 2000).

Health is influenced by a wide range of determinants that can be mainly categorized into five different types:

1. Biological Determinants: Genetics (inherited traits for example), age (different age groups have different health needs and risks), sex (Biological differences between males and females that influence health) (Wilkinson & Marmot, 2003).
2. Behavioral Determinants: lifestyle choices (physical activity that impact health), health seeking behavior (to what extent that individuals seek preventive care and medical treatment) (Marmot, 2005). The self-consciousness to seek healthcare services.
3. Social Determinants: socioeconomic status (income, education, occupation that influence access to resources and chances), Physical and social environment (including living conditions, work environments, and community infrastructure) (Marmot & Wilkinson, 2006).
4. Environmental Determinants: natural environment (air and water quality, climate conditions, exposure to toxins), built environment (urban planning, housing quality, etc.).
5. Healthcare Determinants: access to healthcare (availability, affordability, quality of

health services), health systems (Efficiency and effectiveness of health care delivery systems).

Understanding these dimensions and determinants is useful and crucial for developing effective health policies and interventions that are aimed at improving health outcomes and reducing health inequities.

Governance

Governance refers to the processes, systems, and institutions through which societies manage their affairs at various levels, ranging from local to global. It involves the mechanisms and structures through which individuals and groups express their interests, fulfill their rights and responsibilities, and resolve conflicts (World Bank, 1992). Governance extends beyond government actions to including the roles of non-state actors such as civil society organizations, the private sector, and international bodies.

Governance in general could be divided into four dimensions:

- Political Governance: the processes and structures that guide political decision-making, including the distribution of power and authority within a state. Indicators include measures of political freedom, electoral integrity, political stability, and government effectiveness (Kaufmann, Kraay, & Mastruzzi, 2010).
- Economic Governance: involves the policies, institutions, and frameworks that regulate economic activity, including the management of resources and economic development. Indicators include economic stability, levels of corruption, etc. (North, 1990).
- Administrative Governance: which could refer to the implementation of policies and the functioning of the public sector, including service delivery and bureaucratic efficiency. Indicators include public service delivery, bureaucratic efficiency, transparency, and accountability (Grindle, 2004).
- Social Governance: involves the regulation and management of social issues, including equity, social justice, and inclusion. Indicators include measures of social inclusion, equity in access to services, and the effectiveness of social safety nets (Sen, 1999).

Good governance usually needs effective participation, fair legal frameworks, high transparency, clear accountability, effective results delivery, inclusive and high responsiveness to evaluate. While the challenges to have good governance could be corruption, weak institutional capacity, political instability, social inequities. Addressing these challenges is important for achieving sustainable development and enhancing the governance level and people's confidence.

2.2 Review of Existing Literature

In recent years, it could not be neglected that the issue of climate change problems has become increasingly evident. From the escalating extreme weather events to the undeniable changes in biodiversity and habitats, the specter of climate change increasingly looms over the global community. A well-informed and collaborative effort is required to navigate the path ahead for numerous upcoming challenges as the global ecosystems wavering under the pressure of those environmental shifts. A crucial and indispensable approach is to develop and implement climate change adaptation policies on a global scale. This has become a burgeoning area of focus in both academic literature and international governance discussions. Among all the ways to adapt to climate change, migration is one of the important strategies that could not be dismissed. As documented in an increasing body of literature, migration has surfaced as both a consequence and an adaptation strategy to climate change (Balsari et al., 2020; Vinke et al., 2020). It is estimated that 25 million to 1 billion people are projected to migrate within or across the borders because of climate change by 2050 (IOM, 2021).

It is notable that after the 1951 Refugee Convention, in the past few decades, the debate whether people influenced by climate change, environment shifts and then forced to leave their homes should also be categorized and legalized as "climate migrants" or "climate refugees" and own the same rights as other forced migrants or refugees which under protection of the international law framework is increasingly popular (Berchin et al., 2017). The IOM however developed a working definition for climate-induced migration despite the fact that people concerning and debating on the exact definition for "climate migrants": it is persons or group of persons who are affected of their living conditions due to the sudden or progressive changes in the environment which compelled them to leave their homes either temporarily or permanently and have to choose internal migration or international displacement across the borders (IOM, 2008). When checking the literature from the academic lens, it could be found that "climate migrants" defined as people who habitat is threatened or at risk due to climate change (Hodgkinson et al., 2009). Sea level rise is one of the most evident extreme weather events that forced more and more people on a global scale (WILLIAMS, 2008), Kiribati and Tuvalu are reported as "disappearing States" by 2050, significant part of the capital of Maldives might be flooded by 2025(Mcadam, 2011).

Bangladesh, which often cited as one of the most vulnerable countries to climate change that faced with multifaceted challenges stems from its geographical location, huge amount of population, socio-economic status as a developing country. Bangladesh is positioned at the confluence of a multitude of vulnerabilities, it represents as a typical case within the discourse of climate-induced migration. It is a land cradled by the Ganges, Brahmaputra, and Meghna rivers, people often say that the land which river flows is a gift from mother nature, but equally, with the environment deteriorates, rising

sea levels, tropical cyclones, flash floods, and river erosion have forced highly exposed and vulnerable coastal communities to migrate over the last decade (Ahsan et al., 2011). The annual count of individuals displaced by flooding and erosion in Bangladesh reaches almost a million (Bose & Lunstrum, 2014). People who inhabited this land also feel the pressing challenges from climate change, thus many people are forced to leave the place where they used to live more than twenty years maybe.

When examining the existing literature, Scholars have talked about climate change displacement situation in Bangladesh a lot. Ahsan (2019) highlights the increasing number of climate migrants globally and examines the drivers and impacts of climate-induced migration in Bangladesh. The IPCC provides evidence on the potential increased displacement and migration due to floods and droughts within Bangladesh (Rabbani, 2021). They report that a significant percentage of households affected by floods and erosion have moved to urban areas. Also, an agent-based model that predicts population shifts may happen from drought-prone western districts and areas vulnerable to cyclones and floods in the south to northern and eastern districts is likely across Bangladesh due to climate change. (Hassani-Mahmooei & Parris, 2012). However, in the global south, Bangladesh included for sure, the influences of the climate change not always necessarily make people move, instead, the disasters caused by climate change sometimes will make the poorest people, most vulnerable people trapped in their dilemma and even forced them have to migrate the riskier places such as crowded and flood-prone urban slums (Martin, 2017). Water shortage, flood, and river erosion these stress and sudden shocks due to climate change are largely influence people migrate within or to nearby countries in Bangladesh (Foresight, 2011). Results showed that climate change is not the only driver for migration in Bangladesh, but the consequent social or economic issues by climate change will influence people's decision making on whether temporary or permanent migration in Bangladesh, which also has the international implication in scope (Islam & Shamsuddoha, 2017).

Despite the fact that scholars writing extensive papers on what climate change effects on Bangladesh, also pointed out Bangladesh is the most vulnerable South Asian country (Khan et al., 2021). These studies also detailed elaborate on the direct consequence of climate change. However, while this research provides a comprehensive overview of climate change impacts, there still remains a gap in understanding the urban consequences that this migration caused, particularly the extreme migration from coastal areas to urban areas. In this aspect, the direct urban impacts, such as changes in urban housing, infrastructure, access to health services and urban demographics due to the influx from coastal areas has not been deeply explored. Thus, while general effects of climate change in Bangladesh are well-documented, the nuanced implications of these migration to urban areas still need further discussion Working on a systematic approach to consider urban and rural resilience simultaneously is needed (Rana & Ilina, 2021).

3. Methodology

3.1 Research Method

In order to have a more systematically understanding of the impacts of climate-induced displacement on health challenges faced by Dhaka's slums residents (especially women and children) in Bangladesh, this research paper employs a qualitative approach, primarily relying on secondary data sources. Compared with quantitative approach which indeed collect numerical data to identify patterns and draw conclusions structured, by using a qualitative approach will gain more in-depth insights and try to understand the underlying reasons, motivations, and opinions, could delve into more to get the nuances that may not captured by quantitative methods. Besides, this approach is chosen because of the complexity nature of the research questions, which require an in-depth understanding of the existing data and literature.

3.2 Data Collection

Due to the time limitation and also not enough access to the Bangladesh local networks, also plus the fact that I am not able to speak Bangali (official language of Bangladesh), making it is hard to undertake any form of interview or focus group discussion without local person assistance. So this research will not take interviews, focus groups or online surveys, instead, it will just use the secondary data sources for the purpose of conducting the data collection part. This process involves gathering information from a variety of secondary resources, I will also elaborate why these sources have been selected, including:

- Government and Institutional Reports: Documents from the Bangladesh governmental agencies, such as Bangladesh Climate Change Strategy and Action Plan, Ministry of Health and Family Welfare, international bodies like World Health Organization (WHO) and the United Nations Development Programme (UNDP), International Organization of Migration (IOM) which offer comprehensive data on climate change impacts, health metrics, migration or displacement data and relevant policy responses. These reports are selected since they represent authoritative and systematic data collection methods, which ensure reliability and accuracy. Furthermore, these reports also provide a policy perspective that is important to understand governmental and institutional response to climate change and health related challenges.
- NGO Reports: Reports from non-governmental organizations (NGOs) such as BRAC, CARE Bangladesh, and ActionAid offer detailed insights into the health challenges faced by slum residents in Dhaka. I will mention in the later stage that

Bangladesh government doesn't take much effective strategies on climate-induced displacement and health issues within slums in Dhaka, thus, NGO reports really play a significant role as they often contain on-the-ground data and case studies that from a bottom-up level, which really provide practical insights and real-life examples. The choice of these NGO reports is based on their reliability of data and comprehensive fieldwork that from a governmental level hard to reach.

- Media Sources and News Articles: These sources are selected and utilized since they can help capture recent developments, ongoing issues and actions and public discourse. The inclusion of media resources is crucial for providing contemporary context and highlighting emerging issues that may not ye be covered in institutional or academic reports.

- Academic Journals and Articles: Academic articles offer the readers theoretical and empirical studies that help to contextualize the health impacts of climate change-induced displacement and identify specific vulnerabilities for women and children. These sources are chosen for their validity and readability of the data and analysis presented.

3.3 Data Analysis

To analyze the data collected from various channels on climate-induced displacement, the research will follow a structured approach to ensure an effective study.

Content Analysis: A thematic classification, to identify and examine the key themes in the current research narratives, such as factors that induce migration, explanation, contradicting or overlooked points, which will involve a detailed overview of secondary resources, including literature, documents, reports, articles and media coverage. This involves identifying recurring themes, patterns, and variables that are relevant to the research questions. For example, themes such as health service accessibility, specific health challenges, and policy effectiveness are identified and analyzed.

Comparative Analysis: understand the differences and similarities in health impacts and vulnerabilities among various demographic groups, particularly focusing on women and children in urban slums. This helps in identifying unique challenges and effective mitigation strategies.

Case Study Approach: By conducting case studies of slums in Dhaka, driven by the data from various resources, are used to provide a detailed examination of the impacts of climate-induced displacement and differentiate climate-induced migrants from non-climate-induced migrants. This will allow for a contextual understanding of the lived experiences of the affected population.

Variables and Observations

The variables analyzed in this study include:

Health Outcomes: Incidence of diseases, malnutrition rates, access to healthcare facilities, and overall health status.
Socio-Economic Factors: Income levels, employment status, education levels, and housing conditions.
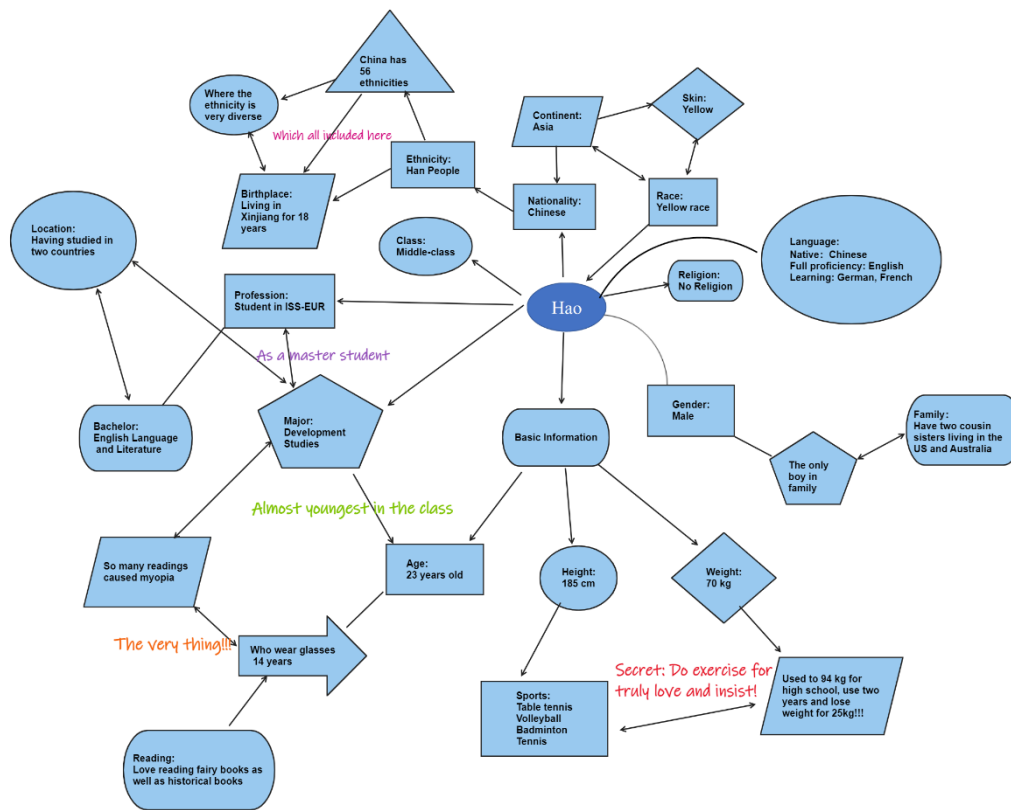**Barriers to Healthcare:** Factors such as distance to health facilities, cost of healthcare, and socio-cultural barriers.
Policy Responses and Interventions: Government and NGO initiatives aimed at improving health outcomes and mitigating the impacts of climate change on vulnerable populations.

3.4 Research Ethics and Positionality

Climate-induced displacement is of great importance in the past few decades due to the climate change has impact on everyone around the globe, however, "climate migrants" or "climate refugees" is also sensitive and debatable since currently there is no international law framework to regulate each country to be responsible for climate-induced migrants, they are more vulnerable sometimes compared with other migrants or refugees group. So, to do research on this topic, ensuring ethical integrity when addressing such issues is very important.

While I mainly do the analysis part based on the secondary data and doesn't involve interviews, focus groups these in-person communication, there still may be some instances where individuals or communities are identifiable, so in these cases the identifying details should be omitted to protect identities. As this research focused on Bangladesh, there may be some cultural sensitively involved, it is crucial to aware that we need to respect the regions' culture, politics, religion, or something else that used to analyze or support, if decontextualize or misrepresent the facts, then it will perpetuate stereotypes and have unintended consequences. As an outsider researcher of Bangladesh, even if imagine myself as a native Bangladesh's researcher, if I do research in different regions within Bangladesh, I may still have some personal bias, not to mention I am an outsider, so continually have the self-awareness that to be critical and objective throughout the research process is crucial to maintain ethical integrity.

China has 56 ethnicities

Where the ethnicity is very diverse

Which all included here

Skin: Yellow

Continent: Asia

Ethnicity: Han People

Birthplace: Living in Xinjiang for 18 years

Nationality: Chinese

Race: Yellow race

Location: Having studied in two countries

Class: Middle-class

Religion: No Religion

Language:
Native: Chinese
Full proficiency: English
Learning: German, French

Profession: Student in ISS-EUR

Hao

As a master student

Bachelor: English Language and Literature

Major: Development Studies

Basic Information

Gender: Male

Family: Have two cousin sisters living in the US and Australia

The only boy in family

Almost youngest in the class

So many readings caused myopia

Age: 23 years old

Height: 185 cm

Weight: 70 kg

The very thing!!!

Who wear glasses 14 years

Secret: Do exercise for truly love and insist!

Sports:
Table tennis
Volleyball
Badminton
Tennis

Used to 94 kg for high school, use two years and lose weight for 25kg!!!

Reading: Love reading fairy books as well as historical books

While I am conducting this research, the stance or positionality I represent is essential as it will influences how I take and absorb different perspectives and ultimately will have an impact on how I interpretate the narratives when I am presenting what I find about climate-induced displacement in Bangladesh.

Let me briefly introduce my personal identity and background. I am a Chinese man who was born and raised in the northwestern part of China where the educational level is comparatively fall behind than other provinces within China, and I graduate from my bachelor in 2021 and come to the Netherlands to pursue my master degree, before I came to the Netherlands, I never been abroad, this is the first time for me to go to another country and study as well. Also, before came to here to study, I have high expectation of "The Netherlands" as a country which also represent part of the "Europe ideology and dynamics", I also have much confidence for how I will perform during the study process. However, it was not easy for me at all. I studied literature for my bachelor and study governance and policy here in the Netherlands, I have no idea what is power dynamics, what is gig economy, besides, even though I feel my English ability is enough, but comes to the academic and normal life here, I still met a lot of challenges. Not able to completely understand some new knowledge, not familiar with academic writing style here, a lot of difficulties as people can imagine. Also, as a Chinese, an Asian, with yellow race, combined with my personality formed in a single-parent family, I have faced with some invisible discrimination, I could not feel connected with many

people, this is probably what as an "international migrant" experience looks like. These experiences led me to gradually be attracted by the "migrant world" and curious to learn the various scenarios behind it. So, when I am thinking about my research topic, "migrant' immediately appeared top of my mind, of course, it is different social perspective and position and when doing research on my own migrant experience compared with climate-induced migrants experience in Bangladesh, however, the similar 'migrant' empathy reflection may help me to "open the door" from their views and reduce arrogant perception. I was also involved in the "Environment Committee" during my time at school in the Netherlands, several of the numbers have proposed the "climate-action" group to call for more people pay attention on the climate-related issues and especially how the institutional level respond to that. So during that time, the idea to explore climate-induced migrants sounds more appealing to me and I decided to do research on this. As an Asian researcher, my background enables me to share some certain cultural and geographical proximities with Bangladesh. While of course China differs significantly in many aspects with Bangladesh, but China, my home country, also have experienced rapid development, urbanization, threatened by climate change, these shared experiences will lead a certain empathy and contextual understanding when doing this research, however, my background may make me automatically compare Bangladesh with China in many parts unconsciously, so I have to be cautious to not draw conclusions or make assumptions just solely based on similar Asian identity. My outsider status will position me as both advantaged and disadvantaged at the same time. On one hand, I must acknowledge about inevitable blind points or minor misunderstanding due to I am not familiar with the politics, socio-economic, culture in Bangladesh, on the other hand, I might not have preconceived bias as someone who lives in that country or being a local when approaching the research. Lastly, as I am not native speaker of Bangla or any other official language in Bangladesh, language barrier may set me limitations when dealing with very nuanced topics, since I rely on the secondary data, I may potentially lose some nuanced and in-depth understanding of topics. Though many limitations exist, I will strive to pursue a balanced, objectively, and comprehensively positionality in this research and make it respectful, ethical.

3.5 Limitations and Practical Challenges

Irrespective of its rigor, when doing research, it is inevitable that there comes with inherent limitations and practical challenges.

As the situation surrounding climate change displacement is changing rapidly, it also presents a challenge in ensuring that data remains current and reflective of the on-ground reality. Also, when relying on secondary data, sourced from fieldwork, quantitative statistics, media, newspapers, literature, or expert opinions, offers valuable insights but may not capture the full spectrum of local experiences. Besides, as a researcher, when using whether case study integration or documentary analysis, different people have different interpretation even though they view the same data or

document, but their insights may vary, same for the reports of local individuals, communities, experts or medias, being dominant narratives doesn't mean it is fully believable or without bias, people's background and experiences differs will also be the limitations, these subjective elements that are harder to quantify.

During the process of this research, one of the practical challenges to be faced in this research is the substantial volume of data since there is a bunch of literature to talk about climate change and displacement in Bangladesh, so how to extract the most relevant information that I need and use them, merge these information to analyze is considerably a challenge. Exiting documents may also be influenced by individual bias or political positionality and various factors, so how to identify and try to minimize these impacts is also important. Plus, as climate-induced displacement is a dynamic process, to capture a comprehensive picture that reflects both spatial and temporal variations could be challenging. Additionally, I could not speak and read in Bengali may also bring some invisible challenges that I may omit some important sources in local language which make the data I found not accurate enough. With time goes by, I also believe that my research is time-based, it could be possible to give general insights that reflect the current situation, but the conclusion or what I observed and analyzed from data maybe not totally valid in the future since the situation is always changing.

4. Climate-induced Displacement

4.1 Health Challenges

4.1.1 Background

Working definition of climate-induced migration:

In general, climate-induced displacement is completely different from traditional "voluntary or forced migration" as it is primarily compelled by environmental degradation and the inability to sustain life due to climate-related factors; it is considered as the subset of environmental displacement (Klepp, 2017). Although there is no legal, universal acceptable definition of "climate migrants" or "climate-induced displacement" (Antonopoulos, 2019). Climate migrants are defined by IOM as: "the movement of a person or groups of persons who, predominantly for reasons of sudden or progressive change in the environment due to climate change, are obliged to leave their habitual place of residence, or choose to do so, either temporarily or permanently, within a State or across an international border" (IOM, 2019). For this research, I considered "climate migrants" as those who are either directly or indirectly affected by disasters caused by climate change and reckoned that such an effect as not "only" but

the one of the predominant factors that forced their displacement. In this study, within the context of Bangladesh, the scope of climate events which are considered as climate-induced disasters are: cyclone, flood, drought, riverbank erosion, tornado, salinization (caused by rising sea levels), tidal surge, and coastal waterlogging.

Why choose Dhaka?

Climate change is a global phenomenon, however, due to the limited capacity of the developing countries (financial resources, high-skilled labor, technology level, powerful support from institutions), it is much more difficult for them to deal with the consequences of climate change. Under these circumstances, people who have been displaced due to climate change in these developing countries have to take their own initiatives to figure out their own adaptation strategies. It is clearly revealed from recent studies that people from climate vulnerable areas, especially those from rural coastal areas, the primary destinations for these displaced people are big cities where they could have more potential possibility to get easier access to opportunities to help them out from the shock after climate-induced disasters. It has been noticed that Bangladesh is regarded as one of the most climate-vulnerable countries around the world. According to the Report from IPCC in 2007, islands, countries with long coastlines, and delta regions particularly bear the brunt of climate change (Birkmann, 2022). Bangladesh is a country that possesses two of these three vulnerable elements. Dhaka-the capital and one of the biggest cities in Bangladesh, it is recognized as one of the most densely populated cities globally (Lipi & Hasan, 2021), facing rapid urbanization and the associated challenges, it also serves as the political, economic and social hub of Bangladesh, plays a central role in policymaking and governance. Dhaka City alone receives nearly half a million people as migrants each year, The Dhaka megacity has received more than 56 percent of all lifetime migrants in Bangladesh (Razi, 2018). Whether those migrants are climate-induced or non-climate migrants, most of them would choose to come to Dhaka since it stands as the primary resources provided for industrial, commercial, and service-based activities within Bangladesh (Razi, 2018). Furthermore, Dhaka is also contributing significantly to a lot of informal opportunities, which makes it more attractive for displaced people. Hence, selecting Dhaka as a key research city within Bangladesh is a well-founded and representative choice.
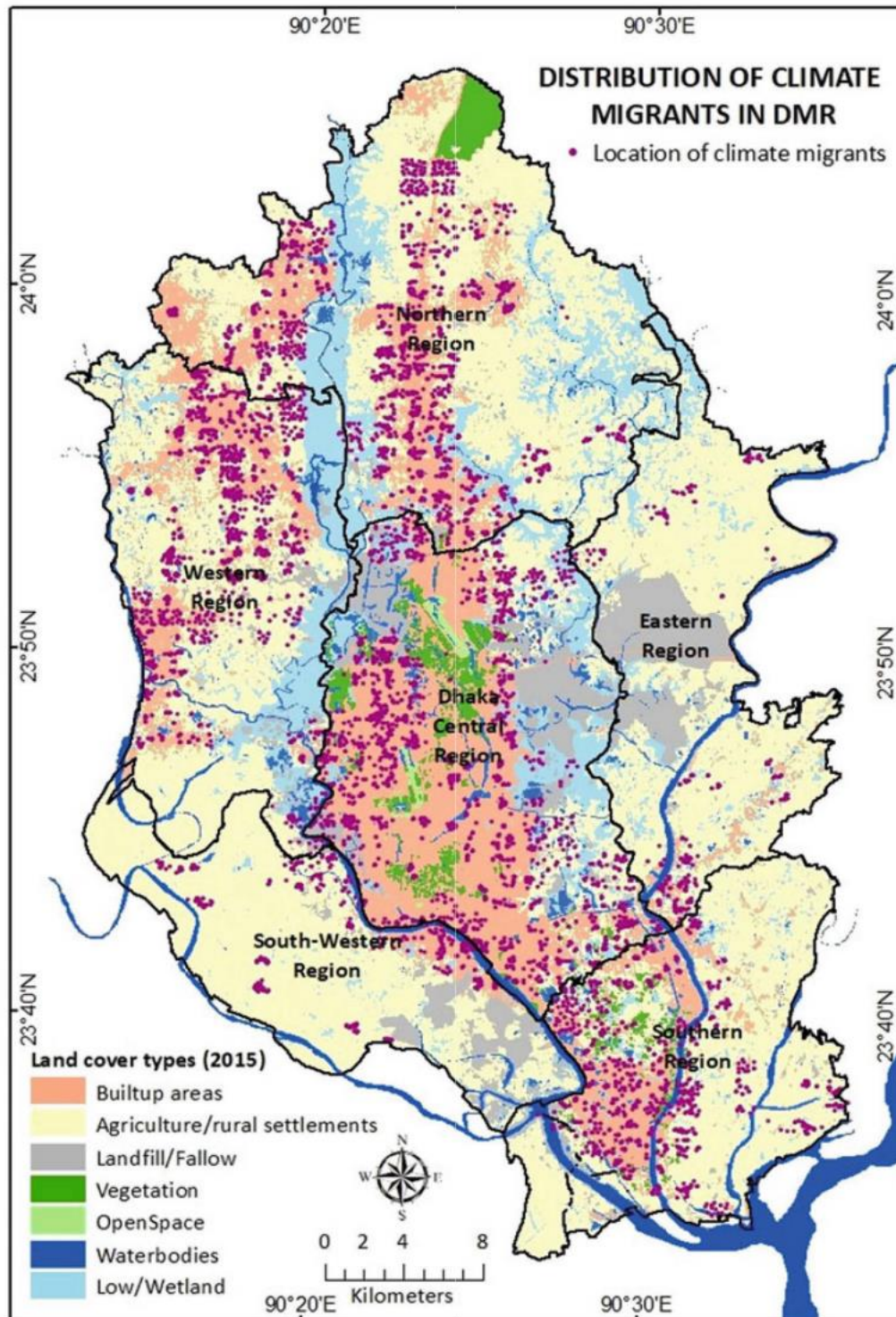
Fig. 2 Location of climate migrant households in the DMA

Source: (Nazem et al., 2023)

Because of the exceptional geographical location of Bangladesh, the rich natural resources which includes biodiversity has been gifted to this nation, nourishing the people on this land for centuries (Aminuzzaman, 2010). However, a significant portion of the landscape is situated at relatively low elevations, with floodplains covering over

80% of the country. The average altitude varies from under a meter on the tidal floodplains to the Sylhet basin in the north-east, which lies up to 6 meters above mean sea level (Ahsan et al., 2011). According to the study during the past 22 years on historical tidal data, it is predicted that with 1 meter of sea-level rise, 10% of the area in Bangladesh will be inundated for 45 cm, and up to 21% of the coastal areas inundated as well (Thornes, 2002).

As climate-induced challenges are increasing, coastal rural areas livelihoods like farming or fishing are not sustainable for most people, when it's hard to make a living at the places they used to live, the immediate response for most is to migrate: either to another place where people could still continue their farm wok or go to urban cities to explore new opportunities. According to the statistics conducted by BBS in 2011, 144 million people in Bangladesh are living in the urban areas, which accounted for 28% of the population (Rahman & Hill, 2019), and now due to climate change and several other influenced factors, the population in urban areas is rising, based on IFC's prediction, this number will reach 50% of the whole population in Bangladesh by 2030 (Mavis, 2022).

While it is essential to recognize that the growing importance of secondary cities like Chittagong, Rajshahi are also facing the issue of urbanization, the center stage in the urbanization discourse is still mainly focus on the capital city – Dhaka. Indeed, Dhaka exemplifies the urbanization challenges exacerbated by climate-induced migration, it is one of the most densely populated cities around the world with a population above 20 million people (Lipi & Hasan, 2021). The rapid influx of migrants has caused the surge of slums and informal settlements, an estimated 3.5 million reside in these areas and confronted with problems of lacking purified water, sanitation services (Rahaman et al., 2023). From the erosion of roadside at Morrelganj to the saline waters of Bagerhat, so many displaced people come to Dhaka with hope to seek refuge, however, these massive movements bring various unpredictable challenges.

4.1.2 Urban Stories in Dhaka – Start with Dreams, Lost in Survive

As discussed in Chapter 2, the push factors leading to the establishment and growth of climate-induced migrants within slums in Dhaka are primarily environmental. The severe impact of the costal erosion, salinization of freshwater, cyclone pushed many coastal inhabitants displaced to Dhaka. Economic hardship, loss of livelihood, and the destruction of homes were significant drivers of this forced migration. These push factors are consistent with the theoretical framework, highlighting the negative conditions that lead to displacement. Despite being forced to migrate, the pull factors that attracted individuals who are displaced to Dhaka included the potential for better economic opportunities and the availability of informal employment. However, the

reality often falls short of expectations, as many migrants end up constrained in slums with overcrowding, poor sanitation, and limited access to healthcare. The gap between the perceived pull factors and the actual living conditions in Dhaka's slums emphasizes the complex relationship between displacement drivers and outcomes.

Natural hazards are considered as one of the big concerns for those who are living in slums, flood is the main worry for residents in slums as it is not only cause devastation in rural coastal areas, but it also happens a lot in cities in Bangladesh (Maliyath, 2023), this is because of Bangladesh's unique geography location as I mentioned earlier before. According to memory of one person lives in Bhola Slum, one big flood happened in 2009 was extremely devastating, the water was 2 meters high and caused severe damage to city's buildings (Ayeb-Karlsson, 2020), slums bear the brunt of that due to fragile infrastructure construction, thus, food, household furnishments were completely destroyed, these are all basic equipment that slum dwellers rely on. After that the government and local NGO organized to provide some basic food, but that's far from enough and afterwards there was not much real action to those people being deeply influenced by flood. Besides, typically slums lack proper drainage systems, narrow and unpaved alleyways could block water flow and lead to puddles and increase the risk such as malaria and dengue which are water-borne diseases.

In 1970, due to the devastating Bhola Cyclone, there was an out-migration flow from Bhola Island as a consequence of natural disaster (McNamara et al., 2016), displaced people from southern coast coming to Dhaka, but where did they live? They built and named the homes originated from their home – Bhola Island, this is how Bhola slum formed, which also represents the informal settlement. In the past few decades, since this slum was built, more and more people from coastal areas came to this slum due to numerous natural events, climate change impacts, and limited development opportunities in their land. However, after they come for a while, what are the results? Loss of belongings, identity, fear of being discriminated against, losing jobs, imbalance of power agency, don't have access to health services, just to name a few. They feel the sense of gaining liberty at first and then find themselves lost the hope for life again and stuck in the dilemma, marginalized location of the slum exposes them with further risks.

As mentioned earlier, Dhaka is one of the most densely populated cities around the world and Bhola Slum is located in one of the most densely populated residential areas in Dhaka called Mirpur (Karlsson, 2016). The total land area of the slum is only 1,65 acres, but with about 4500 adults and also many children living here (McNamara et al., 2016). During the past several years, because of the infrastructure projects of government and relevant housing demolition, the total land area has reduced, which exacerbates the current population problems in the slum (McNamara et al., 2016). In total, there are around 600 families residing in 257 houses within the slum (Alam, 2020). What's more, based on investigation, there are approximately 5 people moving into this slum every week from rural coastal areas, making the existing problems on this small land more and more evident. What are the potential risks or factors that hinder people

to (im) mobile (Ayeb-Karlsson et al., 2020)?

Based on questionnaire survey among the climate-induced migrants in Dhaka, research indicates that the health conditions of the individuals in their original rural locations were comparatively better than their current conditions in urban slums settings (Ahmed, 2019). While there are cases like diarrheal, normal cough and fever reported in those respondents' original places, since migrating, their health conditions have deteriorated substantially (Ahmed, 2019). The poor conditions of the urban slums, combined with a lack of knowledge about hygiene, have left them more vulnerable to the impacts of vector and water-borne diseases. A notable finding is that jaundice is prevalent among 62.5% of the population studied (Adri, 2014). All respondents who have had jaundice reported experiencing it for the first time after moving to the slums, with 66% suffering from it repeatedly (Adri, 2014).

In Dhaka, diarrheal diseases remain one of the major causes of deaths in Bangladesh and affect approximately 92.5% of those surveyed (Chowdhury et al., 2015), highlighting the poor quality of the slum's water and sanitation facilities. Other common health issues include typhoid (21.2%), malaria (28.7%), and dengue (48.7%), indicating a significant public health challenge in the urban slums area (Adri, 2014).
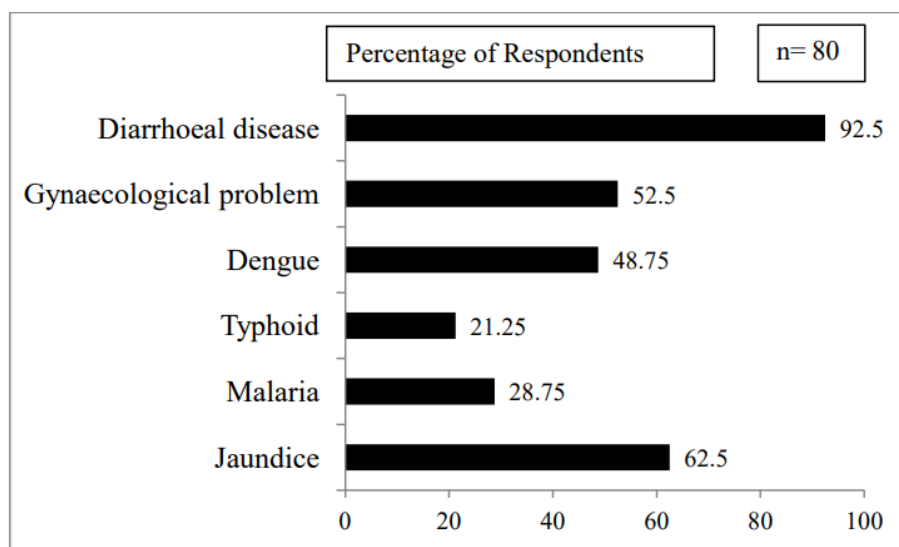
Experience of disease at least once in the city among the climate-induced migrants. Source: Questionnaire Survey (Adri, 2014)

4.1.3 Women as Vulnerable Group in Dhaka's Slums

Gender disparity in slums at Dhaka doesn't exist in isolation, it is interconnected with other issues like sanitation, urban planning, and poverty (Subah et al., 2024). Poor

infrastructure affects women disproportionately, they are always the first to suffer from inadequate and low-quality water, health services, which not only poses health risks, but also make them lack of safe, exposing them to more visible and invisible risks.

In the slums of Dhaka, where most of the "houses" in the slums are made of temporary materials such as wooden planks and iron sheets (Khan, 2013), and are not only surrounded by polluted garbage streams, factories, or roads, but also lack basic amenities such as potable water and electricity. In a humid, rainy, and storm-prone Bangladesh, fresh water is in short supply. More than 1.8 million people have no access to safe drinking water, 36 million people lack basic sanitation facilities, and in many slums, water is supplied only once a day, and residents are accustomed to storing water in plastic tubes (Arias-Granada et al., 2018). Slums are overcrowded and dwellings are generally not separated into separate rooms. At least 90 per cent of households in Dhaka's slums shared sanitation facilities, with each latrine shared by at least 16 families, and children sometimes queue for one to two hours for a bath (Nobel, 2022), disrupting their schooling, in a context where water is scarce and latrines are hard to come by. Poorly equipped communal toilets with sewage and lack of lighting systems, coupled with poor maintenance and broken locks, and shared facilities for hundreds of residents, exacerbate poor sanitation conditions, spread disease and expose women to increased risk of assault and harassment. Not only is water access limited, but bathing space is also a challenge for local residents. As in most slums, the communal bathing rooms in the slums of Dhalpur, Dhaka, are not covered by canvas, and both men and women are forced to bathe in the uncovered communal space (Plan International, 2022). Women bathe in the open air, undressed, losing their privacy and dignity and being exposed to sexual violence (Naved & Khan, 2019).

Because of the lack of access to clean water and its irregular availability, female respondents pointed out that this situation leads them to take baths by using the dirty canal water, which contributes significantly to the severe gynecological problems for the female climate-induced migrants after they came to the city, approximately 52.5% of which reported they suffered from such issues (Adri, 2014). The quality of the sanitation system and solid waste management practices are the key factors behind, despite the effort by Dushtha Shasthya Kendra (DSK)'s sanitation improvement project has been executed in Korail (one of the largest slums in Dhaka, Bangladesh, is home to a significant number of climate-induced migrants), approximately 33% of the migrants in Korail still continue to rely on unhygienic hanging latrines (Rahman, 2012). These latrines, precariously constructed over Gulshan Lake, pose severe health risks. Women, who may be responsible for collecting water, are particularly vulnerable to these health risks. The continual exposure to the dirty and polluted water can lead to a cycle of illness and poverty, as sick individuals are unable to work, and families may be forced to spend scarce resources on medical treatment.

In addition to quick toileting or bathing, they also face the problem of the "stigma of menstruation". Menstrual blood is seen as unclean and dirty, and the onset of

menstruation is a nightmare, and many women are afraid to change their sanitary napkins for long periods of time in order to avoid washing the old ones in public, which can be hazardous to their health. They also try to travel in groups when it is dark, but while darkness brings a certain barrier and sense of concealment for women, it also adds danger. Every time they go to the toilet or bathe, it seems that they have to choose between safety and hygiene.

According to an earlier survey conducted by Plan International that interviewed 417 girls aged 14-24 living in slums in Bangladesh, 98% of them indicated that they use open bathing spaces for bathing, with an average of 35-45 people sharing each space, and as many as 70 people sharing each space (Plan International HongKong, 2023). Nearly 70 per cent of the girls surveyed said they had experienced verbal violence while using open bathing spaces, nearly 13.4 per cent said they had been sexually harassed and eight had been photographed and blackmailed. They feel unsafe (Dhaka Tribune, 2022)

What has been described above is just a corner of the gender disparity phenomenon in slums at Dhaka. Besides, due to the social structure and power relations, when women migrate to slums, they are not only expected to manage household responsibilities but also to participate in the workforce to support their families financially. This dual role goes against the traditional social order and is often seen as dishonorable within the community. This situation results in a shift in both the social perception and self-perception of these women. They are often viewed as transgressing societal norms, and this can lead to changes in how they are treated and how they view themselves. Many of them live a life with suffering and shame in the end.

4.1.4 Children as Vulnerable Group in Dhaka's Slums

While residents in such as Bhola Slum or other slums in Dhaka are all struggling with various and uncertain challenges, children who live in the slums are the vivid epitome who predominately show how people here struggle with poverty and deprivation. Whether they were born here or just came with parents and raised here, as a person who lived at least happily without worrying about don't have food to eat or drink freshwater, being protected by parents during their child period, I could not imagine children who were similar age as me in another corner of the world live in abject squalor, the "slums" are which they called "homes". When we are looking for the stories of these children, we will find the acute reality of poverty, health issues, educational absence, and easy access to juvenile delinquents.

According to UNICEF data, among 33 million children of Bangladesh, more than half of them live in poverty (UNICEF, 2019), due to poverty, many children are mercilessly abandoned by their parents or simply sold. In Bangladesh, about 450,000 children are deprived of their childhood and the opportunity to live a good life (UNICEF, 2023).

They vagrant on the streets, struggling daily to make a living, some of them earn money through working as child labor, and are subjected to deprivation, some of them picking rubbish just try to earn a dinner to survive. There are no homes but just slums, but life goes on, and as long as there's a day without work, then they are facing the risk that die from hunger.

Another crucial research agenda is the health of children who residing in the urban slums in the developing countries (e.g. Fink et al., 2014; Agarwal and Taneja, 2005). Based on the "Focus Group Discussion" taken by the researchers, all the female climate-induced migrants claimed that their children's health are significantly deteriorated following migration. Diarrhea, pneumonia, dengue, and jaundice emerged as the prevalent health issues for children migrants who live in slums at Dhaka due to climate change.

The slums here are the barriers that hinder children from obtaining their basic human rights. Education can be described as a powerful weapon in the fight against poverty. However, for many children living in the slums of Dhaka, schooling is a fantasy, and even when they are in a slum with little exposure to education, they do not even have the concept of getting an education. Gross enrollment rates are staggering low, and dropout rates remain high due to economic pressures on household incomes (World Bank, 2020). The existing non-formal education system is fraught with challenges, including insufficient resources and unqualified educators, leading to an education deficit that perpetuates the cycle of poverty (Kabeer, 2014). Health issues here are alarming, with communicable diseases, malnutrition, and poor sanitation, children are disproportionately affected and are the most vulnerable to the inadequate public health services within their community (WHO, 2021). Besides, child labor in the slums of Dhaka is a complicated but evident phenomenon. In the shadowed corners of Bora's slums, children's hands are sorting through piles of junk to find something looks valuable to sell, weaving on looms, or going out to work in nearby neighborhoods, some of them, their parents are no longer able to work or abandoned by their parents, these children are left to shoulder the responsibility of supporting themselves at an early age. But they must mature as soon as possible, because they have no life, they are striving to survive. These ubiquitous scenes reveal a harsh truth: child labor is not an anomaly, but a systemic feature of the slum economy. With lack of education, financial resources, and various reasons accompanied, children are forced to participate in labor out of necessity. Their income, though meager, becomes an integral part of the family's survival. This economic compulsion is compounded by the lack of enforceable laws and the fact that society views child labor as a tradition rather than a scandal. Moreover, the lack of education and the necessity for children to work to support their families have dire long-term consequences. These children, deprived of their childhood and educational opportunities, often suffer from both physical and mental health issues. In the long term, when these children become parents themselves, their lack of health-related knowledge, stemming from their own incomplete education, can adversely affect the health and well-being of the next generation. This perpetuates a cycle of poor

health outcomes and limited opportunities.

In societies where primary caregiving duties fall predominantly to mothers, consistent research have shown that a mother's educational level has a more profound and noticeable impact on the health of children compared to the educational level of fathers (Lee, 2023), throughout the numerous academic research before, it is not difficult to find that a robust link between the level of education a mother has received and various care-related behaviors (Augustine & Negraia, 2017). These behaviors include improved sanitation practices, better nutritional decisions for children, and adherence to vaccination schedules. Unger's 2013 research (Thomas et al., 1991), as well as findings by the Cebu Study Team in 1991 (Strauss & Thomas, 1995), suggest that mothers with higher levels of education are more adept at choosing effective caregiving practices and identifying potential health risks to their children. Educational advancements in mothers lead to behavioral changes that can significantly reduce the incidence of childhood diseases, such as diarrhea. Because educated mothers are better informed about health practices and more likely to access and understand health-related information. This knowledge enables them to make better health decisions for their children, thereby improving their overall health outcomes. In the article which identify the crucial determinants of malnutrition among urban slum children in Bangladesh, it is highlighted that maternal health knowledge is significantly accounted for improving the children nutritional status (Fakir & Khan, 2015), thus, educating climate-induced female migrants about health and nutrition can significantly mitigate the adverse impacts of such harsh living conditions. Knowledge about maternal health care, child nutrition, hygiene practices, and disease prevention can empower these women to improve the health and nutritional status of their families, especially for their children. Most of the mothers at urban slums in Dhaka are unaware that water can lead to serious diseases, therefore, it is imperative to emphasize and implement educational initiatives as a key component.

Even though women and children/s health issues are evident among the climate-induced migrants in slums at Dhaka, here comes to another question, where do they get the treatment? Limited financial resources among the impoverished respondents further exacerbate their challenges in accessing necessary medical treatment. The majority of people seeking healthcare services from local pharmacies within the slum due to their affordability when it comes to the medical emergency, treatments in the public hospitals are generally cheaper than those of private hospitals. How do climate-induced migrants in slums in Dhaka evaluate the effectiveness of the medical treatment there? Revealed by the survey (among around 85 people), about 37.5% of the respondents feel the quality of the health treatment is either moderate or bad. Based on the research and interview (secondary data), many climate-induced migrants described health services in Dhaka are more like another business, doctors give out the medicine based on the money that patients given to them (Nayna Schwerdtle et al., 2021), "Dhaka's doctors do business more than treatment". Compared with their original place, climate-induced migrants at urban slums in Dhaka complained mainly based on the accessibility,

affordability, and patient satisfaction (ibid.), which their original place like "Bhola" have better health services conditions than Dhaka, but those climate-induced migrants are not able to back to their original places. Most individuals who hold a negative perception regarding the quality of treatment in Dhaka attribute their stance to various factors. A significant portion, comprising 43.7%, points to doctors' perceived inefficiency to cure their diseases; additionally, 34.3%, cites the high costs of medical treatment; furthermore, a notable 21.8% of respondents highlight the doctors' ignorance due to their poverty circumstances (Adri, 2014). The high cost of healthcare exacerbates the issue. Many climate-induced migrants at slums in Dhaka could not even afford the public hospitals which generally offer more affordable services, for those still living in poverty, the costs are still prohibitive. This financial barrier makes a large proportion of "expected mothers" in the slum opt for home births, in another word, experiencing births in an unhygienic environment. The lack of hygiene and the presence of environmental hazards such as mosquitoes pose severe risks to both mothers and newborns. Just considering the reality: a new mother (climate-induced female migrant at slums in Dhaka) who gave birth at home, in an environment plagued by mosquitoes that threatened her baby's health. Many of them expressed a sense of isolation and despair. Unlike some other non-climate-induced migrants in the slums who could back to their original places for support and have cleaner birth environment, she has nowhere to go, her original places had been destroyed by the floods or other severe climate activities, leaving her with no option to go back – stay in slums, where else she could go?

When searching research data among many urban slums in Dhaka, it is surprisingly to find the fact that although primary healthcare services, community midwives and local NGOs present, they are still insufficient and the limited healthcare services provided are struggling to accommodate the huge needs of the rapidly growing population (Adri, 2014) , what's more, priority will always give to the members of local NGOs (Ibid.); besides, the communication gap is highlighted as about 34% of climate-induced migrants in urban slums in Dhaka don't have their own cell phones (Ibid.), which makes the situation is difficult when it comes to the emergencies to contact health providers. Moving forward, there is a clear need for policy interventions and increased funding to expand healthcare services in these underserved areas. Strengthening the network of community midwives and increasing their capacity to manage home births safely could be pivotal. Additionally, local and international NGOs could play a more significant role in bridging the healthcare gap, ensuring that no resident, regardless of their background or economic situation, is left without help during critical times.

4.1.5 Urbanization

When urbanization is 'messy', the growth of a city is characterized not by skyscrapers, but by sprawl and slums. Another key important factor that causes high health risks in urban slums in Dhaka is quick urbanization. In recent years, there has been a massive

influx of people into the capital, Dhaka is home to an estimated 9.1 million residents. Notably, a significant portion of this population, approximately 37.4% or 3.4 million people are recognized as slum dwellers (McDonnell, 2021). But just when people thought they had finally moved to a safer place, Dhaka also began to experience ground subsidence. Experts say that as Dhaka's population has boomed and the city has expanded in recent years, groundwater has been over-exploited and wetlands have been disappearing at a rapid rate, contributing to the problem of ground subsidence there.

In Dhaka, a thriving mega-city of 15 million people spread over 325 bungalow kilometers is taking shape (Sarker, 2020), and climate migrants are finding it to be a city that is very clogged in all directions, from the roads to the life paths, from the rivers to the sewers. These slums have become home to thousands of people and are expanding rapidly. Within 20 years, the city's population could double to 30 million (Reed, 2015). "Every ship has a carrying capacity and every city has a carrying capacity," says Sarder Shafiqul Alam. Alam is a senior fellow at the International Center for Development and Climate Change and Bangladesh's representative on the Rockefeller Foundation's Asia Climate Change Defense Network. "What happens if the carrying capacity is exceeded again and again? The whole ship gets crushed. It's the same with cities."

A significant issue in the slum areas is the instability of land tenure, which also heightens the risk of evictions (Jones, 2022). This uncertainty discourages local authorities from providing consistent public services. Jabeen, Allen, and Johnson (2009) observed that urban slums residents at Dhaka, some of whom have lived in the same place for up to 20 years, hesitate to enhance their living conditions because of the potential threat of being evicted (Hossain & Rahman, 2017). In another study by Biplob, Sarkar, and Sarkar (2011), it was found that about 57% of the residents rely on the municipal water supply for drinking and other needs, whereas 43% depend on shallow tube-wells (Pramanik et al., 2011). Considering the uncertainty and high population density situations of the urban slums, there are limited support from local authorities, but a large proportion of urban slum dwellers in Dhaka rely on what local government provided to them, which results in many of them are forced to shared cemented pit or hanging latrine, often unhygienic. So, location and uncertainty features of the urban slums is also one of the important factors that affect women and children's health in Dhaka's slums.

4.2 Case Study: Korail Slum

4.2.1 General Situation

Each year, there are approximately 500,000 people who migrate to Dhaka (Abdullah, 2016), with many of which settled in slums like Korail. Korail Slum, represents the largest and most densely populated slum area within Dhaka City. Covering an expanse

of 90 acres, it accommodates over 120,000 residents, including about 50,000 children (Adri & Simon, 2017). Korail is very close to "Mohakhali Bus Terminal" and situated in Gulshan Thana of central area of Dhaka, the bus terminal serves as a main transportation hub, proving people from different regions access to various parts of the city and neighboring areas, such terminals also usually foster a bustling informal economy opportunity with vendors, small businesses and service providers seeking to cater to the needs of commuters, thus, a great concentration of urban poor also gather here (Adri, 2014). The slum dwellers could have chance to provide services like (rickshaw puller, driver, householder worker, etc.) to the community nearby since the Korail Slum is surrounded by wealthier community of Gulshan. Therefore, the slum dwellers of Korail have a potential higher chance to be considered as an integral part of the urban economy (Adri & Simon, 2017).

4.2.2 Main Differences between "Climate-induced Migrants" and "Non-Climate-induced Migrants"

Due to the fact that I am not able to conduct fieldwork for interviews or surveys, so all the data I use to illustrate will be secondary data.

In a comprehensive study focusing on climate-induced displacement at Korail Slum in Dhaka, Bangladesh, researchers adopted a meticulous methodology to differentiate the experiences of climate-induced migrants from other urban migration groups. The study, conducted after 2006 to coincide with major climatic events like Cyclone Sidr and Cyclone Aila, involved a dual-group approach (Adri & Simon, 2017). It included 80 climate-induced migrants as the target group and 40 non-climate-induced migrants, primarily for economic reasons, as a comparison group. This comparative analysis aimed to isolate the specific impacts of climate change on migration patterns. The methodology employed both quantitative and qualitative research tools. Identical questionnaires were administered to both groups, capturing a range of socio-economic variables. Additionally, focus group discussions (FGDs) and personal interviews offered deeper qualitative insights, particularly in understanding the emotional and psychological aspects of migration. Data analysis utilized the independent samples t-test and the Chi-square ($\chi2$) test, facilitated by the Statistical Package for the Social Sciences (SPSS) (Adri & Simon, 2017). This approach allowed for a nuanced comparison of quantitative variables such as income and family size, as well as qualitative variables like health awareness and migration motivations. When analyzing the research conducted by Neelopal Adri & David Simon, several main points could be concluded to highlight the differences between "climate-induced migrants" group and "non-climate-induced migrants" group:

Financial conditions:
(include occupations, income and savings, home ownership and etc.): It is well-known

that economic foundation determines superstructure, for both groups, having better economic conditions is one key factor to encourage them to migrate, whether it is primary reason for migration (displacement) or not. According to the survey, it is clear that there's an evident difference in regards to occupations status, 21.2% climate-induced migrants are still unemployed by the time when survey conducted (Adri & Simon, 2017), surprisingly, no one (who identified as "non-climate-induced migrants") was unemployed at that time. Data also reveals that a substantial proportion of the climate-induced migrants have higher participation in the lowest-paid jobs like day laborers, while "non-climate-induced migrants" tend to have a better paid job such as businesspeople.

Table 1.   Major occupations of climate-induced and non-climate-induced migrants.

Types of occupation	Percentage of climate-induced migrants ($n = 80$)	Percentage of non-climate-induced migrants ($n = 40$)
Unemployed[a]	**21.2**	**0**
Rickshaw puller	23.8	22.5
Day labourer	**20**	**5**
Garment worker	**2.5**	**15**
Shopkeeper	**2.5**	**15**
Driver	0	2.5
Hawker	1.2	0
Housewife	5	2.5
Maid servant	**18.8**	**2.5**
Scavenger	1.2	0
Office peon	1.2	7.5
Businessman	**1.2**	**15**
Security guard	1.2	2.5
Construction worker	0	2.5
Carpenter	0	2.5
Contractor	0	2.5
House caretaker	0	2.5

Source: Questionnaire Survey (Adri & Simon, 2017)

In terms of income and savings, independent samples t-test show that on average, non-climate-induced migrants report higher income than climate-induced migrants (for those who are employed and paid). Strikingly, the mean monthly savings of the climate-induced migrants is only 192.50 BDT, which is not even enough for purchasing a return ticket to their original places. In comparison, non-climate-induced migrants have 27 times higher monthly mean savings (Adri & Simon, 2017). Besides, during the FDG sessions, when being asked what they brought during the process of migration, climate-induced migrants claim that they couldn't bring anything but only clothes, while non-climate-induced migrants seems have more options and brought more money and other assets when migrated to Dhaka.

Pattern of migration and family structure:
To understand both climate-induced migrants and non-climate-induced migrants and their socio-economic condition when moving to Korail Slum, family size is an

important indicator. Research found that nearly 79% of climate-induced migrants are living with their parents during the process of migration since they are helpless and alone and they could not figure out a better way if left their family away in coastal areas, whereas less than 2% non-climate-induced migrants brought their parents because they have comparatively more options, they have higher economic ability and more time to keep their families in coastal areas (Adri & Simon, 2017). Therefore, family size could be a significant indicator since when migration with family, climate-induced migrants usually have larger family size during the migration process and thus they will also be more vulnerable in Korail slums compared with non-climate-induced migrants especially under the situation they need to deal with the whole family survival issues.

Table 4. Differences in migration pattern between the target group and comparison group.

Category	Climate-induced migrants (%) ($n = 80$)	Non-climate-induced migrants (%) ($n = 40$)
Migrated with the whole family	98.8	26.5
Initially migrated alone and brought family afterwards	0	56
Living alone in the city	1.2	17.5

Source: Questionnaire Survey (Adri & Simon, 2017)

Access to Credit:
Micro-credit facilities have been provided to the slum dwellers by many institutions in Korail. There are 178 groups working based in Korail Slum to give credit support, however, research found that climate-induced migrants in Korail Slum have rare access to this institutional source. Statistics have shown that climate-induced migrants (55%) tend to have more regularly personal loans than non-climate-induced migrants (17.5%) (Adri & Simon, 2017). Additionally, 30% of non-climate-induced migrants claimed that they operate a bank account regularly in Dhaka, while what shocked is that no climate-induced were found to have a bank account, indicating they don't have much cash flow to operate (Ibid.). Only 16.3% of climate-induced migrants have affiliated with institutions (Adri & Simon, 2017), to be more specific, their affiliation is mainly limited to the leading NGO working in the slum called DSK, but interview during research found that few climate-induced migrants use that financial support to be more productive, instead, they use that to repay their previous personal loans. The annual progress report of Urban Partnerships for Poverty Reduction (UPPR) reveals the phenomenon that some Korail Slum dweller use institutional credit inappropriately due to their debt condition and this behavior is vicious circle that contributes the challenge of poverty reduction (Degert et al., 2016).

Socio-economic condition is crucial, but we should also not neglect migrants' emotion and mental activity behind, how strong do they feel they are linked with their places or origin and what's the difference between climate-induced migrants and non-climate-induced migrants? Through the FDGs, personal interviews and questionnaire survey

conducted by researcher, it gives the clear indication that 100% of the climate-induced migrants in Korail Slum aspired to return to their original places permanently (Adri & Simon, 2017), by contrast, only 40% of non-climate-induced migrants show the same tendency, since most of them (60%) come to Dhaka to find a way to settle permanently (Adri & Simon, 2017), it was clear that climate-induced migrants come to Korail Slum, Dhaka more of forced reasons (they have no choice), while non-climate-induced migrants come to here with a well-planned vision, which shows the difference between these two groups.

Table 8.   Aspiration to return permanently to the place of origin.

Types of migrants	Having aspiration to permanently return to village		Total
	No	Yes	
Climate-induced migrants ($n = 80$)	0%	100%	80
Non-climate-induced migrants ($n = 40$)	60%	40%	40

Source: Questionnaire Survey (Adri & Simon, 2017)

4.2.3 Governance

Throughout the research conducted in urban slums in Dhaka, researchers also found that urban governance plays an important role in affecting both climate-induced migrants and non-climate-induced migrants. Corruption was a root-level problem of the governance system in Bangladesh, when it comes to the vulnerable group as slum dwellers, the effect is more obvious. Local Mastaans is one of the groups who hold power in the society (Ardi, 2014), climate-induced migrants in Korail Slum shows that they are worries about their children's safety as a large proportion of them are least educated and among the nasty political games with exchange of money (Adri & Simon, 2017), these children are very easy to be exploited. So parents in Korail Slum always try to avoid any conflicts with local Mastaans to protect their children (Farhad, 2016).

Based on the World Conference on Disaster Reduction Declaration in 2005, states are primarily responsible for protecting their citizens and their property and assets from natural disasters (ISDR, 2005). While some countries like New Zealand adopted constitutional provisions of governmental obligations to provide mandating support for displaced people following disasters, Bangladesh does not have any such obligations (Naser, 2014). In 2005, the Bangladesh government has developed the National Adaptation Programme of Action (NAPA) as a framework to integrate climate risks into ongoing development strategies and to coordinate both international and local responses (NAPA,2005). The NAPA report highlighted several important climate change impacts in Bangladesh and also proposed several adaptative measures to tackle

these challenges. However, the relationship between climate change and migration was not explicitly addressed in the report. It did acknowledge that climate-induced migration is a detrimental consequence of environmental change. In 2009, the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) was launched, covering the period until 2018. This initiative aimed at fostering long-term planning for both adaptation and mitigation, enhancing resilience, and improving information sharing regarding climate issues. Unlike NAPA, the BCCSAP clearly connected climate change with displacement issues, recognizing that the poor communities are likely to suffer the most severe consequences of climate change. It emphasized that closer monitoring and adequate institutional support should be provided for climate-induced migrants for their proper resettlement. The Ministry of Environment and Forests, the Ministry of Home Affairs and the Ministry of Local Government, Rural Development and Cooperative are responsible for taking care of the residents living in vulnerable coastal regions (BCCSAP, 2009).

The Delta Plan 2100 is the latest policy document for disaster management in Bangladesh (Bangladesh Government, 2020). Officially approved by the government of Bangladesh in 2018, the plan's primary objective is to ensure water and food security, economic growth, and environmental sustainability through integrated and adaptive delta management up to the year 2100 while effectively reducing vulnerability to natural disasters and building resilience to climate change and other delta challenges through robust, adaptive, and integrated strategies, and equitable water governance. However, even though this is already the latest national plan to combat climate change, it still does not specifically outline detailed policies solely dedicated to climate-induced migrants. From NAPA, BCCSAP to Delta Plan 2100, although continuous effort made to address the adaptation of climate change in Bangladesh, throughout the national policy documents, it is evident that climate-induced migration agenda has been ignored and there lacks the guidance for the climate-induced migrants who have no ways to return to their original places due to "forced reasons", how could they survive and what support they will be provided. The national policies have failed to address the needs of the most vulnerable and that is why a significant number of Bangladeshis are displaced annually as a result of environmental disasters. Vulnerable populations often lack awareness of available institutional programs, their own rights, and the methods for implementing them, leaving them disproportionately affected during crises. Additionally, in both rural and urban settings across Bangladesh, the distribution of resources and relief operations is frequently influenced by political factors. Local leaders with significant influence tend to maximize their profit at times of crisis, especially following disasters.

Urban governance in Bangladesh is characterized by a unique and informal structure that tends to overlook the needs of the urban poor. It is commonly believed that rural areas are meant for the poor, while urban spaces are reserved for the rich. Despite constituting 40% of Dhaka's population, the urban poor are often neglected by policymakers who fear that improving conditions for this group could potentially

encourage further migration to already overpopulated cities (Lipi & Hasan, 2021). Moreover, there is a notable absence of accountability in urban governance, as direct interaction between government officials and the urban poor is rare, leading to a governance approach in urban areas that completely different with that in rural settings. The City Corporation Law of 2009, which set a basis for all plans and programs of the City Corporations in Bangladesh, does not have any separate section for slum dwellers (PRAP, 2018); it generally targets urban dwellers who are taxpayers. According to Md. Anowar Hossain Bhuyan, a Slum Development Officer from Dhaka City Corporation (North), services are predominantly designed for and directed towards taxpayers. Since slum dwellers typically do not pay taxes, they are not the focus of government-funded programs in these urban areas. The Urban Partnerships for Poverty Reduction (UPPR) project in Dhaka City involves forming Primary Groups (PGs) of 15-20 families from ultra-poor backgrounds to initiate support (Kamruzzaman, 2014). These families are typically identified by their struggle to meet daily nutritional needs, such as skipping a meal per day due to financial constraints. However, the selection process has been influenced by local leaders or 'Mastaans' in the Korail Slum, who guide government officers in identifying these families. This reliance on local elites for the identification process has been criticized as a significant flaw in the project's implementation, as it potentially excludes many deserving families due to biases or local politics. Although UPPR has implemented various strategies to enhance living conditions in the slums, such as improving drainage systems to reduce waterlogging risks. However, the project's impact on building adaptive capacities among the poorest can be limited by entrenched social inequalities and the control that local elites maintain over resources. Many ultra poor climate-induced families have been excluded from the list of beneficiaries.

The Government of Bangladesh has been actively implementing strategies to tackle the health disparities faced by residents of urban slums. A cornerstone of these strategies is the Urban Primary Health Care Project, which aims to significantly improve healthcare services through partnerships with non-governmental organizations (NGOs). This initiative represents a thoughtful approach to utilize the strengths of NGOs, known for their agility and deep community connections, to deliver healthcare where it is most needed.

Despite the progress made through these initiatives, residents of urban slums continue to face significant health-related challenges. Access to adequate healthcare is a major concern. Overcrowding, a common issue in these areas, along with poor infrastructure, complicates efforts to provide medical care. Many slums lack enough medical facilities, which means that preventive care is rare, and treatments are often not timely. Furthermore, the living conditions in slums are not conducive to health. Poor sanitation systems and limited access to clean water are persistent issues that contribute to health complications among the population. These conditions facilitate the spread of gastrointestinal infections and other diseases related to poor hygiene and water quality.

The challenges are set to escalate due to the impact of climate change. As rural areas become increasingly inhospitable due to flooding, cyclones, and other environmental disasters, more people are compelled to move to urban areas, adding pressure to already overburdened slum regions. This migration is expected to exacerbate the existing problems by increasing the demand for already scarce resources. Additionally, the changing climate is likely to alter the prevalence and spread of various diseases. With rising temperatures and more frequent waterlogging, diseases such as dengue fever and cholera are expected to become more common, alongside an increase in respiratory infections from deteriorating air quality in overcrowded living conditions.

In conclusion, while the efforts of the Bangladeshi government and its NGO partners have made notable strides in addressing the healthcare needs of urban slum residents, the road ahead remains challenging. The ongoing collaboration will need to evolve and adapt, focusing not only on expanding healthcare access but also on improving the overall living conditions within slums. Infrastructure improvements, enhanced disease surveillance, and continued educational efforts will be crucial in mitigating the impacts of both current socio-economic and upcoming climate-related challenges.

4.2.4 Willingness on Helping Climate Migrants

Although this is not part of the research question, but during the process of research, I am also wondering how do local people in Dhaka perceive the climate-induced migrants come to Dhaka? By delve into this a little bit, it would be helpful to understand the further policy implementation when considering the local community support. To what extent the local normal residents are willing to support these climate migrants in slums and how do they feel?

As mentioned earlier, around 20% of migrants who come to Dhaka and live in slums from rural coastal areas are climate-induced, which mean the left (80%) are general migrants (non-climate-induced factors), considered the huge population size of Bangladesh, these are very large numbers. But after coming to Dhaka and live in Dhaka, which means the process and condition of after-migration, how do the local normal residents perceive and to what extent local normal residents would willing to support these climate migrants?

One research has used survey experiments which were conducted to identify the willingness to support climate migrants. That research is asking: given the inadequacy of governmental efforts, if now there are non-profits undertake the responsibility for providing essential public services like housing, education, health, would local normal residents are willing to support climate migrants financially? Dhaka has more than 3,300 slums, Due to the special location of Korail Slum (at center and near bus station in Dhaka), so that research choose Korail Slum as survey site to minimize the issue of generalizability. Considering gender, religion, and occupation, a single-stage cluster sampling method was used, the main survey involved 1,800 in-person interviews in

Korail slum although initially piloted with 200 participants (Castellano et al., 2021), in their survey, they divided migrants into general migrants (non-climate-induced factors related), climate migrants and Rohingya migrants (those who have been persecuted due to religious reasons, from the borders with Myanmar), statistical data which (to researchers surprise and is opposite to researchers hypothesis) shows that: the probability of donating to the climate migrants is about 16 percent less than the chance of giving to the generic group (Castellano et al., 2021) .
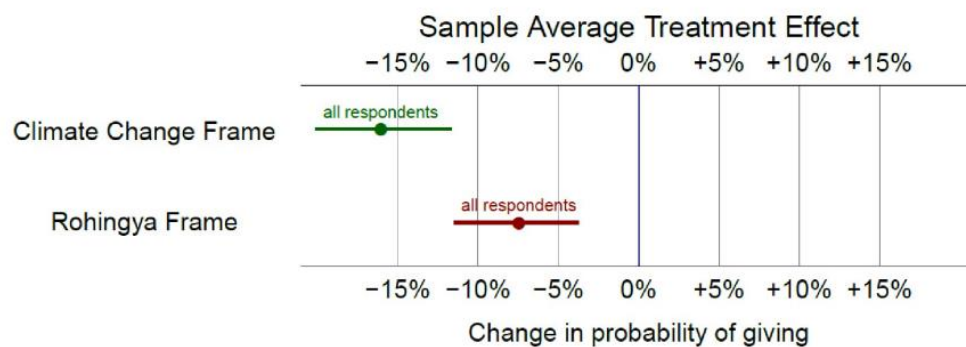
Fig 2. **Differences in willingness to donate between the generic frame and both experimental frames, all else equal (Full sample).**
Note: This plot shows the change in the willingness to give for each frame. The generic frame is the baseline (0%). 95% confidence intervals also shown.

Source: (Castellano et al., 2021)

Why local residents are less likely to donate to climate migrants in Dhaka (take Korail Slum as instance)? There are several explanations for that:

● Since Bangladesh government is vocal about climate migrants issues in the international forum and local media extensively focus on climate change, many local normal residents view "climate migration" as a western issue and hypothesize that rich international actors would willing to help since Bangladesh government also asks for international assistance, so local people in Dhaka already had the conception that even if they don't donate, there will some international bodies come for help with climate migrants, as it both a national and international policy-issue.

● A significant portion of the Bangladesh population, particularly among Muslims, attributes climate change to divine will or sinful activities, rather than to anthropogenic factors. This belief potentially influences their views on assisting climate migrants, as helping them might be seen as opposing the will of God (Haq & Ahmed, 2016).

● Due to the basic population size and huge-continuously influx of migrants to Dhaka, which already made the resources are limited and scarce, generally speaking, local residents perceive migrants come to Dhaka just for better economic condition, access to more informal opportunities, which 70% of respondents think these migrants have already fulfilled their migration objectives (Ishtiaque & Mahmud, 2011), as previously explained, non-climate-induced migrants have the agency and options to go back to their places of origins and they could be recognized as generic

temporarily migrants, but for climate-induced migrants, almost all of them could not go back to coastal areas and they are viewed as permanent migrants at slums in Dhaka, they are not widely supported since their coming pose a threat as economic competition to local communities where resources and facilities already limited.

5. Research Findings

To provide readers with a clearer overview of the main research findings and how they address the primary and sub-research questions, I have used a structured approach to review the discussions above and highlight the key results. Also, what mentioned in the Chapter 3 for variables could have a direct link with the findings here.

Main Research Findings:
1. Impacts on Health in Urban Slums:
   - General Health Deterioration: Climate-induced migrants in urban slums experience significant health deterioration compared to their conditions in rural areas after they displaced to urban slums in Dhaka. Common issues include diarrheal diseases, typhoid, malaria, dengue, and jaundice. The poor living conditions, including inadequate sanitation and contaminated water sources, exacerbate these health problems.
   - Water and Sanitation Challenges: Inadequate access to clean water and poor sanitation facilities are prevalent in Dhaka's slums. The lack of proper drainage systems and overcrowded communal toilets contribute to the spread of water-borne diseases like malaria and dengue. Overcrowded and poorly maintained communal toilets and bathing spaces expose residents, particularly women and children, to health risks and sexual harassment.
2. Vulnerabilities of Women:
   - Health Risks: Women face severe gynecological problems due to poor sanitation and reliance on contaminated water for bathing. Menstrual hygiene is a significant issue, with many women unable to manage menstruation safely and hygienically due to the lack of private and clean facilities.
   - Safety Concerns: Women are at higher risk of assault and harassment when using communal sanitation facilities. The lack of privacy and safe spaces for personal hygiene contributes to their vulnerability.
   - Educational Barriers: The educational level of women is closely linked to health outcomes for their families, particularly children. Educated mothers are more adept at maintaining hygiene practices, ensuring proper nutrition, and accessing healthcare services for their children.

- o Economic and Social Pressures: Women are often expected to manage household responsibilities while also contributing financially, leading to stress and deconstructing their mental health. The dual burden of domestic and economic roles often leads to marginalization and further health complications.

3. Vulnerabilities of Children:
   - o Health and Nutrition: Children in slums suffer from malnutrition, diarrhea, pneumonia, dengue, and jaundice. The unsanitary living conditions and lack of access to healthcare services significantly impact their physical development and overall health.
   - o Education: The poor economic conditions force many children into labor, depriving them of educational opportunities. This perpetuates the cycle of poverty and poor health outcomes as they lack the knowledge and resources to improve their living conditions.
   - o Psychosocial Impact: The harsh living environment and the necessity to work from a young age lead to mental health issues among children. The lack of recreational and developmental opportunities further exacerbates their psychosocial well-being.

Sub-Research Questions:

1. Key Factors as Barriers for Women and Children in Slums:
   - Economic Barriers: Limited financial resources restrict access to healthcare services and nutritious food. The high cost of medical treatments and the necessity to prioritize immediate survival over health lead to delayed or foregone medical care.
   - Inadequate Infrastructure: Overcrowded and poorly maintained infrastructure in slums, including sanitation facilities and housing, significantly hinders the ability to maintain hygiene and access basic health services.
   - Social and Cultural Barriers: Gender norms and societal expectations limit women's mobility and access to health services. Women and children are not easy to receive care in resource-constrained households.
   - Unstable Land Tenure: The instability of land tenure and risk of evictions discourage investment in improving living conditions. The uncertainty also impacts access to consistent public services.

2. Strategies to Mitigate Health Impacts:
   - NGO Interventions: Various NGOs have implemented projects to improve sanitation and health awareness in slums. For example, Dushtha Shasthya Kendra's sanitation improvement project in Korail slum, which aims to enhance access to clean toilets and promote hygiene practices.
   - Community Health Programs: Community-based health programs focus on educating residents about hygiene practices, maternal health, and nutrition. These programs aim to empower women with knowledge and resources to improve their families' health outcomes.
   - Effectiveness of Strategies: While these strategies have shown some positive impacts, the overall effectiveness is limited by the scale of the challenges. The

continuous influx of migrants, coupled with inadequate funding and support from governmental bodies, hampers the long-term sustainability of these interventions.

- Urban Governance and Policy: National policies like the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) and the Delta Plan 2100 recognize the impacts of climate change but lack detailed provisions for climate-induced migrants. Local governance often fails to address the needs of slum dwellers, with services primarily targeting taxpayers.

Conclusion:

The research highlights the severe health challenges faced by climate-induced migrants in Dhaka's urban slums, with women and children being the most vulnerable. Economic hardships, inadequate infrastructure, and social barriers significantly hinder access to health services, exacerbating the health risks. Despite efforts by NGOs and community programs, the effectiveness of these strategies remains limited due to the overwhelming scale of the problem and the lack of sufficient resources and governmental support. Addressing these issues requires comprehensive and sustained efforts, including better urban planning, increased healthcare funding, and targeted interventions to support the most vulnerable populations.

6. Thinking about (Return)?

6.1 Sustainable Return: Green Reintegration

In regards with discussion of climate change and displacement within Bangladesh, the concept of "green reintegration" is of great significance, especially in the context of Bangladesh. Recently paper offered an innovative perspective on this topic, many communities are changed or destroyed due to climate change which emphasizes the need of environmentally sustainable and socially inclusive strategies to supports migrants back to their original communities (Camille Le Coz, 2023). Green reintegration, in this regard, suggests a more comprehensive approach that not only addresses the environmental sustainability of returning migrants but also takes economic viability and social equity into consideration. However, to make this model applicable in Bangladesh, policy makers need to think about the specific environment reality, socio-economic dynamics, and cultural structure carefully.

To make green reintegration initiatives adapts to the specific context of Bangladesh, it requires to satisfy various needs of retuning migrants and utilize local resources and capacities. One of the key areas for customization is the development of climate adaptation infrastructure. This includes constructing community buildings that are capable of withstanding floods and cyclones which happens a lot in Bangladesh, this will provide a comparatively safe and stable environment for retuning migrants in

communities. Besides, it's important to design efficient water management systems to have the function like collecting rainwater and improving irrigation techniques, which could potentially mitigate the impacts of capricious weather patterns on agriculture, one of the critical livelihoods for many. Agriculture and fishing are both highly affected by climate change in Bangladesh, so sustainable agriculture and aquaculture are essential components of green reintegration strategies in Bangladesh. For instance, introducing drought- and flood-tolerant crop varieties, promoting organic farming methods, and adopting climate-smart farming techniques. In aquaculture, sustainable practices such as integrated rice-fish farming can enhance food security while minimizing environmental impacts.

Given its unique geographic location and climate, Bangladesh has huge potential in sectors like renewable energy, particularly solar energy, so promoting green entrepreneurship is another key aspect of customizing green reintegration strategies. Encouraging more and more entrepreneurs in this field and also sustainable waste management and eco-friendly textiles can provide more sustainable options for returning migrants. To support these activities feasible, mechanisms like microfinance and business incubation programs are crucial. In the meantime, culture and socially sensitive awareness should also give focuses when implementing green integration strategies. Engaging with local communities, respecting traditional customs, and ensuring inclusive and equitable practices. Women, the elderly, and minority communities should be paid special attention to, to make people feel that green integration initiatives are accessible and beneficial to all, not specifically for one group. Furthermore, addressing broader social issues that impact reintegration is also crucial, such as education, sanitation, and social cohesion. These are all vital components to promote sustainable green integration strategies.
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This is not a singular action that once one group makes efforts and the whole society can enjoy the fruits of that. To achieve a success adaptation of green reintegration strategies in Bangladesh calls for a collaborative approach that engages a wide range of stakeholders, including relevant government agencies, NGOs, private sectors, local communities representatives and international development experts and partners. Each of these stakeholders plays an important role and could bring unique resources and key perspectives, which are fundamental for the effective implementation of these strategies. From government side, the government of Bangladesh is responsible for developing and implementing policies that beneficial for sustainable practices, providing incentives for green businesses such as reduce environment tax, facilitate access to education and training for returning migrants. The government could also allocate resources for technology transfer, capacity building at the local level, what's more, integrating green reintegration strategies into climate change adaptation strategies and national development plans to ensure consistency and long-term commitment. NGOs and international development experts and partners could assist in designing and implementing pilot projects, conducting research and impact assessment tracking, facilitating community empowerment. The private sector could make contributions

through investments in sustainable industries, CSR and ESG, promoting public-private partnership relations, supporting innovative green technologies and provide more employment opportunities. Meanwhile, powerful policy frameworks that address land rights, sustainable resource management and economic incentives for green practices is key factor to success, ensuring the policy coherence across different levels of government and sectors is critical to avoid conflicts and create synergies. All relevant stakeholders should establish regular communication, joint planning and shared decision-making mechanisms.

In the end, establishing an effective monitoring and evaluation system that involve authorities and community participation could provide insights into the impact of green reintegration strategies and identify challenges and opportunities, inform all relevant stakeholders make adjustments based on M&E system. This system should use both qualitative and quantitative measures to reflect the environmental, social and economic impacts of these strategies, regular data collection, analysis and reports are crucial for tracking the progress.

Implementing green reintegration strategies to the context of Bangladesh presents a unique opportunity to address the challenges faced by returning migrants in a manner that is environmentally sustainable, economically viable, and socially inclusive. By tailoring these strategies to local needs, leveraging the strengths of various stakeholders, and utilize monitoring and evaluation systems, green reintegration can significantly contribute to the resilience and development of Bangladesh.

7. Conclusion

Bangladesh is a country which deeply affected by climate change, this research firstly points out a series of research questions, aiming to explore the health challenges of climate-induced displacement in Bangladesh. As explored through this research, it reveals that climate-induced migration, this phenomenon is environmental crises that are strongly linked with socio-economic struggles and political complexities. This paper has critically examined the implications of climate change on urban displacement, particularly in the context of Dhaka's slums, highlights the profound impacts on health and living conditions for climate-induced migrants, especially on women children.

Research have shown that Bangladesh has implemented several strategies to address the impacts of climate change through frameworks such as the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) and various NGO-led initiatives. Despite these efforts, the effectiveness of these strategies is not that evident. While actions like cyclone shelters and embankments indeed provide some protection, the rapid influx of migrants to Dhaka's slums overwhelms existing services and infrastructures. Healthcare facilities, in particular, struggle to meet the end, leading to widespread health issues among slum residents. The primary health challenges faced by climate-induced migrants at slums in Dhaka include waterborne diseases such as diarrhea, typhoid, and cholera, exacerbated by poor sanitation and overcrowded living conditions. women and children are particularly vulnerable, facing issues such as inadequate maternal health services, malnutrition, and limited access to clean water and sanitation facilities. As the frequency and intensity of climate events increase, additional challenges are expected. These include a higher prevalence of vector-borne diseases like dengue and malaria due to rising temperatures and changing precipitation patterns. The expected increase in slum populations will further strain already overburdened healthcare systems, leading to more severe health crises.

The Bangladesh government's role in providing healthcare to climate-induced migrants is crucial but currently insufficient. Statistics show that many climate-induced migrants rely on local pharmacies and informal healthcare providers due to the high costs and limited availability of public healthcare services. Government documents and reports often highlight the need for improved healthcare access, but implementation remains a significant challenge. Various institutions, including international organizations like the IOM and local NGOs, are working to address the needs of climate-induced migrants. Efforts include providing healthcare services, improving sanitation facilities, and advocating for policy changes. However, these efforts are often fragmented and lack the scale needed to address the growing crisis comprehensively. Projections indicate that without significant interventions, the health challenges faced by climate-induced migrants will worsen. Rising temperatures and increased migration will exacerbate existing issues, leading to higher morbidity and mortality rates among vulnerable populations. Moreover, this research also investigates the disparities in how local

residents perceive and support climate-induced versus non-climate-induced migrants, further complicating the socio-political landscape.

Furthermore, the concept of "green reintegration" has been brought to this research as a promising approach to address the relevant challenges caused by climate-induced displacement. This concept (approach) offers a pathway to sustainable and inclusive development within the context of Bangladesh. However, its success depends on collaborative efforts involving government, NGOs, the private sector, and local communities. To ensure these strategies are responsive, impactful, and sustainable, effective policy frameworks, stakeholder engagement, and a robust monitoring and evaluation system are imperative. Besides, integrated policy approach, targeted healthcare programs, stronger institutional collaboration, community-based interventions, long-term planning and funding should be considered to address these issues and improve the resilience of its urban populations and ensure better health outcomes for climate-induced migrants, particularly for the most vulnerable groups.
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Looking ahead, there is an obvious need to call for continue research in this field, particularly engage directly with affected communities and explore innovative solutions to the pressing issues of climate change and displacement, not only in Bangladesh,, but the globe as a whole. Remember, climate change affects all, we need to stand together.

8. References

Abdullah, A. (2016) 'Rural-urban migration and informal sector of Dhaka City: Issues and facts', Research Journal of Humanities and Social Sciences, 7(2), p. 101. doi:10.5958/2321-5828.2016.00017.6.

Adri, N. (2014) 'climate-induced' rural-urban migration in Bangladesh: Experience of migrants in Dhaka City. dissertation. Royal Holloway, University of London.

Adri, N. and Simon, D. (2017) 'A tale of two groups: Focusing on the differential vulnerability of "climate-induced" and "non-climate-induced" migrants in Dhaka City', Climate and Development, 10(4), pp. 321–336. doi:10.1080/17565529.2017.1291402.

Ahmed, M. (2019) 'Health and well-being of climate migrants in slum areas of Dhaka', Encyclopedia of the UN Sustainable Development Goals, pp. 277–293. doi:10.1007/978-3-319-95681-7_63.

Ahsan, R. and Afrin, S. (2019) 'Retracted: Understanding climate-induced migration: Bangladesh A place to explore the reality', Journal of Asian and African Studies, 54(5), pp. 702–715. doi:10.1177/0021909619839420.

Ahsan, R., Karuppannan, S. and Kellett, J. (2011) 'Climate migration and urban planning system: A study of bangladesh', Environmental Justice, 4(3), pp. 163–170. doi:10.1089/env.2011.0005.

Akinde, A. (2023) Discover the 5 most populated cities in Bangladesh, A. Available at: https://a-z-animals.com/blog/discover-the-most-populated-cities-in-bangladesh/.

Akram, A., Chowdhury, S. and Mobarak, M. (2017) Migration subsidies and rural labor markets in Bangladesh: The abdul latif jameel poverty action lab, The Abdul Latif Jameel Poverty Action Lab (J-PAL). Available at: https://www.povertyactionlab.org/evaluation/migration-subsidies-and-rural-labor-markets-bangladesh?lang=en.

Alam, A. (2020) Op-ed: The untold stories of Bhola Slum - Dhaka Tribune, OP-ED: The untold stories of Bhola slum. Available at: https://www.dhakatribune.com/opinion/op-ed/215096/op-ed-the-untold-stories-of-bhola-slum.

Antonopoulos, I. (2019) 'Climate-induced displacement and the developing law', Climate Action, pp. 307–315. doi:10.1007/978-3-319-95885-9_48.

Arias-Granada, Y. et al. (2018) Water and sanitation in Dhaka slums: Access, quality,

and informality in service provision [Preprint]. doi:10.1596/1813-9450-8552.

Augustine, J.M. and Negraia, D.V. (2017) 'Can increased educational attainment among lower-educated mothers reduce inequalities in children's skill development?', Demography, 55(1), pp. 59–82. doi:10.1007/s13524-017-0637-4.

Ayeb-Karlsson, S. (2020) '"when we were children we had dreams, then we came to Dhaka to survive": Urban stories connecting loss of wellbeing, displacement and (im)mobility', Climate and Development, 13(4), pp. 348–359. doi:10.1080/17565529.2020.1777078.

Ayeb-Karlsson, S., Kniveton, D. and Cannon, T. (2020) 'Trapped in the prison of The mind: Notions of climate-induced (im)mobility decision-making and wellbeing from an urban informal settlement in Bangladesh', Palgrave Communications, 6(1). doi:10.1057/s41599-020-0443-2.

Balsari, S., Dresser, C. and Leaning, J. (2020) 'Climate change, migration, and civil strife', Current Environmental Health Reports, 7(4), pp. 404–414. doi:10.1007/s40572-020-00291-4.

Berchin, I.I. et al. (2017) 'Climate change and forced migrations: An effort towards recognizing climate refugees', Geoforum, 84, pp. 147–150. doi:10.1016/j.geoforum.2017.06.022.

Birkmann, J. (2022) Chapter 8: Poverty, Livelihoods and Sustainable Development, Climate Change 2022: Impacts, Adaptation and Vulnerability. Available at: https://www.ipcc.ch/report/ar6/wg2/chapter/chapter-8/.

Bose, P. and Lunstrum, E. (2014) 'Introduction environmentally induced displacement and forced migration', Refuge: Canada's Journal on Refugees, 29(2), pp. 5–10. doi:10.25071/1920-7336.38163.

Camille Le Coz, R.S. (2023) Green reintegration: Supporting returning migrants in climate-affected communities, migrationpolicy.org. Available at: https://www.migrationpolicy.org/research/green-reintegration-migrants.

Castellano, R., Dolšak, N. and Prakash, A. (2021) 'Willingness to help climate migrants: A survey experiment in the Korail slum of Dhaka, Bangladesh', PLOS ONE, 16(4). doi:10.1371/journal.pone.0249315.

Chowdhury, F. et al. (2015) 'Diarrheal illness and healthcare seeking behavior among a population at high risk for diarrhea in Dhaka, Bangladesh', PLOS ONE, 10(6). doi:10.1371/journal.pone.0130105.

Cities Alliance (2009) Climate migration drives slum growth in Dhaka, Cities Alliance. Available at: https://www.citiesalliance.org/newsroom/news/urban-news/climate-migration-drives-slum-growth-dhaka.

Dhaka Tribune (2022) Survey: Girls feel unsafe while bathing in open places - dhaka tribune, Survey: Girls feel unsafe while bathing in open places. Available at: https://www.dhakatribune.com/bangladesh/272305/survey-girls-feel-unsafe-while-bathing-in-open.

Degert, I., Parikh, P. and Kabir, R. (2016) 'Sustainability assessment of a slum upgrading intervention in Bangladesh', Cities, 56, pp. 63–73. doi:10.1016/j.cities.2016.03.002.

Fakir, A.M. and Khan, M.W. (2015) 'Determinants of malnutrition among urban slum children in Bangladesh', Health Economics Review, 5(1). doi:10.1186/s13561-015-0059-1.

Farhad, S.M. (2016) Slum-governance of Korail, Governance from the Below and Interplay between Formal and Informal System in Dhaka city: Slum-governance of Korail. Available at: https://www.northsouth.edu/newassets/files/ppg-research/PPG_5th_Batch/9._Farhad_Governnace_from_the_Below___and_Interplay_between_Formal_and_Informal_system_in_Dhaka_city_5th___Batch_2016.pdf (Accessed: 31 May 2024).

Foresight (2011) Migration and Global Environmental Change: Future Challenges and opportunities. London, UK: The Government Office for Science.

Jones, M.L.G. (2022) 'Tenure security, Housing Quality and energy (in)justice in Dhaka's slums', Global Discourse, 12(2), pp. 313–344. doi:10.1332/204378921x16309935493598.

Haq, S.Md. and Ahmed, K.J. (2016) 'Does the perception of climate change vary with the socio-demographic dimensions? A study on vulnerable populations in Bangladesh', Natural Hazards, 85(3), pp. 1759–1785. doi:10.1007/s11069-016-2664-7.

Hassani-Mahmooei, B. and Parris, B.W. (2012) 'Climate change and internal migration patterns in Bangladesh: An agent-based model', Environment and Development Economics, 17(6), pp. 763–780. doi:10.1017/s1355770x12000290.

Hodgkinson, D., Burton, T., Young, L., & Anderson, H. (2009). Copenhagen, Climate Change "Refugees" and the Need for a Global Agreement. Public Policy, 4(2), 155–174. https://search.informit.org/doi/10.3316/informit.117407333511939

Hossain, Md.Z. and Rahman, Md.A. (2017) 'Pro-poor adaptation for the urban extreme

poor in the context of climate change', International Journal of Climate Change Strategies and Management, 10(3), pp. 389–406. doi:10.1108/ijccsm-08-2016-0117.
kabir

International Organization for Migration. (2008). "Migration and Climate Change." International Organization of Migration Research Series 33, 31.

International Organization for Migration. (2019) Environmental migration: IOM, UN Migration: Environmental Migration Portal, IOM, UN Migration | Environmental Migration Portal. Available at: https://environmentalmigration.iom.int/environmental-migration (Accessed: 15 January 2024).

International Organization for Migration. (2021) 'International Dialogue on Migration No. 31', International Dialogue on Migration [Preprint]. doi:10.18356/9789210026345.

Ishtiaque, A. and Mahmud, M.S. (2011) Migration objectives and their fulfillment: A Micro Study of the rural ..., Migration objectives and their fulfillment: A micro study of the rural-urban migrants of the slums of Dhaka city. Available at: https://www.researchgate.net/publication/220048815_Migration_objectives_and_their _fulfillment_A_micro_study_of_the_rural-
urban_migrants_of_the_slums_of_Dhaka_City.

Islam, M.R. and Shamsuddoha, M. (2017) 'Socioeconomic consequences of climate induced human displacement and migration in Bangladesh', International Sociology, 32(3), pp. 277–298. doi:10.1177/0268580917693173.
World bank group
Kamruzzaman, P. (2014) 'Poverty reduction', Poverty Reduction Strategy in Bangladesh, pp. 51–80. doi:10.1332/policypress/9781447305699.003.0003.

Karlsson, S.A. (2016) A climate migrant's story from an urban slum in Dhaka, Our World. Available at: https://ourworld.unu.edu/en/a-climate-migrants-story-from-an-urban-slum-in-dhaka.

Khan, T.H. (2013) 'Self-built houses (SBH) in Dhaka City', Living with Transformation, pp. 1–19. doi:10.1007/978-3-319-00720-5_1.

Khan, M.R. et al. (2021) 'High-density population and displacement in Bangladesh', Science, 372(6548), pp. 1290–1293. doi:10.1126/science.abi6364.

Ki-moon, B. (2011) Remarks at 'Momentum for change' initiative secretary-general, United Nations. Available at: https://www.un.org/sg/en/content/sg/speeches/2011-12-06/remarks-momentum-change-initiative (Accessed: 14 October 2023).

Kirmayer, L.J. et al. (2010) 'Common mental health problems in immigrants and refugees: General approach in primary care', Canadian Medical Association Journal,

183(12). doi:10.1503/cmaj.090292.

Klepp, S. (2017) 'Climate change and migration', Oxford Research Encyclopedia of Climate Science [Preprint]. doi:10.1093/acrefore/9780190228620.013.42.
Krieger, T., Panke, D. and Pregernig, M. (2020) Environmental conflicts, migration and governance. Bristol, UK: Bristol University Press.

Lee, L.X. (2023) Around the world, Children's education becoming more closely tied to their mother's, UBC News. Available at: https://news.ubc.ca/2023/03/around-the-world-childrens-education-becoming-more-closely-tied-to-their-mothers/ (Accessed: 31 May 2024).

Lipi, A.I. and Hasan, N. (2021) 'Urbanization in Bangladesh: Emerging challenges and the way forward', Bangladesh Journal of Multidisciplinary Scientific Research, 3(1), pp. 33–44. doi:10.46281/bjmsr.v3i1.1112.

Maliyath, R. (2023) Slum dwellers struggle with Flood Water, Nextblue. Available at: https://www.next.blue/slum-dwellers-struggle-with-flood-water/.

Martin, M. (2017) Climate, environmental hazards and migration in Bangladesh [Preprint]. doi:10.4324/9781315297453.

Mavis, M. (2022) IFC: 50% of the population will move to urban areas by 2030 - Dhaka Tribune. Available at: https://www.dhakatribune.com/business/274896/ifc-50%25-of-the-population-will-move-to-urban.

May, M.A. (2022) Frugal map making: Experiences from Korail, The Good Feed. Available at: https://blog.brac.net/frugal-map-making-experiences-from-korail/.

McDonnell, T. (2021) Climate change creates a new migration crisis for Bangladesh, Environment. Available at: https://www.nationalgeographic.com/environment/article/climate-change-drives-migration-crisis-in-bangladesh-from-dhaka-sundabans (Accessed: 15 January 2024).

McNamara, K.E., Olson, L.L. and Rahman, Md.A. (2016) 'Insecure hope: The challenges faced by urban slum dwellers in Bhola slum, Bangladesh', Migration and Development, 5(1), pp. 1–15. doi:10.1080/21632324.2015.1082231.

Md Ashek-E-Rahman et al. (2020) Bangladesh Delta Plan (BDP), 2100. Available at: https://bangladeshembassy.nl/bangladesh-delta-plan-2100/.

Ministry of Environment and Forest Government of the People's Republic of Bangladesh (2005) Bangladesh National Adaptation Programme of Action (NAPA), Bangladesh National Adaptation Programme of Action (NAPA) | Climate Change

Adaptation. Available at: https://www.adaptation-undp.org/projects/bangladesh-national-adaptation-programme-action-napa.

Nayna Schwerdtle, P. et al. (2021) 'A risk exchange: Health and mobility in the context of climate and environmental change in Bangladesh—a qualitative study', International Journal of Environmental Research and Public Health, 18(5), p. 2629. doi:10.3390/ijerph18052629.

Nazem, N.I., Mahbub, A.Q. and Hossain, Md.A. (2023) 'Climate migrants in the dhaka metropolitan region: The process of livelihood adaptation', Urban Transformational Landscapes in the City-Hinterlands of Asia, pp. 359–377. doi:10.1007/978-981-19-8726-7_21.

Naved, R.T. and Khan, N.N. (2019) 'Multilevel control over sexuality of unmarried adolescent girls and related violence: A qualitative exploration in slums of Dhaka, Bangladesh', Journal of Interpersonal Violence, 36(15–16), pp. 6956–6978. doi:10.1177/0886260519831378.

Nobel, S. (2022) Poor access to sanitation system plagues slum residents, homeless people in Dhaka, bdnews24.com. Available at: https://bdnews24.com/bangladesh/nkbe5zehn2.

Pender, J.S. (2016) 'How will climate change hit Bangladesh?', Bangladesh Confronts Climate Change, pp. 15–28. doi:10.2307/j.ctt1hj9zfv.8.

Plan International, H. (2022) Taking a bath in slums puts girls at risk of being sexually harassed, Plan International Hong Kong. Available at: https://www.plan.org.hk/en/taking-a-bath-in-slums-puts-girls-at-risk-of-being-sexually-harassed/.

Pramanik, B.K., Sarker, D. and Sarker, R.C. (2011) Assessment of water supply and sanitation facilities for Korail slum in Dhaka city. | request PDF, Assessment of Water Supply and Sanitation Facilities for Korail Slum in Dhaka City. Available at: https://www.researchgate.net/publication/282062799_Assessment_of_Water_Supply_and_Sanitation_Facilities_for_Korail_Slum_in_Dhaka_City.

Pradhan, R.P., Arvin, M.B. and Nair, M. (2021) 'Urbanization, transportation infrastructure, ICT, and economic growth: A temporal causal analysis', Cities, 115, p. 103213. doi:10.1016/j.cities.2021.103213.

PRAP (2018) 5.5 Guidelines for Poverty Reduction Action Plan (PRAP). Available at: http://ncc.portal.gov.bd/sites/default/files/files/ncc.portal.gov.bd/forms/299bb356_afe6_45c9_956c_95d3c39546e3/5.5%20Guidelines%20for%20PRAP_F_20180225.pdf.

Rabbani, G. (2021) 'Climate bridge fund: Tackling climate migration in Bangladesh by Bridging Stakeholder Gaps', Environmental Sciences and Ecology: Current Research (ESECR, 2(5), pp. 1–2. doi:10.54026/esecr/1031.

Rahman, H.Z. and Hill, R. (2019) 'Poverty in urban Bangladesh: Trends, profiles and spatial differences', The Bangladesh Development Studies, XLII(2 & 3), pp. 131–171. doi:10.57138/pnkl5994.

Rahman, A.M. (2012) Sanitation interventions in the urban informal settlements of Bangladesh: The role of government, ngos and the Grassroots.

Rahaman, M.A., Kalam, A. and Al-Mamun, Md. (2023) 'Unplanned urbanization and Health Risks of Dhaka City in Bangladesh: Uncovering the associations between Urban Environment and Public Health', Frontiers in Public Health, 11. doi:10.3389/fpubh.2023.1269362.

Rana, M.M. and Ilina, I.N. (2021) 'Climate change and migration impacts on cities: Lessons from Bangladesh', Environmental Challenges, 5, p. 100242. doi:10.1016/j.envc.2021.100242.

Reed, B. (2015) Dhaka: The city where climate refugees are already a reality, The Guardian. Available at: https://www.theguardian.com/cities/2015/dec/01/dhaka-city-climate-refugees-reality.

Rees, P. and Lomax, N. (2020) 'Ravenstein revisited: The analysis of migration, then and now', Comparative Population Studies, 44. doi:10.12765/cpos-2020-10.

Riaz Uddin, A.K. (2016) 'Urbanization', Routledge Handbook of Contemporary Bangladesh, pp. 207–219. doi:10.4324/9781315651019-17.

Rojas, D. (2021) How the climate crisis is impacting Bangladesh, The Climate Reality Project. Available at: https://www.climaterealityproject.org/blog/how-climate-crisis-impacting-bangladesh.

Sarker, P. (2020) 'Analyzing urban sprawl and Sustainable Development in Dhaka, Bangladesh', Journal of Economics and Sustainable Development [Preprint]. doi:10.7176/jesd/11-6-02.

SKELDON, R. (1997) Migration and Development: A Global Perspective. HARLOW JOURNALS DIVISION - FOURTH AVENUE, UK: LONGMAN.

Strauss, J. and Thomas, D. (1995) Health, nutrition, and Economic Development. Santa Monica, CA, US: RAND.

Subah, Z., Bala, S.K. and Ryu, J.H. (2024) 'Impacts of urban flooding on gender in a slum of Bangladesh', Social Sciences, 13(5), p. 248. doi:10.3390/socsci13050248.

Thomas, D., Strauss, J. and Henriques, M.-H. (1991) 'How does mother's education affect child height?', The Journal of Human Resources, 26(2), p. 183. doi:10.2307/145920.

Todaro, M.P. (1976) 'Rural—urban migration, unemployment and job probabilities: Recent theoretical and empirical research', Economic Factors in Population Growth, pp. 367–393. doi:10.1007/978-1-349-02518-3_13.

UNICEF (2019) Data on the situation of children in Bangladesh, UNICEF. Available at: https://www.unicef.org/bangladesh/en/data-situation-children-bangladesh.

UNICEF (2023) New report details shocking deprivation of children living on the street, UNICEF. Available at: https://www.unicef.org/bangladesh/en/press-releases/unicef-new-report-details-shocking-deprivation-children-living-street.

Vinke, K. et al. (2020) Migration as Adaptation?, Academic.oup.com. Available at: https://academic.oup.com/migration/article/8/4/626/6039497

WILLIAMS, A. (2008) 'Turning the tide: Recognizing climate change refugees in international law', Law &amp; Policy, 30(4), pp. 502–529. doi:10.1111/j.1467-9930.2008.00290.x.