

Climate Induced Vulnerability of Migrant Workers: A study in Slums of Dhaka North City Corporation

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ABSTRACT

Climate induced migration is becoming a critical issue in Bangladesh, particularly in Dhaka. Extreme weather events force many working-age individuals from coastal areas to migrate to the capital. This study explores their socio-economic challenges and vulnerabilities in informal settlements, focusing on migration drivers, living conditions, employment, and urban adaptation barriers. Through qualitative research using purposive and snowball sampling, we conducted 21 in-depth interviews and three focus groups across Alubdi, Karail, and Jhilpar slums. Results reveal that while some migrants find marginal work, many remain unemployed or underemployed in low-wage, unstable jobs. They often endure unsafe housing, poor sanitation, and unreliable access to water, electricity, and gas. Awareness and uptake of government initiatives are minimal. The study highlights the urgent need for policy interventions: upgrading infrastructure, providing affordable housing, expanding vocational training, and facilitating access to formal employment to bolster migrant resilience and sustainable urban growth.

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1. Introduction

In earlier times, migration was often a way to overcome environmental and livelihood challenges. Today, a distinct group known as "climate migrants" has emerged—people who are forced to move specifically due to climate-related impacts (Ahsan, Kellett, & Karuppannan, 2016). Climate change has increased people's vulnerabilities, triggered new migration flows, and contributed to rapid and unplanned urban growth (Eriksen, Nightingale, & Eakin, 2015; Rana & Ilina, 2021). As a result, there is growing academic and policy-level interest in understanding how climate change, vulnerability, and migration are connected.

The consequences of climate-induced migration vary by age group. Children and the elderly are typically dependent, while working-age adults are crucial to the country's

economic productivity (Navaneetham & Dharmalingam, 2012; Cruz & Ahmed, 2018). Bangladesh currently enjoys a demographic advantage due to a high percentage of working-age people, referred to as a "demographic dividend" (Navaneetham & Dharmalingam, 2012; M. M. Islam, 2016; Khondker & Rahman, 2018; United Nations, 2019; Farid & Mostari, 2022). However, many of these individuals are being forced to migrate from climate-vulnerable rural areas to slums in Dhaka due to environmental disasters (Nazem, Mahbub, & Hossain, 2023).

Bangladesh's capital, Dhaka, is increasingly vulnerable to urban challenges like flooding, water shortages, heatwaves, and disease outbreaks (Rahaman et al., 2018). The search for improved living conditions drives rural populations to urban centers. By 2016, Dhaka had over 3.4 million slum dwellers, and by 2023, 19% of them were identified as climate migrants (Nazem, Mahbub, & Hossain, 2023). The majority are working-age adults, with 57% aged between 16 and 55 years (Alamgir, Jabbar, & Islam, 2009). Official records show that over 8.8 million people live in slums across Dhaka Division, though NGO estimates suggest the number may be closer to 4 million (Khandker et al., 2017).

However, this migration ends up in overcrowded slums lacking essential services like clean water, sanitation, and secure housing (Rahman, Rahman, & Rahman, 2018; Subah, Islam, & Hossain, 2023). Despite their economic contribution, these individuals live in poor conditions that harm their physical and mental well-being (Khandker et al., 2017). Limited access to basic services prevents them from achieving upward mobility, forcing them into a cycle of survival. To examine these challenges, this study uses the Pressure and Release (PAR) model to assess the vulnerabilities of working-age climate migrants in Dhaka's slums. Finally, this research aims to identify and understand the vulnerabilities faced by working-age climate migrants in Dhaka's slums. It will also examine how these vulnerabilities impact Bangladesh's demographic dividend and provide policy guidance to reduce these risks and maximize national benefits.

2. Literature Review

Urban areas are increasingly vulnerable to climate change due to rapid urbanization, inadequate infrastructure, and socio-economic disparities. Over the past two decades, extreme events—tornadoes, wildfires, floods, droughts, tsunamis—have displaced millions, intensifying climate-induced migration (Sakapaji, 2023). A new concern is "climate whiplash," characterized by rapid shifts between extreme wet and dry conditions, which complicates urban preparedness and recovery efforts (The Guardian, 2025). Meanwhile, "sponge city" initiatives—like Wuhan's permeable pavements, wetlands, and artificial ponds—show effective nature-based solutions to absorb excess rainfall and reduce flood risk (Financial Times, 2025). Access to urban green spaces is also linked to reduced heat-related mortality, highlighting the need for equitable, climate-adaptive planning (The Guardian, 2024).

In Bangladesh, climate-induced migration is escalating, driven by cyclones, flooding, sea-level rise, and salinity intrusion. In 2022 alone, over 7.1 million people were displaced, with projections suggesting up to 13–20 million could be affected by 2050 (Moitree, 2024). Dhaka is absorbing a large share of this influx, straining housing, infrastructure, and public services. Government efforts such as the Ashrayan Project, which has provided housing to over 400,000 families, and the Climate Bridge Fund, aimed at supporting climate migrant livelihoods, illustrate growing policy engagement (ICCCAD, 2025). Nevertheless, many migrants remain socio-economically marginalized, with limited access to essential services and weak urban integration.

Migration decisions are influenced not only by environmental hazards but also by economic hardship, social networks, and attachment to ancestral lands. Many coastal communities choose to stay, despite risks, because of cultural ties or perceived lack of alternatives (Islam, 2022; Wiig et al., 2023). In Dhaka's informal settlements, migrant workers confront layered challenges: job insecurity, poor living conditions, and restricted service access. Women in informal sectors are especially vulnerable, due to financial instability, gender-based violence, and absence of social protection (Sifullah et al., 2023; Amjad, 2020). Mental health challenges like anxiety and depression are widespread among displaced women. Additionally, rural-to-urban migrants report poor health-related quality of life, with stress from unstable work and inadequate healthcare (Koly et al., 2021). Overcrowding, low income, limited education, insufficient water and sanitation, along with increased communicable disease risk (e.g. dengue), further compound vulnerabilities (Hasan et al., 2024; Rahaman, Kalam & Al-Mamun, 2023).

Dhaka's slums represent overlapping environmental, infrastructural, and socio-economic hazards. Rapid urbanization has encroached on natural drainage such as Baunia Khal, worsening pluvial flooding—for example, in Baganbari—while loss of over 57% of flood-flow zones in a decade has exacerbated waterlogging (Subah et al., 2023; The Daily Star, 2024). Frequent fires, structural instability, and vector-borne disease outbreaks underscore compounded risks in dense settlements. Illegal gas and electrical connections and flammable materials turn slums into “time bombs” for fires (Dhaka Tribune, 2025; The Independent, 2025), and stagnant water fosters mosquito breeding that promotes dengue spread (bdnews24.com, 2019).

Bangladesh stands at a demographic crossroads. Its expanding working-age population could yield a significant demographic dividend—adding approximately 4.47% to real per-capita GDP growth between 1991 and 2019 (Islam & Roy, 2024). However, inadequate investment in education and healthcare threatens this potential: the World Bank's Human Capital Index estimates that a child born today will reach only 46% of their potential productivity under current conditions (The Daily Star, 2025). Youth unemployment surged to 16% in 2024—the highest in decades—with many working in roles below their qualifications (Emont, 2024).

To avoid turning the demographic opportunity into a burden, Bangladesh must implement integrated policies that align education, vocational training, healthcare, labor market reforms, and climate-resilient infrastructure—especially within urban and slum settings—to empower climate migrants, reduce vulnerabilities, and sustain economic growth (UNFPA, 2024).

Although many studies have explored climate-induced migration and urban challenges in the slums of Dhaka, very few have used the Pressure and Release (PAR) model to deeply analyze the root causes, ongoing pressures, and unsafe living conditions faced by climate-affected migrant workers. More importantly, there is a lack of research linking these vulnerabilities to Bangladesh's demographic dividend. The country's large working-age population holds great potential for economic growth, but this opportunity is at risk due to poor living conditions, insecure jobs, and lack of basic services. This study aims to fill that gap by applying the PAR model to understand how climate change, socio-economic pressures, and weak infrastructure are creating layers of vulnerability. It will also suggest practical and inclusive strategies to reduce these pressures and help migrant workers contribute more effectively to national development by improving their resilience and quality of life.

3. Theoretical Framework

To explore the climate-induced vulnerability of migrant workers in Dhaka's slums, this study adopts the Pressure and Release (PAR) model which is developed by Blaikie, Cannon, Davis, and Wisner in 1994 (Blaikie, Cannon, Davis, and Wisner, 2014). The PAR model conceptualizes disasters not merely as the outcome of natural hazards, but as the result of the interaction between external pressures (hazards) and internal socio-economic vulnerabilities. It emphasizes how vulnerability is socially constructed through a progression of factors: root causes, dynamic pressures, and unsafe conditions, which, when combined with a natural hazard, result in disaster.

Where : a) root causes: a complex web of societal variables that collectively create and sustain vulnerability. b) dynamic pressures: a mechanism that transforms unfavorable outcomes into hazardous circumstances; c) unsafe conditions: Conditions that are unsafe are those that put people and property at risk of in danger.

The factors that have determined the vulnerability to disasters are the analysis of the challenges of good governance in every sector has been linked to the increase in vulnerability to future disasters due to deeply rooted causes like constrained access to political power and decision-making structures, dynamic pressures (such as rapid urbanization and demographic changes, lack of local institutions, awareness training, etc.) and finally unsafe conditions (such as habitations in hazardous locations, pollution, poor social protection, risk to livelihood, lack of insurance against hazards, etc.).

By applying the PAR model, this study aims to unpack how structural inequalities, rapid urban transformation, and informal livelihoods combine to make climate impacts

especially harsh for migrant workers in Dhaka's slums. This framework underscores the importance of addressing root causes and policy-level interventions for effective disaster risk reduction and urban resilience building in the context of climate migration.

4. Methodology

The research adopts a qualitative approach to achieve its objectives, focusing on selected slums within Dhaka City Corporation. Based on a pilot survey, three slums—Alokdi, Jhilpar, and Korail—were chosen for cross-sectional study. The respondents consist of working individuals aged 16 to 55, who reside in these slums after migrating from various parts of Bangladesh due to climate change-induced natural disasters. This study uses the PAR model combined with a qualitative approach to effectively understand and address the climate-induced vulnerability of migrant workers in Dhaka slums by identifying underlying causes, dynamic pressures, and hazardous conditions. Data collection and analysis were conducted through qualitative methods, primarily using In-depth Interviews (IDIs) and Focus Group Discussions (FGDs).

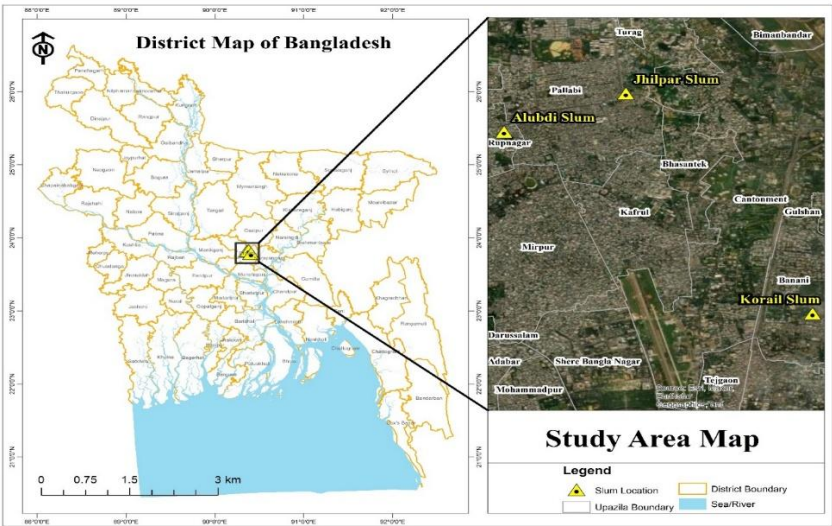
Several systematic steps during the IDIs and FGDs have been followed. First, a semi-structured questionnaire was developed to explore the hazards and vulnerabilities faced by climate migrants, allowing open-ended responses to be collected in order to capture in-depth socio-cultural realities (Bryman, 2011). During FGDs, inconsistent views were respectfully asked to be clarified so that consensus could be reached. Second, a data recording plan was created, with priority given to audio recording and transcription. When informant disagreements occurred, memo writing was used as an alternative (Bryman, 2011). Third, 21 in-depth interviews (IDIs) were conducted in three slums of Dhaka—Alokdi, Karail, and Jhilpar—with 14 females and 7 males aged between 16 and 55, selected through non-probability purposive and snowball sampling technique (Neuman, 2014). The IDI's and FGDs were conducted in each slum until data saturation was reached. In Alokdi Slum, the FGD was conducted with eight female participants; in Karail Slum, with eight male participants; and in Jhilpar Slum, with eight participants—four male and four female. Each FGD was facilitated by a moderator, with notes taken by a note-keeper, and supervised by the principal investigator. Fourth, respondents were located through referrals, beginning with demographic and background information before proceeding to thematic discussions. Fifth, coding was carried out to categorize themes and either develop or refine concepts (Levitt et al., 2018; Green et al., 2007; Neuman, 2014), using memo notes and audio recordings. Sixth, analytic comparison through the use of truth tables was applied to identify influencing factors (Neuman, 2014). Finally, reliability and validity were ensured through the use of multiple data sources and checks for authenticity and inter-subjective truth (Neuman, 2014).

Ethical clarifications has been confirmed by the research ethics committe Written consent was obtained—each participant kept one copy, and one was retained for record-keeping. Confidentiality expectations were clearly communicated during focus

group discussions. Ethical principles were followed during data analysis, and all sources were properly acknowledged to avoid misconduct.

5. Result Analysis

Figure 1: Geographical map of the study area



Source: Author, 2025

Table 01: Socio-demographic Profiles of the Respondents

Socio-demographic profiles of the respondents		%
Age	Less than 20	4.76
	21-40	47.62
	41-60	42.86
	More than 61	4.76
Sex	Male	42.22
	Female	57.78
Education level	Illiterate	57.14
	Didn't pass the primary education level	4.76
	Passed the primary education level	14.29
	Passed Junior School Certificate level	14.29
	Passed Secondary School Certificate	9.52
Migrated from	Barishal	19.05
	Bhola	14.29
	Bikrampur	4.76
	Chandpur	14.29
	Kishoreganj	4.76
	Kushtia	4.76
	Madaripur	4.76

	Sunamganj	14.29
	Sherpur	19.05
Migrated for	Riverbank erosion	52.38
	Floods	42.86
	Landslides	4.76
Years Since Migration	More than 24 years ago	23.81
	20-24 years ago	19.05
	Less than 5 years ago	14.29
	5-9 years ago	14.29
	10-14 years ago	14.29
	15-19 years ago	4.76
	Cannot recall/details not provided	9.52
Employment Status Before Migration	Unemployed	76.19
	Farmer	14.29
	Soil Digger	4.76
	Day Laborer	4.76

Employment After Migration	Unemployed	42.86
	Own tea stalls	14.29
	Rickshaw puller	9.52
	Tailor shop	4.76
	Business	4.76
	CNG driver	4.76
	Factory worker	4.76
	Soil digger	4.76
Income Variation After Migration	No income source	42.86
	1,000 - 15,000	42.86
	15,001 - 30,000	9.52
	More than 30,000	4.76
Economic Transition After Migration	From unemployed to employed	42.86
	Status remained the same	38.10
	Switched previous occupation	19.05

The study conducted in Dhaka's three major slums—Alokdi, Karail, and Jhilpar—reveals a complex and interconnected set of challenges faced by climate-induced migrants who moved to the city in search of better livelihoods. Across these slums, the participants predominantly migrated due to natural disasters, including floods, riverbank erosion, and landslides, which devastated their places of origin. Districts

such as Sunamganj, Kishoreganj, Sherpur, Barishal, Chandpur, Bhola, Madaripur, Kushtia, and Bikrampur were commonly cited as their previous homes. The decision to migrate to Dhaka was driven largely by the perception of more abundant job opportunities, yet upon arrival, migrants encountered realities that fell far short of their expectations.

A common issue across the slums is the lack of accurate information regarding the urban job market before migration. Many migrants had heard of Dhaka's employment prospects from acquaintances, but the reality was different, especially for those with limited education and skills. Most migrants initially worked in low-paying, informal jobs such as rickshaw pulling, day labor, factory work, housekeeping, and small-scale businesses like tea stalls. While these jobs provided some means of survival, they were insufficient for sustainable livelihoods, particularly given the rising cost of living in Dhaka. The lack of formal education and vocational training was a significant barrier that restricted access to higher-paying and stable jobs. Though some individuals acquired skills informally through work experience or supervisors, structured training opportunities remained scarce, especially for men.

In contrast, some women in the slums, especially in Jhilpar, reported receiving training from NGOs, which helped them acquire skills relevant to housekeeping jobs or garment factory work. There were also instances where NGOs provided entrepreneurial training and small financial grants to help women start businesses. However, despite these initiatives, the income generated by most residents remained low and insufficient to build savings or secure economic stability. House rents and the prices of essential goods have increased over time, further straining already limited earnings. Most households, especially those with only one earning member, struggled to save, leaving them highly vulnerable to financial shocks, particularly during illness or periods of unemployment.

Overcrowding is another pervasive challenge in these slums, driven by the continuous influx of migrants hoping to find employment. This has intensified competition for low-income jobs, making it increasingly difficult for newcomers and long-term residents alike to secure work. Additionally, the heightened demand for housing has driven up rents even in these impoverished areas. Despite the cramped living conditions, most residents did not view overcrowding itself as a major issue, as they shared common migration stories and experiences. However, overcrowding indirectly contributed to worsening living conditions, particularly regarding sanitation, utility services, and safety.

Utility services across all three slums were found to be inconsistent and inadequate. Water supply, although slightly improved in some areas due to the installation of WASA pumps or NGO interventions, remained insufficient and often unsafe. In Jhilpar, for example, the water supply was limited to once a day, and the water was typically unsafe for consumption without boiling. Yet, boiling water was not always feasible due to chronic gas shortages. Gas supply was irregular in all slums, with residents often

accessing it only at midnight, which forced them to prepare all meals for the day at inconvenient hours. Those unable to access gas had to buy wood for cooking, adding another financial burden. Consequently, many residents consumed unpurified water, leading to frequent illnesses that further undermined their productivity and earning potential.

The physical living conditions in the slums were hazardous and poorly organized. Seasonal flooding and waterlogging during the rainy season disrupted daily life and posed serious health risks. The lack of a proper drainage system meant that residents were often confined to their homes during floods, unable to work, and left without income for the day. The threat of fire outbreaks was another common fear, especially since some slums had experienced devastating fires in the past, resulting in the loss of residents' limited possessions. Theft and insecurity also plagued these communities, contributing to their overall sense of vulnerability.

Unemployment remained a critical concern across the slums. Residents frequently cited illiteracy, lack of vocational training, and limited work experience as the main barriers to employment. The situation was particularly dire for older residents, who faced age discrimination and were often replaced by younger workers. Even individuals with higher levels of education struggled to find decent jobs, as the demand for skilled labor in the informal economy was limited. Although some NGOs occasionally offered support, such as training programs, financial assistance during crises like heatwaves, or small loans, these interventions were insufficient to address the systemic issues faced by slum residents. Government support was notably absent, with participants across all slums reporting a complete lack of engagement or assistance from governmental bodies. Residents were largely unaware of any short-term or long-term strategies designed to address their challenges, leaving them disillusioned and without hope for significant improvement.

Despite these hardships, many residents expressed a willingness to work hard to escape poverty and improve their living conditions. However, without adequate support in the form of education, vocational training, healthcare, infrastructure improvements, and consistent utility services, their opportunities for upward mobility remained severely limited. The persistent neglect from both government and more sustained NGO efforts has trapped many slum dwellers in a cycle of poverty, insecurity, and vulnerability. Overall, the study underscores the urgent need for coordinated and sustained interventions that address not just the economic dimensions of migration and urban poverty, but also the infrastructural, educational, and healthcare needs of Dhaka's growing slum populations.

6. Discussion

This study delves into the multifaceted challenges faced by climate-induced migrants residing in Dhaka's slums. Through 21 in-depth interviews and three focus group discussions across Alokdi, Karail, and Jhilpar, the research uncovers the socio-

economic and infrastructural adversities these individuals encounter. The following discussion interprets these findings, shedding light on the barriers hindering the realization of Bangladesh's potential demographic dividend.

6.1 Drivers of Migration

The migration of individuals to Dhaka's slums has predominantly been driven by environmental degradation in their native regions. Natural disasters such as riverbank erosion, floods, and landslides have destroyed homes and farmlands, compelling families to seek refuge in urban areas. Dhaka, perceived as a hub of economic opportunity, attracts these migrants despite its overburdened infrastructure. The uneven development across Bangladesh further limits alternative urban destinations, compelling migrants to settle in the capital.

6.2 Living Conditions in Slums

Upon arrival, migrants often find themselves in overcrowded and unsanitary slums. Housing is typically makeshift, constructed from bamboo, tin, or plastic, lacking proper ventilation and space. Basic amenities such as clean water, sanitation, and electricity are scarce. Shared toilets are common, with one facility serving multiple families, leading to health issues like cholera and diarrhea. The lack of gas supply hampers the ability to boil water, exacerbating health risks. Additionally, the absence of secure tenure leaves residents vulnerable to eviction, further destabilizing their living conditions.

6.3 Employment and Economic Challenges

Employment opportunities for these migrants are limited and predominantly in the informal sector. Men often work as rickshaw pullers, day laborers, or tea stall vendors, earning between 10,000 to 15,000 BDT monthly. Women, especially those without prior work experience, struggle to find employment. The absence of formal education and vocational training restricts access to better-paying jobs, perpetuating the cycle of poverty. Moreover, the lack of social safety nets and job security exacerbates their economic vulnerability.

6.4 Health and Safety Hazards

The slums are prone to various hazards, including waterlogging during monsoons due to inadequate drainage systems. Fire hazards are prevalent, given the congested living conditions and lack of proper planning. These environmental and infrastructural deficiencies pose significant risks to the physical and mental well-being of the residents. Furthermore, the limited access to healthcare services and the prevalence of communicable diseases contribute to the deteriorating health conditions in these communities.

6.5 Institutional Support and Policy Implementation

While the Bangladeshi government has introduced policies like the National Housing Policy and Urban Poverty Reduction Projects, their implementation in slums remains inadequate. Programs aimed at improving employability, such as the National Skills

Development Policy, have not effectively reached the slum populations. The lack of coordination between governmental and non-governmental organizations, coupled with bureaucratic inefficiencies, hampers the delivery of essential services. Additionally, the absence of targeted interventions for climate-induced migrants limits the effectiveness of existing policies.

6.6. Barriers to Harnessing the Demographic Dividend

Bangladesh stands at a pivotal juncture where its burgeoning working-age population presents a potential demographic dividend—a period when economic growth can be accelerated due to a favorable age structure. However, the lived realities of climate-induced migrants residing in Dhaka's slums reveal significant barriers that hinder the realization of this potential.

Inadequate Education and Skills Training:

A significant number of slum residents lack formal education and vocational skills, limiting their employment prospects. This educational deficit restricts their ability to contribute effectively to the economy, thereby impeding the demographic dividend.

Informal Employment and Economic Insecurity:

Many migrants engage in informal jobs such as rickshaw pulling or day labor, which offer low wages and lack job security. This economic instability prevents them from achieving upward mobility and contributing to sustained economic growth.

Poor Living Conditions and Health Risks:

Overcrowded and unsanitary living environments in slums expose residents to health hazards, reducing their productivity and increasing healthcare burdens. These conditions undermine the workforce's potential and strain public health systems.

Limited Access to Public Services:

Slum dwellers often lack access to essential services such as clean water, sanitation, and electricity. This deprivation hampers their quality of life and restricts their ability to participate fully in economic activities.

Gender Disparities:

Women in slums face additional challenges, including limited employment opportunities and social constraints, further reducing the labor force participation rate and economic output. Gender-based violence and discrimination exacerbate these disparities, hindering women's empowerment and contribution to the economy.

The demographic dividend relies on a productive and financially secure working-age population that can contribute to economic growth and invest in future generations. However, the financial instability of slum dwellers impedes their ability to invest in education, health, and skill development, which are critical for enhancing productivity.

Moreover, the lack of savings limits their capacity to withstand economic shocks, perpetuating a cycle of poverty and underemployment.

7. Conclusion

This study delves into the complex challenges of climate-induced migrants living in Dhaka's slums (Alokdi, Karail, and Jhilpar), drawing on 21 in-depth interviews and three focus-group discussions. Environmental degradation and natural disasters in rural areas drive migration, forcing individuals into overcrowded urban slums where they face poor living conditions without access to clean water, proper sanitation, or reliable electricity. Their housing is insecure, often unsafe, and vulnerable to hazards like waterlogging and fire. Employment for these migrants is confined to the informal sector—offering low wages, instability, and no social protection. This deepens financial vulnerability, making it difficult to save, invest in education or training, and cope with economic shocks. These challenges directly undermine Bangladesh's efforts to capitalize on its demographic dividend, as migrants remain unable to reach their full economic potential. Institutional support falls short. While the National Housing Policy and Urban Poverty Reduction initiatives exist, execution is weak and coordination between governmental and NGO sectors is lacking. Consequently, many slum residents miss out on essential services, reinforcing cycles of deprivation.

The study recommends improving slum conditions through affordable housing, better utilities, and inclusive urban planning. It emphasizes skill development, policy enforcement, support for vulnerable groups like women and the elderly, and active community engagement to ensure equitable access to services, employment, and infrastructure for sustainable urban development.

However, the study is exploratory and qualitative, focusing on only three slums and using a cross-sectional design. Its findings cannot be broadly generalized or used to establish causality. Nonetheless, its insights point to actionable pathways for improving migrant well-being and unlocking the demographic dividend in Bangladesh.

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