

Comprehensive Study on Climate-Induced Migration in the South-western Coastal Zone of Bangladesh



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Abbreviations

IDI - In-depth Interview

FGD - Focus Group Discussion

KII – Key Informant Interview

HH – Household

PSF – Pond Sand Filtration

1 Introduction

1.1 Context and Background

Bangladesh is highly vulnerable to adverse impacts of climate change, which include extreme weather events and slow-onset changes like rising temperatures, droughts, floods, sea-level rise, and salinity intrusion (Barua, 2016). Over the past two decades, the country's population and their livelihoods have been severely affected by an increasing frequency of devastating climate-related events, including temperature fluctuations, erratic rainfall, drought, salinity intrusion, and cyclonic storms such as Cyclone Sidr (2007), Aila (2009), Mahasen (2013), Roanu (2016), Fani and Bulbul (2019), and Amphan (2020). For marginalized and vulnerable populations, relocation often emerges as the most viable option for ensuring safety and survival (Black, 2013). Following a catastrophic event, temporary relocation to nearby communities or cyclone shelters has become increasingly common. However, the recovery process is challenging and prolonged, with many individuals experiencing long-term or permanent relocation due to resource loss and reduced local employability (Black, 2013).

Migration and relocation in response to climate-induced events reflect the pursuit of alternative livelihoods to cope with these losses (Afsar, 2003). Decisions surrounding migration are influenced by a complex interplay of interconnected factors, rather than solely environmental events. These decisions depend on the prospects of finding suitable living conditions and securing alternative livelihoods (Mukaddim, 2021). For many, regional cities—particularly urban slums—become appealing destinations due to the availability of varied employment opportunities, easier access to services, and generally improved living standards compared to rural areas (Ahsan, 2013). However, urban slums often suffer from poor living conditions, inadequate infrastructure, and limited access to essential public services (Rahman M. M., 2012).

Despite these substandard conditions, urban slums provide critical support for migrants forced to relocate from rural or climate-affected areas, often with few or limited resources (Nazem, 2023). A major challenge faced by slum residents, including migrants, is their limited access to public services (Md Masud Parves Rana, 2021). Governmental efforts to address the needs of slum dwellers and migrant populations often fall short due to budget limitations, administrative challenges, or an inability to keep pace with rapid urbanization (Szaboove, 2023). As a result, essential services such as housing, healthcare, and education remain insufficient or unavailable to these vulnerable groups.

In Bangladesh, the southwestern coastal region of Bangladesh is increasingly grappling with severe challenges driven by climate-induced migration, worsened by environmental factors such as sea-level rise, salinity intrusion, and frequent extreme weather events. These climate pressures are disrupting local livelihoods, diminishing agricultural productivity, and destabilizing communities, compelling many individuals and families to seek safer, more sustainable environments. This study aims to provide an in-depth analysis of climate-induced migration in the southwestern coastal areas (specifically Khulna, Satkhira, and Bagerhat Districts, focusing on Assasuni, Koyra, Morrelganj, Paikgacha, Sarankhola, and Tala Upazilas). It will map migration hotspots, identify primary migration drivers, and assess both economic and social impacts on the affected populations.

Additionally, the study will investigate the destinations of these migrants, examining the employment opportunities available and challenges they face in new locations. It will also assess existing support systems for climate migrants and host communities to identify gaps and suggest improvements. Findings from this research will offer valuable insights for policymakers and stakeholders, supporting the creation of targeted policies and strategic measures that address the needs of climate migrants and strengthen the resilience of both migrant destinations and host communities. This research seeks to deepen understanding of climate-induced migration dynamics and guide more effective responses to this escalating issue.

1.1.1 Study objectives

This study aims to conduct a thorough investigation into climate-induced migration in the southwestern coastal region of Bangladesh, with a focus on identifying migration hotspots, analysing the driving factors behind migration, and assessing both economic and non-economic loss and damage experienced by migrants and non-migrants alike. Additionally, the research will seek to determine the primary destinations of migrants, evaluate available employment opportunities, and propose models for entrepreneurship and skills development to support sustainable livelihoods. Specific objectives aligned with project is given below-

1. Identify and map hotspots of climate-induced migration using GIS and remote sensing technologies.
2. Analyse the driving factors of climate-induced migration in the identified hotspots.
3. Assess economic loss and damage (e.g., property damage, income loss) and non-economic loss and damage (e.g., Human life, Physical health, Mental and emotional wellbeing, Territory, Culture and practices, Indigenous and local knowledge, Ecosystem services and biodiversity, social fabric, Education, Mobility) experienced by climate migrants and non-migrants in the hotspots.
4. Determine and map primary destinations of climate-induced migrants and analyze the demographic and socio-economic characteristics of these destinations.
5. Evaluate the availability and nature of employment opportunities in both host areas and migration destinations and examine how these opportunities align with migrants' skills and needs.
6. Propose Models of entrepreneurship and skills development to Support Potential Migrants.

1.1.2 Research questions

For the fulfilment of this project the consultant has developed segment-wise detailed research questions. By addressing these research questions, we can develop a holistic and rationale system that will underline the migration context. The specific segmental research questions which are addressed by this study are as follows:

Segment		Research Question
Migration Mapping	Hotspots	7. Which unions in the project area are considered hotspots for climate-induced migration?
		8. How can Geographic Information Systems (GIS) and remote sensing technologies effectively identify and represent these migration hotspots?
		9. What spatial patterns of migration are evident in these hotspots?
Migration Drivers		10. What are the primary micro-level factors (e.g., human, social, financial, physical, and natural capital) contributing to climate-induced migration in these hotspots?
		11. How do macro-level factors (e.g., political, demographic, economic, social, and environmental influences) affect migration decisions in the region?
		12. In what ways do meso-level factors (e.g., political/legal frameworks, cost of migration, social networks, recruitment agencies, diasporic links) play a role in influencing migration from the region?
		13. What are the key economic losses (e.g., property damage, income disruption) experienced by climate migrants and non-migrants within the identified hotspots?

Segment	Research Question
Loss & Damage Assessment	14. What are the significant non-economic damages (e.g., impacts on human life, physical and mental health, territorial losses, cultural erosion, disruptions to indigenous knowledge, biodiversity loss, social fabric degradation, educational setbacks, and mobility issues) experienced by these populations?
	15. How do the economic and non-economic impacts differ between migrants and non-migrants in these vulnerable areas?
Host Area & Migration Destination	16. What are the main destinations of climate migrants from the southwestern coastal zone?
	17. What are the demographic and socio-economic characteristics of these destination areas?
Entrepreneurship and Skills Development Model	18. What employment opportunities are available in the host and primary migration destination areas?
	19. How well do these employment opportunities align with the skills and needs of the climate migrants?
	20. What are the identified gaps between the skills of climate migrants and the available employment opportunities in their host communities or destinations?
	21. What models of entrepreneurship and skills development can be designed to support climate migrants in host areas?
	22. What are the potential barriers to implementing such entrepreneurship and skills development models?

These questions are designed to comprehensively address the study's goals and objectives, facilitating an in-depth analysis of climate-induced migration in Bangladesh's south-western coastal zone.

1.1.3 Literature Review

Climate Change & Migration

The southwestern coast of Bangladesh is a critical area affected by climate change, with rising sea levels, saline intrusion, and increasingly severe cyclones impacting local populations (Dasgupta, 2015). Bangladesh ranks among the countries most affected by climate-induced disasters globally, and it has been predicted that nearly one-third of its coastal population will face displacement due to rising sea levels by 2050 (Haque, 2014). This geographical vulnerability contributes to significant levels of migration, as residents seek to escape recurring climate hazards. As communities grapple with the loss of agricultural land and freshwater resources due to salinity, migration becomes a survival strategy. Research by (Kabir, 2018), highlights how rural populations in the southwestern coastal areas, such as Khulna and Satkhira, are increasingly moving to urban centers or neighbouring rural areas less affected by saline intrusion and flooding.

The report titled "Urbanization and Migration in Bangladesh" by the (UNFPA, 2016) delves into the dynamics of general internal migration in Bangladesh, through it acknowledges the challenge of pinpointing specific migration categories resulting from climate-related extreme events. Nevertheless, the report offers insights into temporal trends and spatial patterns concerning the origins and destinations of migrants within the country.

Highlights

The literature underscores that climate-induced migration in Bangladesh's southwestern coastal zone is driven by complex environmental, economic, and social factors. Mapping migration hotspots, understanding migration drivers, and assessing the impacts on both origin and host communities are essential steps in formulating effective responses. Addressing gaps in policy and institutional support, enhancing employment opportunities, and implementing sustainable adaptation measures are key to managing the impacts of climate-induced migration. This study will build upon these insights to provide evidence-based recommendations for policymakers to address the specific challenges and needs of climate migrants in Bangladesh.

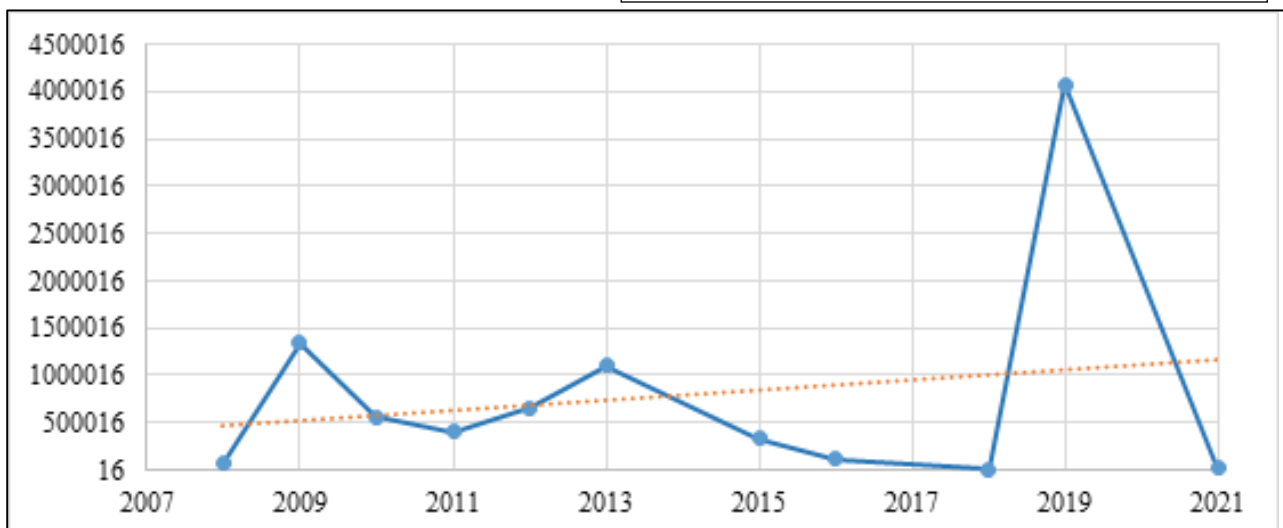


Figure 1-1: Yearly Displacement Trend in Southwestern Region of Bangladesh

Source: (IDMC, 2023)

More than 35 million people in Bangladesh's coastal districts may be forced to relocate by 2050, according to the projection (IDMC, 2023). In particular, 19 coastal districts and communities along key rivers like the Padma, Meghna, and Jamuna are extremely vulnerable to climate-induced displacement and migration because of increased catastrophic risks. Environmental factors such as soil salinity, frequent cyclones, and tidal surges are major drivers of migration in Bangladesh's coastal belt. According

to Nicholls et al. (2007), sea-level rise exacerbates flooding, intensifying the vulnerability of low-lying coastal areas. Salinity intrusion caused by rising seas and seasonal tidal surges has degraded arable land, forcing farmers to abandon agriculture-based livelihoods and migrate (Rahman M. M., 2011). Cyclones Sidr (2007), Aila (2009), and Amphan (2020) have particularly demonstrated the severity of climate-induced migration in the coastal areas, as these storms left millions homeless, causing long-term displacement (Ahsan, 2013). The recurrent flooding and cyclonic activity erode resilience, reducing the feasibility of returning to affected areas (Mirza, 2011). As a result, temporary and permanent migration to urban slums has become common. The escalating environmental pressures in the southwestern region are thus a primary push factor for migration, with the threat of future extreme weather events compounding the situation.

Climate-induced migration poses substantial economic and social impacts for both migrants and their origin communities. Migrants often lose significant economic assets, including property and livestock, during displacement (Alam, 2010). Furthermore, they experience difficulties finding stable employment in their new locations, with many settling in urban slums under challenging living conditions. Socially, migration disrupts established community networks, leaving migrants to navigate complex social dynamics in their host communities. Social cohesion in origin communities is also disrupted when family members relocate, as social networks that traditionally provide security and support are weakened (Adger, 2002). This phenomenon contributes to increased vulnerability for those who remain behind, particularly for households with limited financial resources to adapt or relocate. Host communities, in turn, face the challenges of integrating large numbers of migrants into limited infrastructure, leading to competition for resources, increased poverty, and reduced quality of life.

For hotspots mapping remote sensing tools, as employed by (Dewan, 2015) have been instrumental in detecting land use changes in coastal areas and identifying regions where agricultural land is degraded by saltwater intrusion. Such mapping exercises not only help pinpoint areas experiencing high out-migration but also provide a basis for allocating resources and designing sustainable adaptation strategies to mitigate the impacts of climate change. It was found that, employment mismatch traps migrants in a cycle of poverty and limits their access to resources and essential services.

For example, the women migrants from coastal areas face particularly severe employment barriers, often resorting to informal, low-wage jobs. Employment gaps are a major hindrance to effective integration in host areas, and addressing them requires targeted training and livelihood programs that can bridge the skills gap for climate migrants (Akhter, 2014). Bangladesh's existing policy framework for addressing climate-induced migration is fragmented, focusing mainly on disaster response rather than long-term adaptation (Rashid, 2016). Although the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) outlines objectives for building resilience, it lacks specific measures to address the unique needs of climate migrants (Government of Bangladesh, 2009). Policies often fall short of providing sustained support for affected populations, leading to inadequate social services, insufficient housing, and limited access to education and healthcare in both origin and host communities.

Collection of Relevant Documents, Basic Statistics, & Other Info

The Project Team, has compiled and examined the basic statistics and relevant project documents. Furthermore, letters that are necessary will be sent to the appropriate departments in order to start the process of collecting the remaining data. Following crucial project documents have been gathered from the concerned authorities and will be used as a secondary source of information. The following documents has been gathered and holistically reviewed in the lateral section-

- Bangladesh Climate Change Strategy and Action Plan (BCCSAP), 2009 – Provides insights into national climate adaptation and resilience priorities.
- National Adaptation Programme of Action (NAPA), 2005 and 2009 updates – Outlines the key adaptation actions for climate-vulnerable areas.
- Delta Plan 2100 – Offers a long-term framework for managing water resources and building resilience in vulnerable regions, especially in coastal zones.
- Bangladesh National Strategy for Disaster Risk Reduction (DRR), 2016 – Details the national approach to disaster risk management.

- National Strategy on Internal Displacement, 2015 – Contains relevant policies for addressing climate-induced displacement.
- Relevant local government reports on disaster management, rural development, and climate resilience in the study areas.
- Sendai Framework for Disaster Risk Reduction, 2015-2030 – Provides international standards for reducing disaster-related migration.
- Sustainable Development Goals (SDGs) – UN Agenda 2030 – Relevant SDGs include Goal 13 (Climate Action), Goal 10 (Reduced Inequalities), and Goal 11 (Sustainable Cities and Communities).
- World Bank's Groundswell Report (2018) on projections for internal climate migration.
- Asian Development Bank (ADB) Reports on climate change impacts and migration in South Asia.
- Demographic, climate, and environmental statistics.
- Academic research and other NGO's working paper related to migration.

Collecting these documents, maps, statistics, and information will provide a comprehensive data foundation for the project. This data will enable the project to conduct in-depth analyses of migration drivers, patterns, and impacts and to formulate targeted recommendations for policy interventions. Through a detailed understanding of demographic, environmental, socio-economic, and institutional factors, the project can contribute effectively to building resilience against climate-induced migration in the southwestern coastal zone of Bangladesh.

Review of National Level Plans & Policies Related to CC: Migration

1. Bangladesh Climate Change Strategy and Action Plan (BCCSAP), 2009
Description: The BCCSAP is Bangladesh's national action plan aimed at building resilience to climate change. It covers six key themes, including food security, social protection, disaster management, infrastructure development, and capacity building. The plan recognizes migration as an adaptation strategy and highlights the need for interventions that address both temporary and permanent displacement due to climate impacts.
Relevance: The BCCSAP underscores the significance of climate-induced migration, particularly from vulnerable coastal zones. This project aligns with the BCCSAP's objectives by identifying migration drivers, mapping hotspots, and suggesting adaptive measures that could integrate with national climate strategies. The findings may provide actionable insights for the BCCSAP's future updates, emphasizing targeted support for communities prone to displacement.
2. National Adaptation Programme of Action (NAPA), 2005 and 2009 Updates
Description: NAPA outlines Bangladesh's short- and long-term strategies for adapting to climate change impacts. Its priorities include enhancing disaster management, improving infrastructure resilience, and increasing awareness of climate vulnerabilities. The plan acknowledges migration as a potential response to extreme climate events but lacks detailed guidance on managing migration.
Relevance: This project can supplement NAPA by providing specific data on migration patterns, economic and non-economic impacts, and the effectiveness of existing adaptation measures. Insights from this study could aid in refining NAPA's approach to climate-induced migration, potentially leading to more targeted interventions that reduce displacement risks in high-vulnerability areas.
3. Bangladesh National Strategy for Disaster Risk Reduction (DRR), 2016
Description: The DRR strategy outlines Bangladesh's approach to disaster risk reduction and management. It includes risk mitigation for natural disasters like cyclones, floods, and landslides, which are prevalent in coastal zones. The strategy indirectly acknowledges migration as an outcome of disaster vulnerability.
Relevance: This study aligns with the DRR strategy by focusing on migration triggered by disaster-related climate events. The findings on economic and non-economic losses due to climate events can inform the DRR's implementation, helping to tailor risk reduction measures to reduce migration pressures. Understanding specific community vulnerabilities could support more localized disaster preparedness and response plans.
4. Bangladesh National Strategy on Internal Displacement, 2015

Description: This strategy is Bangladesh's first dedicated policy document addressing internal displacement due to natural disasters and climate change. It recognizes the need for protecting internally displaced persons (IDPs) and highlights the role of infrastructure and livelihood support in mitigating forced displacement.

Relevance: This study directly contributes to the goals of the National Strategy on Internal Displacement by providing updated data on migration patterns, hotspots, and support systems for displaced communities in southwestern Bangladesh. Recommendations from this project could guide enhancements in the strategy, particularly concerning long-term support for climate-induced migrants.

5. Groundswell: Preparing for Internal Climate Migration (World Bank, 2018)

Description: This World Bank report provides projections on internal climate migration across various regions, including South Asia, by 2050. It emphasizes the importance of early planning and adaptive strategies to manage climate migration effectively.

Relevance: The report's projections on migration can be contextualized by this project's findings in Bangladesh's southwestern coastal areas. Data on the economic and social impacts of migration, gathered from this study, could refine predictions and inform the development of national and regional migration management policies.

6. 6) Climate-Induced Migration: Lessons from Bangladesh (IOM, 2015)

Description: This report by the International Organization for Migration (IOM) highlights lessons learned from climate-induced migration in Bangladesh, documenting the country's experiences and challenges in addressing migration as a climate adaptation response.

Relevance: This project builds on IOM's findings by conducting an in-depth analysis of migration in the southwestern coastal zone, adding to the body of knowledge on climate-induced migration in Bangladesh. The project's focus on migration hotspots, drivers, and adaptation needs can be directly aligned with IOM's recommendations, helping to enhance existing support frameworks for climate migrants.

-These policies, plans, schemes, studies, and reports are directly relevant to the "Comprehensive Study on Climate-Induced Migration in the Southwestern Coastal Zone of Bangladesh." Together, they establish a policy foundation and set of guidelines that underscore the need for evidence-based insights on climate-induced migration, resilience, and adaptation. This project contributes by filling gaps in existing knowledge, providing data and recommendations to support national and international efforts to address the impacts of climate-induced migration effectively.

Literature-Based GAP Analysis

To finalize and prepare the Gap Analysis for the project on climate-induced migration in the Southwestern Coastal Zone of Bangladesh, consultant will integrate findings from the agreed Terms of Reference (TOR) and the Research Question.

The ToR outlines the increasing challenges of climate-induced migration in the region due to environmental stressors such as sea-level rise, salinity intrusion, and extreme weather events. ECL's understanding and adopted study model aligns with ToR, providing details on the socioeconomic and environmental vulnerabilities of the project area. But, while there is a broad understanding of migration drivers, comprehensive data on the economic and non-economic impacts on both migrants and non-migrants remains limited, particularly at the micro-level. So, the consultant has already developed the recommending measure that is given below-

Table 1-1: Identified GAP & Recommendation Based upon Literature Review

Sr.No	Area	Identified GAP	Mitigation Measures
1	Migration Hotspots	Delay in hotspot finalization due to methodological dependencies on participatory mapping and GIS analyses.	Prioritize hotspot mapping with parallel data collection in unaffected areas for comparative analysis.
2	Policy Integration	Policies lack specific measures for long-term adaptation and migration management.	Advocate for policy integration focusing on sustainable livelihoods and urban resilience.

3	Loss & Damage Assessment	Limited integration of economic and non-economic loss quantification.	Develop a hybrid model combining quantitative and qualitative metrics.
4	Employment Opportunities	Misalignment between skills of migrants and available opportunities in host areas.	Design tailored skill-development programs informed by local labor market assessments.
5	Stakeholder Participation	Potential underrepresentation of vulnerable groups in qualitative data collection.	Ensure gender-balanced and inclusive stakeholder selection for FGDs and KIIs.
6	Data Quality and Timeliness	Risk of delays in data validation due to reliance on multiple data sources and tools.	Streamline data quality assurance protocols and adopt real-time data monitoring techniques.

1.1.4 Conceptual Framework

The decision-making process for migration in response to climate change impacts the consulting firm has adopted the most suitable foresight model (Rigaud, 2018), which will fulfil the project objectives. It highlights how various factors at different levels influence whether individuals or households decide to migrate or stay.

Critical Components:

Macro-Level Factors: These include broad, societal-level influences, such as political, demographic, economic, social, and environmental conditions. Additionally, different forms of capital (human, social, financial, physical, and natural) are considered. These factors create the larger context within which migration decisions are made.

Micro-Level Factors: These refer to personal or household characteristics, such as individual needs, risk perceptions, past experiences, beliefs, and trust levels. These elements shape the household's internal decision-making dynamics.

Meso-Level Factors: Meso-level factors include intermediating influences like political/legal frameworks, social networks, the cost of moving, recruitment agencies, and diasporic links. These factors act as facilitators or obstacles in the migration process, affecting the feasibility of migration.

Decision Process: At the core is the decision-making process, where households evaluate their needs and risks in light of norms, beliefs, and trust. This process leads to a choice between migration and staying.

In conclusion, this framework illustrates how climate change impacts migration decisions through a multi-layered interaction between macro, micro, and meso factors, shaping the ultimate choice to migrate or stay

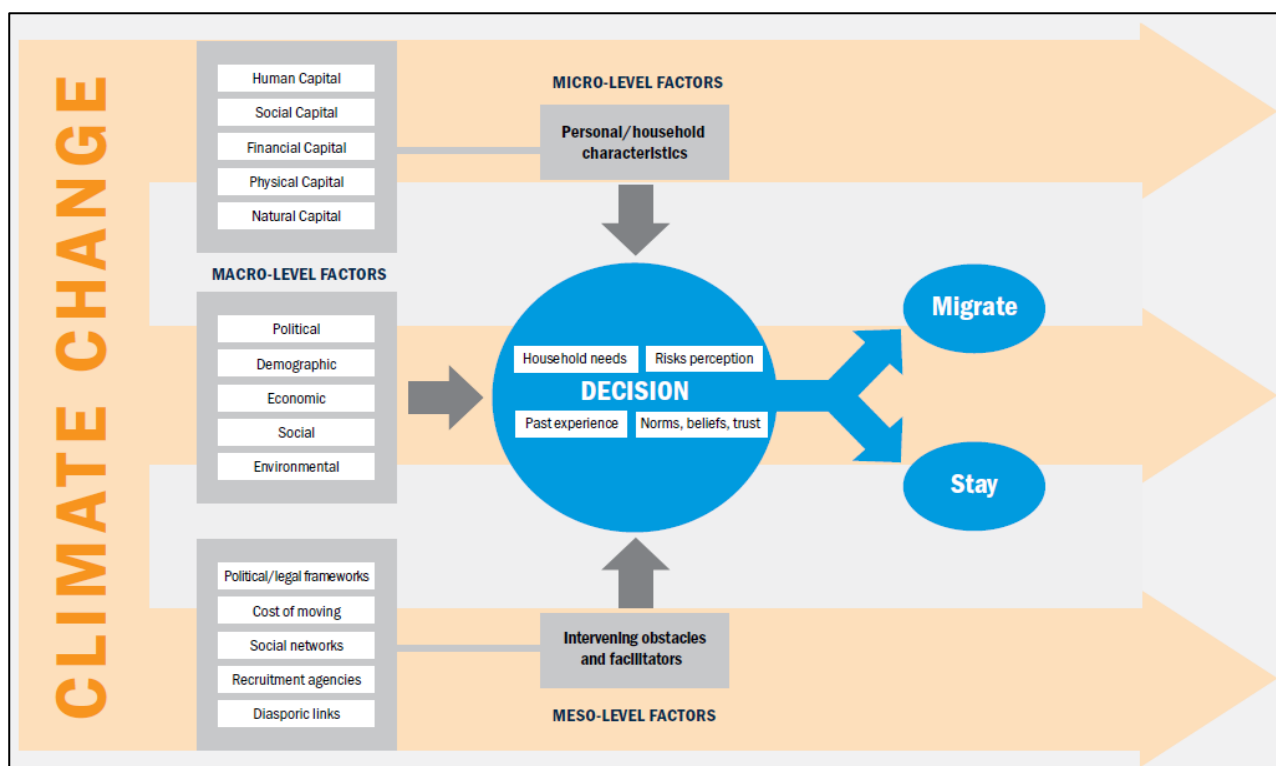


Figure 1-2: Climate-Induced Migration Foresight Model

Source: (Rigaud, 2018)

1.1.5 Research Matrix

The table represents a research matrix designed to systematically organize the study of climate-induced migration. It connects the study's objectives with key areas of inquiry, data sources, collection methods, and analytical techniques. This structured approach ensures that the research objectives are comprehensively addressed, and the data collected aligns directly with the information needed for analysis. The matrix explores patterns of climate migration—both short-term and permanent—by identifying and mapping origin and destination hotspots. It uses tools like GIS and PRA for data collection, enabling spatial analysis and participatory insights into migration trends. To analyze driving factors behind migration, the table incorporates both qualitative and quantitative approaches, ensuring a balanced understanding of environmental, social, and economic triggers. It also examines the economic and non-economic losses experienced by migrants and non-migrants, addressing aspects like property damage, health, cultural loss, and social cohesion. By focusing on both origin and destination hotspots, the study captures a holistic view of migration impacts. Furthermore, the matrix investigates employment opportunities in migration destinations, comparing them to migrants' skills and needs. This analysis informs recommendations for skill development and entrepreneurship models, aligning interventions with migrant livelihoods. By systematically linking each objective with relevant indicators, methods, and analytical tools, the matrix ensures a coherent and comprehensive approach to achieving the research objectives.

Objective	Migration pattern	Key indicators/information / areas we want to inquire	Source of information	Data collection method	Data analysis method
Identify and map hotspots of climate-induced migration using	Short-term/seasonal	Migration intensity, Livelihood stresses	Origin Hotspot	PRA, GIS, and GPS data collection	GIS mapping, spatial analysis,

Objective	Migration pattern	Key indicators/information / areas we want to inquire	Source of information	Data collection method	Data analysis method
GIS and remote sensing technologies.					hotspot analysis.
	Permanent and displacement	Migration trends, key climatic triggers (e.g., sea-level rise, salinity), socio-economic push factors.	Destination hotspot	PRA, GIS, and GPS data collection	GIS mapping, spatial analysis, hotspot analysis and descriptive statistics
Analyze the driving factors of climate-induced migration in the identified hotspots.	Short-term/seasonal	Economic pressures, loss of livelihoods, climate impacts (floods, droughts, salinity), access to basic services, household coping strategies.	Origin Hotspot	FGDs and KIIs (Qualitative) and household questionnaire survey (quantitative)	Thematic analysis (qualitative), Crosstabulation and descriptive statistics (quantitative)
	Permanent/displacement	Land and property loss, long-term livelihood loss, climatic impacts, economic opportunities, adaptation strategies	Destination hotspot	FGDs and KIIs (Qualitative) and household questionnaire survey (quantitative)	Thematic analysis (qualitative), Crosstabulation and descriptive statistics (quantitative)
Assess economic loss and damage (e.g., property damage, income loss) and non-economic loss and damage (e.g., Human life, Physical health, Mental and emotional well-being, Territory, Culture and practices, Indigenous and local knowledge, Ecosystem services and biodiversity, social fabric, Education, Mobility) experienced by climate migrants and non-	Short-term/seasonal	Income loss, asset damage, physical health impacts, mental well-being, access to services, education disruption, biodiversity changes, community cohesion.	Origin Hotspot	FGDs and KIIs (Qualitative) and household questionnaire survey (quantitative)	Thematic analysis (qualitative), estimation economic losses and descriptive analysis of non-economic losses (quantitative).
	Permanent/displacement	Loss of cultural practices, emotional well-being, migration costs, family separation, infrastructure damage, ecosystem changes.	Destination hotspot	FGDs and KIIs (Qualitative) and household questionnaire survey (quantitative)	Thematic analysis (qualitative), Comparative analysis (quantitative).

Objective	Migration pattern	Key indicators/information / areas we want to inquire	Source of information	Data collection method	Data analysis method
migrants in the hotspots.					
Determine and map primary destinations of climate-induced migrants and analyze the demographic and socio-economic characteristics of these destinations.	Short-term/seasonal	Migrant demographic profiles (age, gender, education, skills), household composition, employment status, housing conditions, access to services.	Origin Hotspot	FGDs and KIs (Qualitative) and household questionnaire survey (quantitative)	Descriptive statistics, Thematic analysis, GIS spatial analysis.
	Permanent/displacement	Population changes, urbanization effects, socio-economic disparities, housing conditions, infrastructure needs.	Destination hotspot	FGDs and KIs (Qualitative) and household questionnaire survey (quantitative)	Descriptive statistics, Thematic analysis, GIS spatial analysis.
Evaluate the availability and nature of employment opportunities in both host areas and migration destinations and examine how these opportunities align with migrants' skills and needs.	Short-term/seasonal	Availability of jobs, skill demands, wage levels, barriers to employment, employer perceptions, alignment with migrant skills, gaps in opportunities.	Origin Hotspot	FGDs and KIs (Qualitative) and household questionnaire survey (quantitative)	Gap analysis, SWOT analysis, Descriptive statistics, Thematic analysis
	Permanent/displacement	Long-term job availability, vocational training needs, skill gaps, income stability, migration-induced employment challenges.	Destination hotspot	FGDs and KIs (Qualitative) and household questionnaire survey (quantitative)	Gap analysis, SWOT analysis, Descriptive statistics, Thematic analysis
Propose Models of entrepreneurship and skills development to Support Potential Migrants.	Both urban and rural migrants	Feasibility of entrepreneurship, training needs, access to credit, market demands, successful models of entrepreneurship in similar contexts, skill-building programs, role of government and NGOs.	Origin Hotspots Destination hotspots	Qualitative and quantitative method	Analysis of quantitative and qualitative findings and scenario building

1.2 Study methodology

1.2.1 Data collection methods

Component 1: Understanding the Context

Objective: To understand the historical context of climate change impacts and migration patterns in the study area.

Methods:

- Literature Review: Review of previous studies on climate change, migration dynamics, and socio-economic factors affecting the region.
- Document Analysis: Examination of government and NGO reports, policies, and IPCC findings on climate impacts in Bangladesh.

Outputs:

- Overview of historical climate impacts and migration trends.
 - Identification of knowledge gaps and baseline information for the study.
-

Component 2: Mapping of Climate-induced Migration Hotspots

Objective: To identify specific locations within the study area that are most affected by climate-induced migration.

Methods:

- Spatial Analysis: Using Geographic Information System (GIS) to map migration hotspots based on climate vulnerability data (e.g., salinity levels, flood zones, cyclone pathways).
- GIS/RS: Analysing DEM, Cyclone paths, Flood Proxies to detect changes in settlement pattern, vegetation, and water bodies that may indicate environmental degradation.
- Participatory Hotspot Mapping: Participatory GIS mapping will be used to identify migration hotspots in the places of origin. The process will begin with a transect walk to explore areas where people commonly gather. During this walk, we will organize small group discussions to identify settlement clusters (paras or mahallas) where migration has frequently occurred, including areas where permanent migration has historically taken place. Once this information is gathered, we will mark the identified hotspots on a GIS map within the ward boundaries of the Union. Afterward, we will visit each of these settlement clusters to collect GPS coordinates of migrant households. This will allow us to map both clusters of houses and individual migrant households. During these visits, we will collect additional information regarding the types of migration, the causes of migration, the names of destinations, and the years of migration. Using this data, we will develop a GIS-based hotspot map that highlights the locations of migrants in the place of origin. Furthermore, we will explore and map the locations of destinations where climate-induced migrants have settled in the cities.

Outputs:

- Spatial maps highlighting migration hotspots.
 - Dataset on environmental vulnerability indicators for targeted areas.
-

Component 3: Driving factors behind migration

Objective: To determine the main factors driving migration, with a focus on environmental, economic, and social influences.

Methods:

- Quantitative Surveys: Conduct household surveys in identified hotspots to gather data on migration motivations and experiences.
- Qualitative Surveys: Conducting FGDs and KIs with local residents, community leaders, and government officials to understand localized drivers of migration.
- Statistical Analysis: Use quantitative analysis to assess correlations between climate change and migration rates.

Outputs:

- Comprehensive report on migration drivers.
-

-
- Quantitative analysis of how environmental stressors impact migration decisions.
-

Component 4: Impact Assessment

Objective: To assess the economic, social, and cultural impacts of migration on both migrants and host communities.

Methods:

- Case Studies: Conduct case studies of specific communities impacted by migration to capture nuanced social and economic impacts.
- FGDs & KIIs: Facilitate FGDs with migrants and KIIs with both host and destination areas community members, government persons, NGO workers, disaster prevention committee to explore challenges and adaptation strategies.
- Economic Impact Assessment: Analyse changes in income, employment, housing, and access to services for migrants and host communities.

Outputs:

- Report on socio-economic impacts of migration including livelihood changes and community integration.
 - Comparative analysis of challenges faced by migrants and residents of host communities.
-

Component 5: Adaptation Mechanism & Livelihood Model

Objective: To understand the current support mechanisms and propose an actionable livelihood model that supports sustainable livelihoods opportunity.

Methods:

- Institutional Analysis: Assess the roles and capacities of government agencies, NGOs, and community organizations in providing support.
- HH Survey, FGDs & KIIs: Conducting interviews with representatives from government bodies, NGOs, and local organizations and community people to understand existing initiatives and limitations. Also, doing FGDs with migrants to understand their employment perspective too.
- Scenario Analysis: Exploring potential future climate scenarios and their impacts on migration to anticipate needed interventions.

Outputs:

- Evaluation of current support systems and develop a suitable livelihood model for the migrants.
 - Set of targeted recommendations for policymakers, including climate resilience and migration management strategies through sustainable entrepreneurship & skill development model.
-

The project area encompasses the southwestern coastal Upazilas of Assasuni, Koyra, Morrelganj, Paikgacha, Sarankhola, and Tala, located in the Khulna, Satkhira, and Bagerhat districts of Bangladesh. This region is marked by its vulnerability to climate change, with rising sea levels, increased salinity, frequent cyclones, and waterlogging posing significant challenges. The population primarily depends on climate-sensitive livelihoods such as agriculture, shrimp farming, and fishing, which are increasingly threatened by environmental changes. Figure 1-3: Project study area



1.2.3 Sampling Techniques

This study will adopt a comprehensive approach by including households from both the place of origin and the place of destination in its household survey. The sample frame for the study consists of all households in 25 Unions across the Upazilas of Assasuni, Koyra, Morrelganj, Paikgacha, Sarankhola, and Tala, as well as major cities such as Khulna, Bagerhat, and Satkhira. of 434 households were selected for this study where 234 households were chosen based on their place of origin, while the remaining 200 households were selected as the destination place across the urban areas like- Khulna City Corporation (KCC), Bagerhat Paurashava, Satkhira Pourashava, Upazila Headquarters. For better analysis 33 more data is collected from the study area.

1.2.3.1 Hotspot area Selection

Hotspot mapping of climate migrants is a spatial analysis technique used to identify and visualize geographic areas that experience significant climate-induced migration. After every disaster or due to regular climate change, a considerable amount of people regularly migrate to the less exposed areas. Nearby city centers become an ideal location for these migrated people as there are more livelihood opportunities. So, one of the objectives of the project was to identify the hotspots both in Origin and Destination.

To Identify the migrants both in origin and destination the study employed snowball sampling technique. Household questionnaire survey was performed to collect primary data. Afterwards geospatial tool (ArcGIS) was utilized to visualize the location of these migrants both in origin and destination area.

Total 25 unions from 3 districts are considered as study area. Among these 25 unions, 23 unions have major or minor hotspot among them. Unions like Kapilmuni, Garuikhali, Gadaipur, Raruli has comparatively bigger hotspot than other unions. Bagali union from Koyra Upazila, and Balaibunia union form Morrelganj Upazila do not have any hotspots. On the other hand among the destinations Khulna has 4 hotspots, Bagerhat has 4 Hotspots, Satkhira has 3 Hotspots.

Table 1-2: Hotspot among the study areas

Project Area	Upazila	Union	Major Hotspot	Minor Hotspot
Khulna	Koyra	Amandi	3	0
		Bagali	0	0
		Moharajpur	2	2
		Koyra	1	4
		Uttar Bedkashi	1	2
	Paikgacha	Garaikhali	2	0
		Kapilmuni	4	0
		Godaipur	3	0
		Raruli	3	0
Satkhira	Assasuni	Protapnagar	2	0
		Kadakati	1	0
	Tala	Dhandia	2	1
		Islamkati	2	1
Bagerhat	Morrelganj	Baharbunia	3	4
		Balaibunia	0	0
		Baroikhali	1	0
		Putikhali	2	0

Project Area	Upazila	Union	Major Hotspot	Minor Hotspot
		Jiduhara	2	1
		Khaulia	1	0
		Morrelganj Sadar	1	0
		Nishanbaria	1	1
		Panchakaran	2	5
		Putkhali	2	2
	Sharankhola	Dhansagar	1	0
		Khontakata	2	1
		Rayenda	3	1
Urban Area	Urban Areas	Khulna CC	4	0
		Bagherhat Sadar	3	0
		Sathkhira Sadar	3	0
Total=	25 Unions and Destination Urban Areas		57	25

1.2.4 Sample Distribution

Selected Unions from Origin Areas for Data Collection:

Districts	Upazila	Unions	Total No. of Surveys
Khulna	Koyra	Koyra	30
		Maharajpur	30
	Paikgacha	Gadaipur	30
Sathkhira	Assasuni	Pratapnagar	30
	Tala	Dhandia	30
Bagerhat	Sharonkhola	Rayenda	30
	Morrelganj	Baharbunia	30
		Putikhali	30
Total			240

Data Collection from Destination Areas (Urban Hotspots):

To capture the perspective of migrants at their destination, 200 data will be collected from key urban hotspots:

- Khulna City Corporation: 80 Household Surveys from 4 major hotspots where 20 data from each hotspot. Hotspot Locations are; Green Land (5 No. Ghat), Khora Bosti (Middle of Sonadanga And 250 Bed), Notun Bazar (Rupsha Slum) And Khal Par (Jorakol Bazar, Tutpara)
- Bagerhat Paurashava: 60 Household Surveys from 3 major hotspots where 20 data from each hotspot. Hotspot Locations are; Nager Bazar, Rail Road, Alia Madrasah, (Additional: Jatrapur & Radha Bollob)
- Sathkhira Paurashava: 60 Household Surveys from 3 major hotspots where 20 data from each hotspot. Hotspot Locations are; Jarinar Ber (Laskarpur) Rajar Bagan Lichu Tola, Katia Mathpara Juti Tola Rishipara, Kazipara Bager Bosti,

KII Distribution of Khulna District:

Respondent Type	District	Upazila	Union	No. of Surveys	Assigned Expert
UNO	Khulna	Paikgacha	-	1	Field Supervisor
Upazila/Union Disaster Management Committee Representative	Khulna	Koyra	Koyra	1	Field Supervisor
		Paikgacha	Gadaipur	1	Field Supervisor
Union Shacib	Khulna	Koyra	Maharajpur	1	Field Supervisor
		Paikgacha	Gadaipur	1	Field Supervisor
Union Member's	Khulna	Koyra	Koyra	2	Field Supervisor
			Maharajpur	1	Field Supervisor
		Paikgacha	Gadaipur	1	Field Supervisor
PIO	Khulna	Paikgacha	-	1	Field Supervisor
NGO Representatives	Khulna	Koyra		1	Field Supervisor
Teacher	Khulna	Koyra	-	1	Field Supervisor
Religious Leader (Hindu)	Khulna	Paikgacha	Gadaipur	1	Field Supervisor
Civil Society Representative	Khulna	Koyra	Maharajpur	1	Field Supervisor
		Paikgacha	Gadaipur	1	Field Supervisor
Police	Khulna	-	-	1	Deputy Team Leader
Department of Social Welfare Representative	Khulna	-	-	1	Team Leader
CPP/Other Volunteer	Khulna	Koyra		1	Field Supervisor
Local Student Association	Khulna	Khulna Sadar	-	1	Team Leader
Relevant Academicians	Khulna University	Md. Mustafizur Rahman	-	1	Team Leader
	Khulna University of Engineering and Technology	Dr. Tusar Kanti Roy	-	1	Team Leader
Local Community Leaders	Khulna	Paikgacha	Gadaipur	1	Field Supervisor
Total				22	

FGD Distribution of Khulna District:

Respondents Type	Districts	Upazila	Union	Sub-total Number of Survey
Voluntary Migrants	Khulna	Koyra	Koyra	1

Respondents Type	Districts	Upazila	Union	Sub-total Number of Survey
Temporary Migrants			Maharajpur	1
Permanent Migrants		Khulna Sadar	-	1
Total				3

KII Distribution of Bagerhat District:

Respondent Type	District	Upazila	Union	No. of Surveys
UNO	Bagerhat	Morrelganj	-	1
Upazila/Union Disaster Management Committee Representative	Bagerhat	Sharonkhola	Rayenda	1
		Morrelganj	Baharbunia	1
Union Shacib	Bagerhat	Sharonkhola	Rayenda	1
		Morrelganj	Putikhali	1
Union Member's	Bagerhat	Morrelganj	Baharbunia	2
			Putikhali	1
		Sharonkhola	Rayenda	2
PIO	Bagerhat	Sharonkhola	-	1
NGO Representatives	Bagerhat	Sharonkhola		1
Teacher	Bagerhat	Morrelganj	-	1
Religious Leader (Muslim)	Bagerhat	Morrelganj	Baharbunia	1
Civil Society Representative	Bagerhat	Sharonkhola	Rayenda	1
		Morrelganj	Putikhali	1
Police	Bagerhat	-	-	1
Department of Social Welfare Representative	Bagerhat	-	-	1
CPP/Other Volunteer	Bagerhat	Morrelganj		1
Local Student Association	Bagerhat	Bagerhat Sadar	-	1
Relevant Academicians	-	-	-	-
Local Community Leaders	Bagerhat	Morrelganj	Putikhali	1
Total				21

FGD Distribution of Bagerhat District:

Respondents Type	Districts	Upazila	Union	Sub-total Number of Survey
Temporary Migrants	Bagerhat	Morrelganj	Baharbunia	1
Non-Migrants			Putikhali	1
Total				2

KII Distribution of Satkhira District:

Respondent Type	District	Upazila	Union	No. of Surveys
UNO	Satkhira	Tala	-	1
Upazila/Union Management Representative	Satkhira	Assasuni	Pratapnagar	1
		Tala	Dhandia	1
Union Shacib	Satkhira	Assasuni	Pratapnagar	1
		Tala	Dhandia	1
Union Member's	Satkhira	Assasuni	Pratapnagar	2
		Tala	Dhandia	1
PIO	Satkhira	Assasuni	-	1
NGO Representatives	Satkhira	-	-	-
Teacher	Satkhira	Tala	-	1
Religious Leader (Hindu)	Satkhira	-	-	-
Civil Society Representative	Satkhira	Assasuni	Pratapnagar	1
		Tala	Dhandia	1
Police	Satkhira	-	-	1
Department of Social Welfare Representative	Satkhira	-	-	1
CPP/Other Volunteer	Satkhira	Assasuni		1
Local Student Association	Satkhira	Satkhira Sadar	-	1
Relevant Academicians	Satkhira	-	-	-
Local Community Leaders	Satkhira	Tala	Dhandia	1
Total				17

FGD Distribution of Satkhira District:

Respondents Type	Districts	Upazila	Union	Sub-total Number of Survey
Seasonal Migrants	Satkhira	Assasuni	Pratapnagar	1
Non-Migrants		Tala	Dhandia	1
Permanent Migrants		Satkhira Sadar	-	1
Total				3

In-Depth Interviews (Case Stories) Distribution:

Respondents Type	Districts	Upazila	Union	Sub-total Number of Survey
Potential Migrants	Bagerhat	Morrelganj	-	1
Seasonal Migrants	Khulna	Paikgacha	Gadaipur	1
	Satkhira	Tala	Dhandia	1
Permanent Migrants	Bagerhat	Bagerhat Sadar	-	1
	Khulna	Khulna Sadar	-	1
Total				5

1.2.5 Data Analysis Methods

The data analysis focused on drawing meaningful conclusions from both field data and secondary sources. A combination of statistical analysis for quantitative data and thematic analysis for qualitative data has been used. This mixed-method approach enabled the identification of key trends, patterns, and relationships that explain migration drivers, assess impacts, and inform policy recommendations.

Quantitative Data Analysis

Quantitative data is collected primarily through structured surveys, GIS-based spatial data, and economic impact assessments. This type of data will be analysed to provide measurable insights into the migration process.

Descriptive Statistics

Basic descriptive statistics has been used to summarize the demographic and socio-economic characteristics of the surveyed population. This included measures like mean, median, frequency distributions, and percentages to present an overview of factors such as income levels, employment status, and migration frequency.

Spatial Analysis

GIS data has been used to conduct spatial analysis, mapping migration hotspots, migration pattern **(Temporary, Permanent, Voluntary, Forced, Seasonal Migrants)**, and migration OD spatial matrix. Overlaying socio-economic data with spatial data helped identify correlations between geographic factors (e.g., proximity to the coast, sea-level rise) and migration patterns too.

Economic Loss Quantification

Using economic data gathered from the field, a detailed assessment of economic losses has been performed. This included analysing the decline in income, property loss, and disruption to livelihoods, particularly in agriculture and fisheries, which are highly vulnerable to climate change in the region.

Qualitative Data Analysis

Qualitative data, gathered through focus group discussions (FGDs) and key informant interviews (KIIs), provided a deeper understanding of the non-economic impacts and socio-cultural factors driving migration.

Thematic Analysis

Qualitative data has been analysed thematically to identify recurring patterns and themes. Key themes included emotional and psychological well-being, cultural loss, and community resilience. This type of analysis highlighted the human and social dimensions of migration that cannot be quantified through numerical data alone.

Comparative & Narrative Analysis

Data from different communities or hotspots has been compared to understand the variation in migration drivers and impacts across different regions. This comparative analysis helped in tailoring solutions to the specific needs of diverse groups within the southwestern coastal zone. On the other hand, Migration experiences, personal stories, and testimonies collected during the FGDs and KIIs will be used to construct a narrative around the non-economic losses, such as mental health impacts, loss of social networks, and changes in cultural practices.

1.3 Challenges and limitations

This study has generated a comprehensive profile of climate migrants. The process of generating findings was very smooth but methodologies can have some flaws as well. Main constrain with the study was time. This research has significantly large area to cover. Hotspot mapping is very requiring time and precision. So, covering a large area with a short period of time was challenging. But this study has successfully identified major hotspot of the area. Another issue was getting an interview form upazila officials as there is some political instability is going on in the country.

2 Findings, discussion, and analysis

2.1 Demographic information

2.1.1 Locational distribution of data

Total of 477 data (266 from origin and 211 from destination) was collected from the field. Due to some misunderstanding 4 of the desnitiation data got inputed into origin form and 1 of the destination data

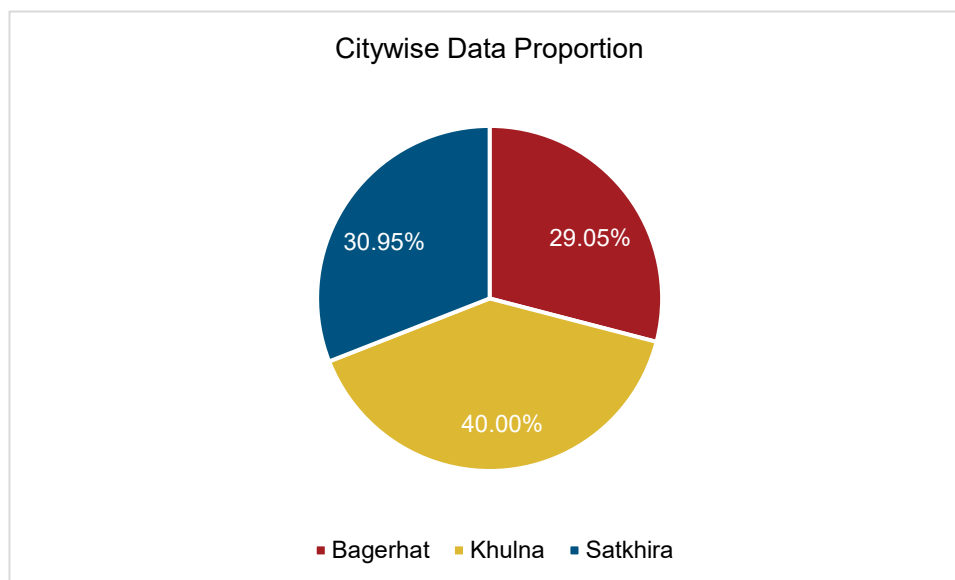


Figure 2-1: City wise Data Proportion

lacking enough information consequently these four data is excluded from the analysis. The remaining origin data is distributed across eight unions, with each union receiving a specific proportion of the total data to ensure balanced representation. The highest proportion of data, 13.36%, is allocated to both Gadaipur and Dhandia, indicating a focus on these areas, possibly due to their significance or larger population. Moharajpur accounts for 12.98% of the data, followed closely by Koyra and Rayenda, each

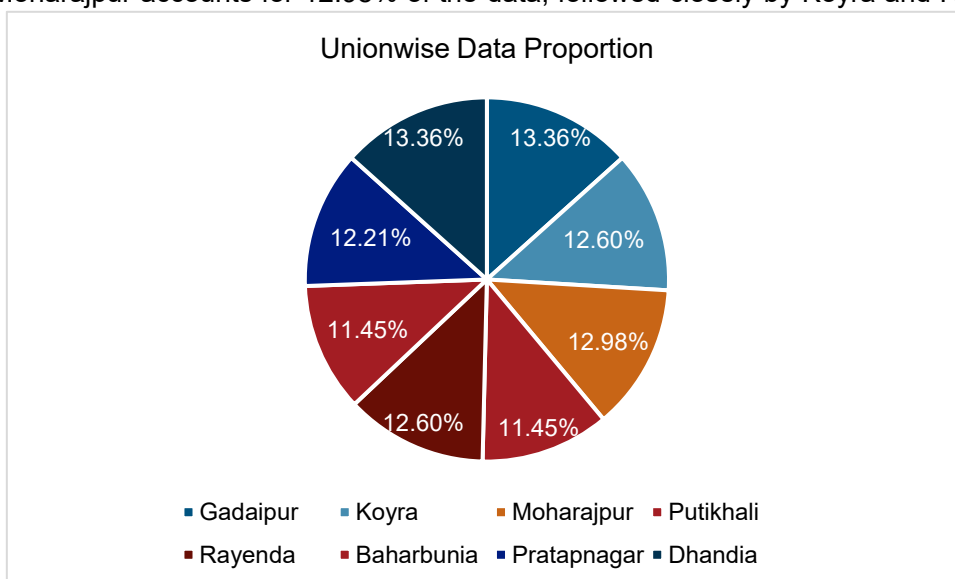


Figure 2-2: Union wise Data Proportion

with 12.60%. Pratapnagar holds 12.21% of the total data, while Baharbunia and Putikhali each account for 11.45%. For destination Khulna holds the largest share with 40.00% of the total data. Satkhira accounts for 30.95% of the data, while Bagerhat represents 29.05%, both contributing nearly equal portions. This distribution reflects a strategic effort to ensure comprehensive coverage across the three cities, allowing for more robust and regionally inclusive analysis

2.1.2 Age-Sex Pyramid

The comparison of age-sex ratios at the migration destination and origin reveals notable differences across age groups. For children aged 0-5, a higher percentage is observed at the origin compared to the destination, indicating that many young children remain in their place of origin, possibly due to caregiving

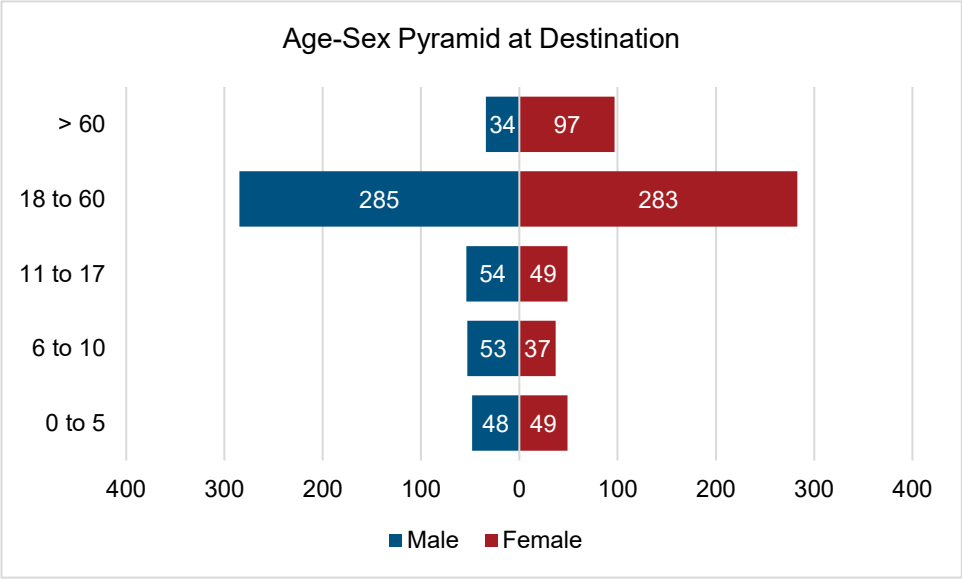


Figure 2-3: Age-sex pyramid at destination

needs. Among the 6-10 and 11-17 age groups, the proportion of males is higher at the destination, suggesting that boys in these age groups are more likely to migrate than girls. In the working-age group (18-60), both males and females are more concentrated at the origin than at the destination, reflecting that a significant portion of the working population remains at their place of origin, potentially due to local employment opportunities or family responsibilities. For the 60+ age group, the percentage of elderly females is notably higher at the destination than at the origin, which may indicate older women migrating to join family members or to access better care and support.

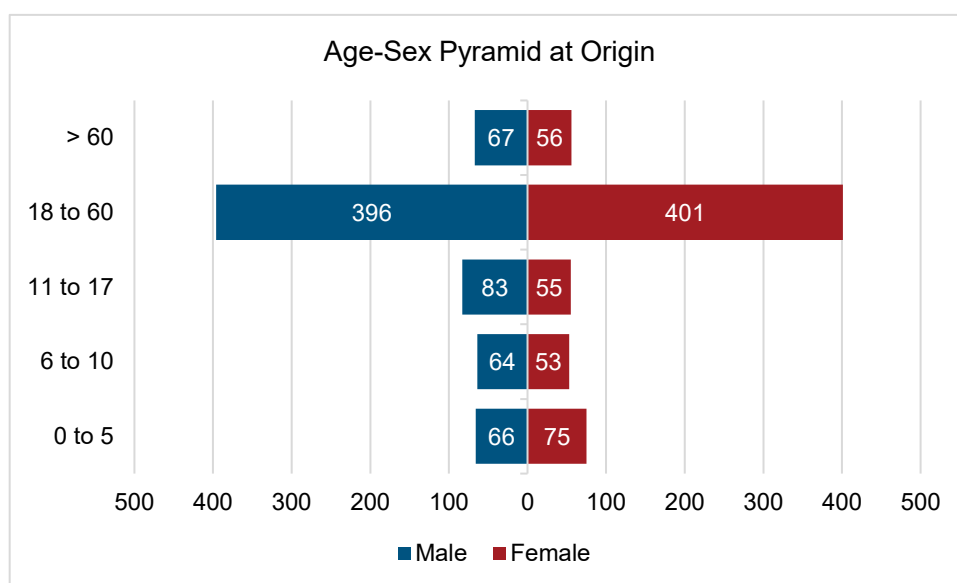


Figure 2-4: Age-Sex Pyramid at Origin

2.1.3 Disability

The distribution of disabled members in respondents' households across different upazilas reveals significant variation. Koyra has the highest percentage of households with disabled members, accounting for 33.93% of the total. Morelganj follows with 21.43%, while Sarankhola and Paikgacha have 16.07% and 14.29%, respectively. Households in Tala and Assasuni have relatively lower proportions, with 10.71% and 3.57%, respectively. This variation suggests that Koyra may have a higher prevalence of disability among household members, which could be linked to environmental, social, or economic factors unique to the region.

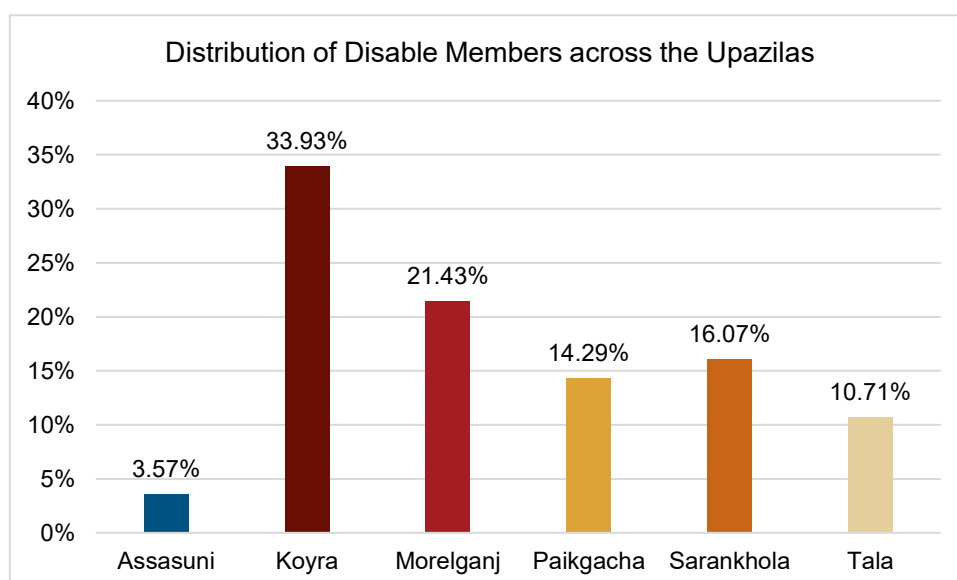


Figure 2-5: Distribution of disable member across the upazilas

The distribution of disability among household members across the destination cities indicates that Bagerhat has the highest proportion at 47.76%. Satkhira follows with 28.36%, while Khulna has the lowest proportion at 23.88%. This distribution highlights that Bagerhat accommodates a significantly larger share of households with disabled members compared to Khulna and Satkhira.

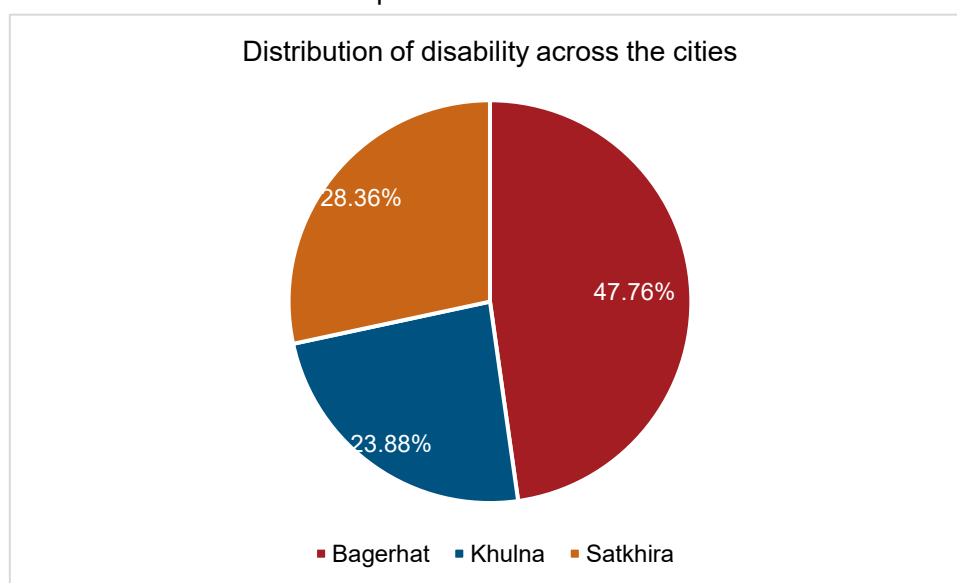


Figure 2-6: Distribution of disable member across the destination cities

2.1.4 Religion

All respondents at the destination identify as Muslim, representing 100% of the population. This indicates a homogeneous religious composition among the migrant households in the study area.

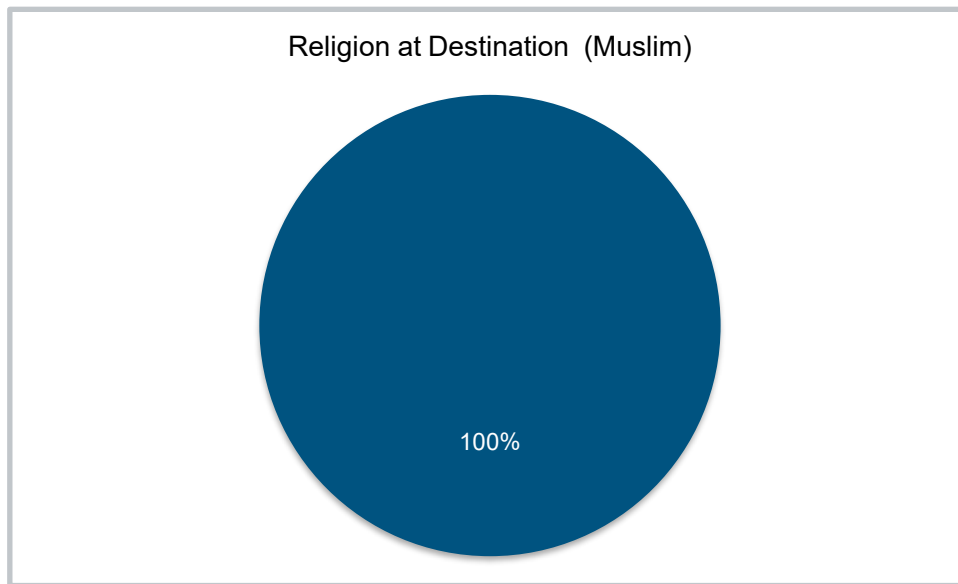


Figure 2-7: Religion at destination

2.2 Hotspots of climate-induced migration

Combine Hotspot analysis

The map identifies key origin and destination hotspots for disaster-induced migration across Khulna, Satkhira, and Bagerhat districts in coastal Bangladesh. A total of nine unions were selected from 25 based on the intensity of hotspots. Origin hotspots include Koyra (1 hotspot) and Maharajpur (2 hotspots) in Khulna, Gadaipur (3 hotspots) in Paikgacha, Pratapnagar (2 hotspots) in Assasuni, and Dhandia (2 hotspots) in Tala under Satkhira. In Bagerhat, Putikhali (2 hotspots) and Baharbunia (3 hotspots) in Morrelganj, along with Panchakaran (2 hotspots) and Rayenda (3 hotspots) in Sharankhola, were highlighted. On the destination side, Khulna City Corporation (4 hotspots), Bagerhat Pourosova (3 hotspots), and Satkhira Pourosova (3 hotspots) were identified as major relocation points.

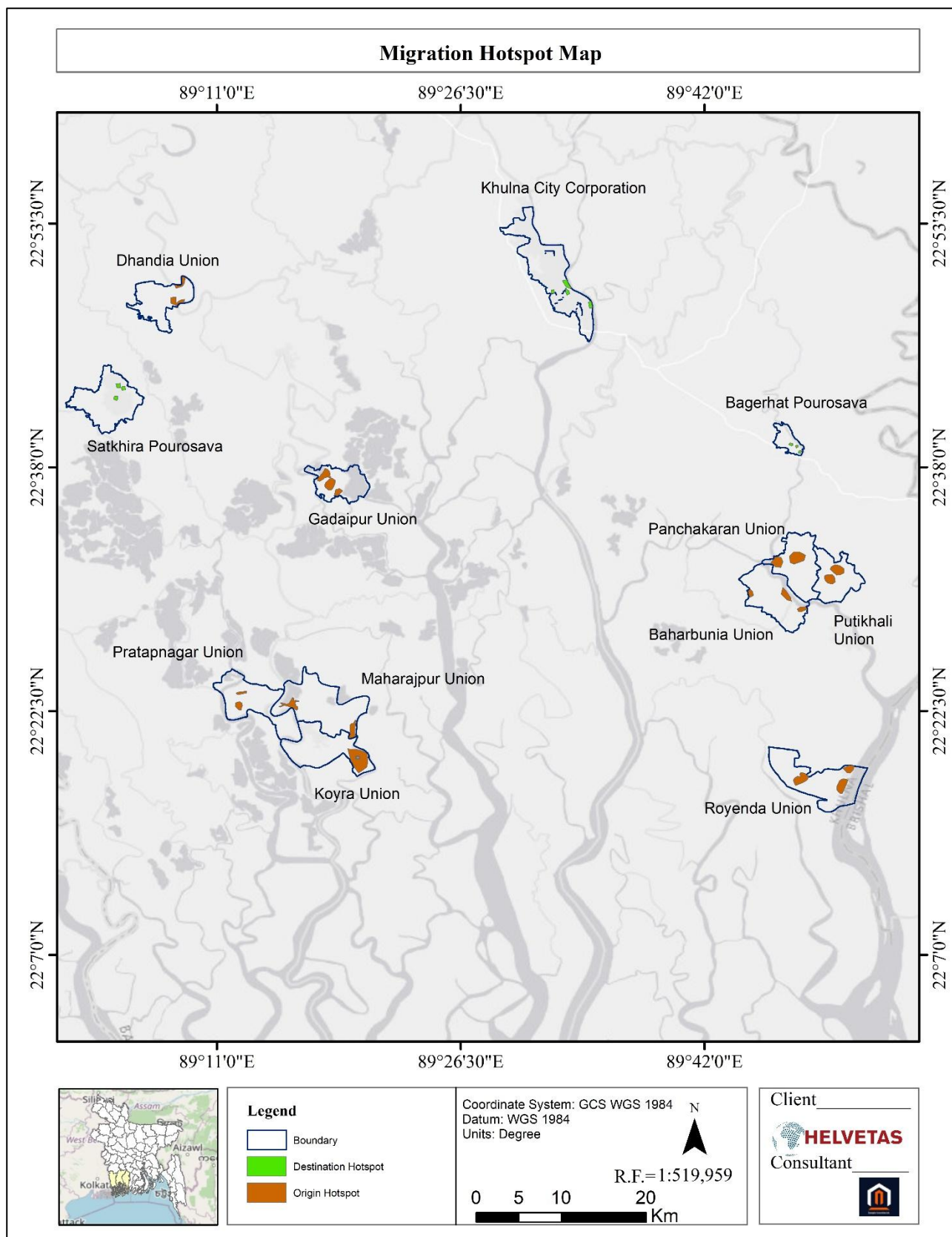


Figure 2-8: Combine Hotspot Map

2.2.1 Short-term/ seasonal:

2.2.1.1 Migration Intensity

The intensity of seasonal migration in the southwestern coastal zone of Bangladesh is directly linked to local climate conditions, particularly salinity intrusion and flooding. In Khulna District, areas like Koyra and Paikgacha experience significant migration during the dry season when agricultural activities are disrupted by increasing salinity. As Rabiul Islam from Koyra Union shared, *"During the summer, when the land becomes too salty, we have no work left, so I go to Khulna to find seasonal work. Without it, we wouldn't be able to survive."*

In Bagerhat District, seasonal migration spikes during the monsoon season due to cyclonic events and flooding. Md. Bellal Hossain from Morrelganj explained, *"During the monsoon, my fields get flooded, and I can't grow crops. I have no choice but to migrate for work."* Similarly, Nur Box Gazi from Sarankhola highlighted the hardship, saying, *"Floods bring a lot of damage. We can't work on the land, so we go to Khulna to work in the city. We get temporary jobs there, like construction work, but it's hard."* In Satkhira District, particularly in Assasuni, seasonal migration follows a similar pattern. Md. Salauddin described, *"When the saltwater destroys our crops, I have to find work elsewhere. This year, I went to Satkhira for seasonal work in the fields. It's not easy, but it's better than staying home and doing nothing."*

Overall, the frequency and intensity of seasonal migration reflect the urgent need for alternative livelihood strategies in response to the ongoing environmental stresses faced by rural communities.

2.2.1.2 Livelihood Stresses

Unemployment Intensity Increased at Origin due to Climate change

Out of a total of 107 respondents who believe climate change impacted unemployment, 51.40% reported experiencing severe unemployment at their origin due to climate change. Additionally, 39.25% of respondents stated that they faced moderate impacts, while 9.35% reported only slight damage to

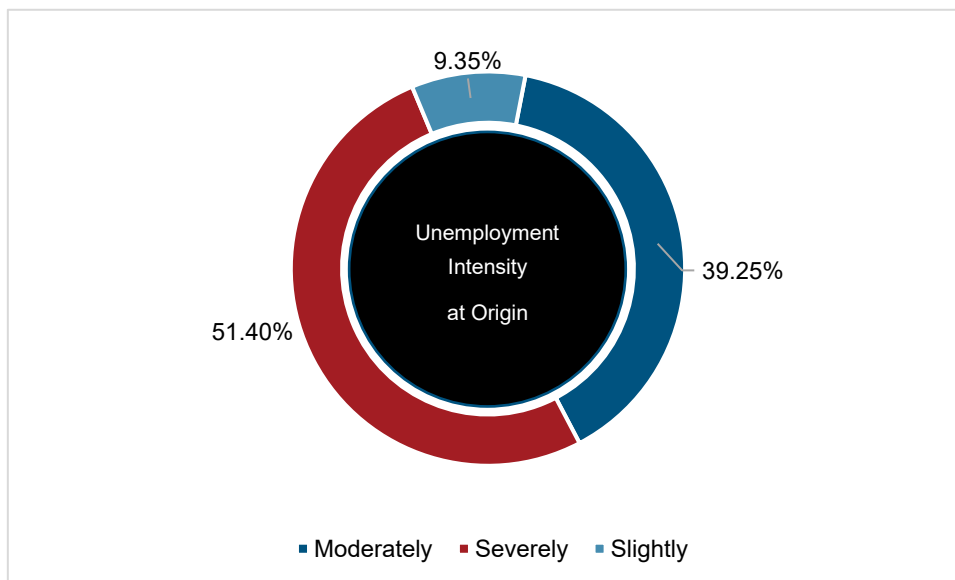


Figure 2-9: Intensity of increasing Unemployment at Origin due to Climate Change

employment opportunities. These findings highlight that the vast majority (over 90%) of respondents experienced moderate to severe disruptions in employment, underscoring the significant role of climate change in affecting livelihoods and economic stability at the origin.

People migrating for income sources

A significant portion of respondents, 57.31%, reported migrating to other places for income generation from their place of origin, while 42.69% did not. This suggests that the pursuit of better livelihood opportunities serves as a major driver of migration for many individuals.

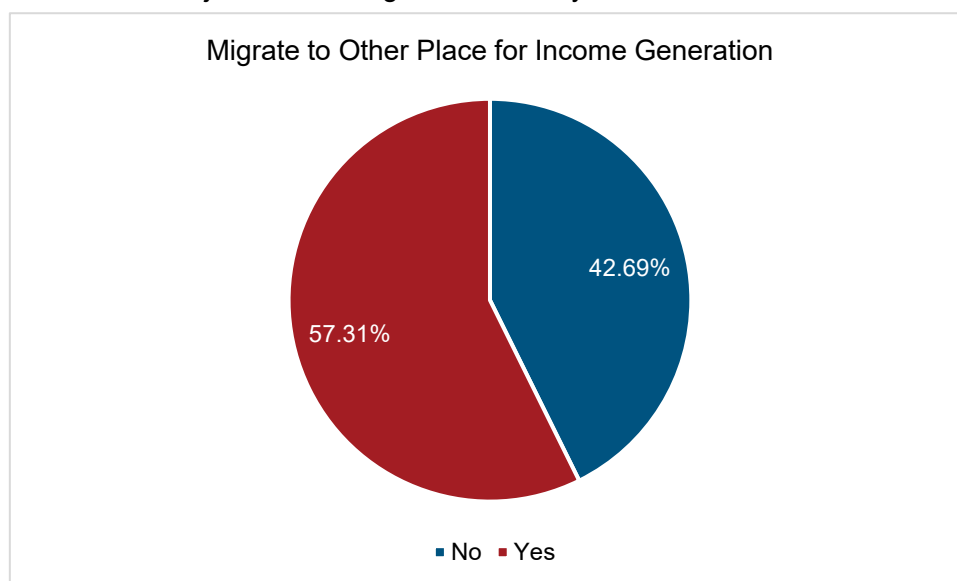


Figure 2-10: People migrating to other areas for livelihood

2.2.1.3 Qualitative findings of Hotspots of climate-induced migration (Short-term)

The southwestern coastal zone of Bangladesh is highly affected by climate-induced stresses, leading to significant patterns of seasonal migration. This region, covering areas like Khulna, Satkhira, and Bagerhat, faces frequent environmental challenges, including salinity intrusion, river erosion, flooding, and cyclones, all of which directly impact livelihoods and push people to migrate temporarily for survival.

In Khulna District, particularly in areas like Koyra and Paikgacha, seasonal migration is a coping mechanism tied directly to agricultural cycles. With salinity intrusion during the dry season, many agricultural activities, including rice farming and shrimp farming, are severely disrupted. As salinity levels increase, families are left with few sources of income, and migration to urban centers like Khulna city becomes an immediate solution. For example, Rabiul Islam from Koyra Union shared, *"During the summer, when the land becomes too salty, we have no work left, so I go to Khulna to find seasonal work. Without it, we wouldn't be able to survive."* Seasonal migration from Paikgacha follows a similar pattern, with people migrating mainly for labor in the brickfields, construction sites, and in the informal sector. Women also engage in domestic work in urban centers during these times. In fact, Md. Madhu Sardar, a resident of Paikgacha, mentioned that *"while the men work in construction, the women go to nearby cities for housework to sustain their families. The environmental stressors during these times push families to leave for a few months, with the peak migration months being during the summer and rainy seasons when agricultural work is most severely impacted."*

In Bagerhat District, particularly in Morrelganj and Sarankhola, migration intensity is also linked to cyclonic events and flooding. Md. Bellal Hossain from Morrelganj shared his experience of migrating to Khulna city every year during the monsoon season when heavy rains flood his fields, making it impossible for him to earn a livelihood from farming. *"During the monsoon, my fields get flooded, and I can't grow crops. I have no choice but to migrate for work,"* he said. Similarly, Sarankhola residents are forced to migrate seasonally for work during and after flooding events. Nur Box Gazi from Sarankhola mentioned, *"Floods bring a lot of damage. We can't work on the land, so we go to Khulna to work in the city. We get temporary jobs there, like construction work, but it's hard."*

The seasonal migration trends in Satkhira District, particularly in areas like Assasuni and Tala, align with the patterns seen in Khulna and Bagerhat, with salinity and flooding being the main drivers. In Assasuni, Md. Salauddin described how he migrates during the off-season for agriculture, when saline intrusion

makes farming unfeasible. *"When the saltwater destroys our crops, I have to find work elsewhere. This year, I went to Satkhira for seasonal work in the fields. It's not easy, but it's better than staying home and doing nothing,"* he shared. The majority of people in these areas also migrate to nearby urban centers, where they engage in low-wage labor, particularly in agriculture, brick kilns, and construction, to supplement their incomes.

The intensity of seasonal migration, therefore, is tied directly to the local climate conditions, especially salinity during the dry season, and flooding during the rainy season. These environmental challenges exacerbate livelihood stresses in rural communities, compelling people to seek temporary work in urban centers. Urban slums like Khulna city and Bagerhat become crucial destinations, providing jobs in informal sectors, though these opportunities are often insufficient to offer long-term security.

2.2.2 Permanent and displacement:

2.2.2.1 Migration trends

The migration trend in the southwestern coastal zone of Bangladesh is shifting from seasonal to permanent migration due to escalating environmental stressors. In Khulna District, particularly in Koyra, permanent displacement is becoming more prevalent as recurring cyclones and salinity make it increasingly difficult for families to return. Md. Bellal Hossain, who migrated to Khulna city permanently after Cyclone Sidr, explained, *"The saltwater ruined everything. Our land was flooded, and crops died. We couldn't farm anymore, so we came to Khulna. Now, I have to stay here."* Similarly, Rabiul Islam from Koyra added, *"There's no future in farming anymore. The saltwater keeps coming, and the land gets destroyed. We moved to Khulna because staying in Koyra meant we would lose everything."* In Bagerhat, permanent migration is driven by salinity and river erosion. Md. Madhu Sardar from Morrelganj shared, *"After Aila, the soil was ruined. We had nothing left to fall back on, and we had to move to the city for survival. Farming was no longer an option."* In Satkhira District, the trend is similar, with flooding and saline intrusion accelerating permanent displacement. The migration trend highlights how environmental degradation is pushing rural families toward urban areas, with Khulna city, Bagerhat, and Satkhira being primary destinations.

2.2.2.2 Key Climatic Triggers

Role of Hazard on Migration

The role of hazards in driving migration is evident from the distribution of responses. A significant majority (57.42%) of respondents identified hazards as a major factor influencing migration decisions. This highlights the critical role that environmental shocks and stresses, such as floods, cyclones, and other climate-related hazards, play in displacing communities. Additionally, 27.27% of respondents considered hazards to be a minor factor, indicating that while hazards may not be the primary driver of migration for this group, they still contribute to the decision to relocate. On the other hand, 15.31% of respondents stated that hazards had no influence on their migration decision, suggesting that other social, economic,

or personal factors may have been more prominent in their decision-making process hazards like floods and cyclones degrade essential resources such as arable land and fisheries, compelling communities to seek livelihoods elsewhere. The destruction of physical capital, including homes and infrastructure, further exacerbates the need to migrate. Limited financial capital is evident, as affected individuals often lack the savings or resources to rebuild locally, making migration a financial survival strategy. Human capital factors, such as health and adaptive skills, also influence the ability to relocate and adapt to new environments, though hazards may erode resilience over time.

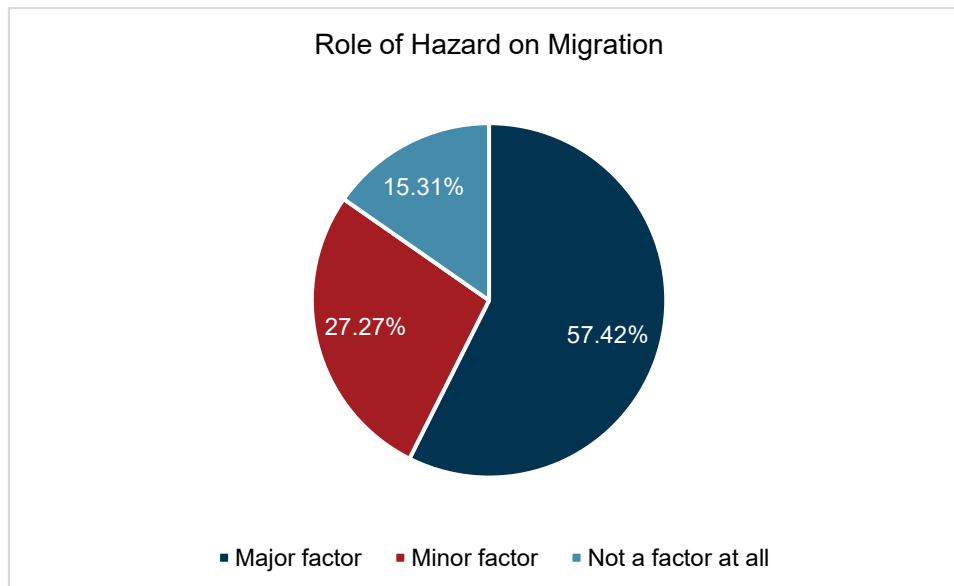
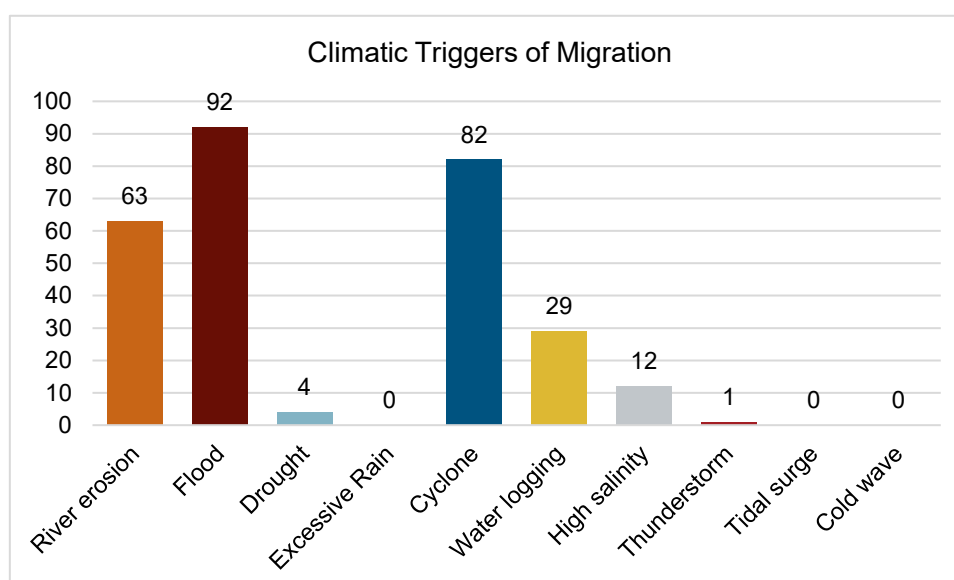


Figure 2-11: Role of Hazard on Migration

Climatic triggers behind migration

The data on climatic events driving migration highlights the disproportionate impact of certain natural hazards on community displacement. Floods (92 responses) and cyclones (82 responses) are the most frequently cited triggers, underscoring their catastrophic effects on livelihoods, housing, and infrastructure. River erosion, with 63 responses, is another significant driver, reflecting its persistent and irreversible impact on land loss and displacement. Unlike sudden-onset events like floods and cyclones, river erosion poses a gradual yet severe threat, often forcing people to migrate permanently. Waterlogging (29 responses) and high salinity (12 responses) point to the growing influence of climate-induced environmental changes. Waterlogging disrupts agriculture and daily activities, while salinity intrusion, often linked to sea-level rise and storm surges, gradually renders agricultural land unusable. Drought (4 responses) appears less prominent in this dataset, but it remains a critical issue in other contexts, particularly in arid and semi-arid regions. Notably, no respondents identified excessive rain, tidal surges, or cold waves as direct triggers for migration. This could be due to the shorter duration of these events or their limited impact compared to floods and cyclones. The data reveals that sudden-onset hazards like floods and cyclones force immediate displacement, whereas slow-onset changes like salinity, waterlogging, and erosion gradually erode livelihoods, compelling migration over time. This dual nature of climatic stressors suggests that policy interventions must address both emergency responses for sudden hazards and long-term adaptation strategies for slow-onset changes. Furthermore, the absence of responses for certain events like tidal surges and cold waves may indicate either their low impact in the specific study area or a lack of respondent awareness about their role in migration. Natural capital is severely impacted, as floods, cyclones, river erosion, waterlogging, and salinity degrade land, water, and agricultural resources, eroding livelihoods and forcing displacement. Physical capital is damaged or destroyed, including homes, infrastructure, and arable land, leaving communities vulnerable and unable to rebuild locally. Financial capital limitations further compound the issue, as affected individuals lack resources to recover or adapt, pushing them to migrate for survival. Human capital is strained, as individuals face health risks and reduced capacity to sustain traditional livelihoods, while social capital plays a dual role: weakening due to displacement but also enabling migration through community networks and shared strategies.



2.2.2.3 Socio-economic Push Factors

The socio-economic push factors driving migration are varied, with land fragmentation being the most significant factor, cited by 46 respondents. This suggests that limited land availability is a major reason for people seeking migration. Other notable push factors include crop failure (24 responses), conflict between relatives (22 responses), and the lack of employment (11 responses). Issues such as low income (7 responses) and housing facilities from the government (3 responses) also contribute to migration. Other factors, such as eviction (2 responses), family crisis (1 response), and even the death of a mother (1 response), are less commonly reported but still play a role in pushing people to migrate. The desire for a better life (8 responses) and better livelihood (1 response) reflects aspirations for improved economic and social conditions. These factors indicate that people are migrating in search of better living conditions, economic opportunities, and security. Natural capital is constrained due to land fragmentation, which limits access to arable land, forcing people to seek opportunities elsewhere. Financial capital is weakened by crop failure, low income, and the lack of employment, reducing the economic stability of households and prompting migration. Physical capital deficiencies, such as inadequate housing facilities and eviction, further exacerbate the need for relocation. Human capital is influenced by family crises and aspirations for better living conditions, as individuals seek improved livelihoods and opportunities. Lastly, social capital is affected by conflicts between relatives, weakening community ties and prompting migration, but also reflects aspirations to build new networks and opportunities in destination areas. Together, these factors illustrate the interplay of vulnerabilities and aspirations in driving migration decisions.

Table 2-1: Socio-Economic Push Factors

Socio Economic Push Factors	Responses
Conflicts between groups	6
Conflict between relatives	22
Land fragmentation	46
Education	10
Crop failure	24
Beter livelihood	1
Better life	8
Due to rent	11

Socio Economic Push Factors	Responses
Eviction	2
Family crisis	1
Housing facilities from Govt.	3
Lack of employment	11
Lack of property	9
Low income	7
Monther death	1
Not concern about	1

2.2.2.4 Qualitative findings of Hotspots of climate-induced migration (Permanent)

While seasonal migration remains a major coping strategy, the escalating environmental stressors in the southwestern coastal zone have also led to a rise in permanent migration. In areas like Koyra, Paikgacha, and Sarankhola, permanent displacement is increasingly common, as recurring cyclones, salinity, river erosion, and sea-level rise make it increasingly difficult for people to return to their homes or rebuild their lives. Permanent migration, in this context, is often driven by the combined pressures of environmental degradation, economic loss, and the loss of livelihood opportunities.

In Khulna District, the residents of Koyra have been particularly hard-hit by sea-level rise and salinity intrusion. Md. Bellal Hossain, who migrated to Khulna city permanently after Cyclone Sidr (2007), described how the combination of the storm and the subsequent salinity destruction made it impossible for his family to return to farming. *"The saltwater ruined everything. Our land was flooded, and crops died. We couldn't farm anymore, so we came to Khulna. Now, I have to stay here,"* he explained. Similarly, Rabiul Islam from Koyra mentioned, *"There's no future in farming anymore. The saltwater keeps coming, and the land gets destroyed. We moved to Khulna because staying in Koyra meant we would lose everything."* These narratives reflect the growing trend of permanent displacement in Koyra, driven by climate stressors that have rendered the land uninhabitable.

In Bagerhat District, the situation is similar, with salinity and river erosion driving permanent migration from Morrelganj and Sarankhola. Md. Madhu Sardar from Morrelganj explained that his family had to leave after Cyclone Aila (2009) destroyed their house and agricultural land. *"After Aila, the soil was ruined. We had nothing left to fall back on, and we had to move to the city for survival. Farming was no longer an option,"* he shared. The frequent cyclones and the loss of arable land due to riverbank erosion in these areas are making it impossible for many families to remain in their homes, driving them toward Khulna city in search of stability.

Similarly, in Satkhira District, particularly in Assasuni and Koyra, the situation is dire, with saline intrusion and flooding being major factors contributing to permanent displacement. Md. Salauddin from Assasuni shared that after the floods and saline intrusion affected his agricultural land, he had no choice but to permanently migrate to Khulna. *"Our lands were destroyed by saltwater, and we couldn't recover. There was no income, no work, so we had to leave,"* he explained. Families in Assasuni and Koyra are increasingly finding that the land they depend on for their livelihoods has become unproductive due to climate stressors, making it impossible for them to return to their original homes.

The key climatic triggers behind this permanent migration include sea-level rise, salinity intrusion, flooding, and the intensity of cyclones. These environmental factors are compounded by socio-economic push factors, such as the loss of agricultural land, decreased fish stocks, and lack of viable economic alternatives. In these areas, families are facing economic ruin, with traditional livelihood options, such as agriculture and fishing, becoming increasingly unsustainable. This drives many families to leave, with urban slums in Khulna, Bagerhat, and Satkhira emerging as key destinations. However, the migration is

not without its challenges. Urban slums, though providing immediate access to labor, often lack adequate infrastructure and public services, exacerbating the vulnerability of these migrant populations.

2.3 Driving factors of climate-induced migration

2.3.1 Short-term/ seasonal

Micro level factors

Human capital

In Khulna, respondents cited better educational opportunities and employment prospects as significant pull factors, while in Satkhira, a lack of local job opportunities pushed individuals towards urban centers. A respondent from Khulna shared, "We go where we can grow. Here in the city, there's a chance for education and jobs that just don't exist back home."

Social capital

In Bagerhat, the erosion of community ties due to recurring floods and cyclones acts as a push factor, whereas in Khulna, stronger urban networks that offer support and stability serve as pull factors. A participant from Bagerhat noted, "After the cyclone, our community wasn't the same. Many moved away to find safety and support elsewhere."

Financial capital

Economic instability is a significant push factor across all regions, with individuals migrating in search of more stable and lucrative employment. In Satkhira, participants highlighted the unpredictability of earnings from agriculture due to environmental degradation as a key concern.

Physical capital

Frequent natural disasters damaging homes and infrastructure in Satkhira and Bagerhat compel people to relocate to areas with better physical capital, such as Khulna, where urban infrastructure offers greater resilience and comfort.

Natural Capital

Loss of natural resources due to salinity and river erosion in Bagerhat and Satkhira drives residents to seek livelihoods in less environmentally degraded areas like Khulna. A respondent from Bagerhat lamented, "Our fields are barren, the water too saline. We have no choice but to leave if we want to farm."

Macro level factor

Political

Governance issues, particularly ineffective disaster management in Satkhira and Bagerhat, push residents towards Khulna, where government response and infrastructure are perceived to be better.

Demographic

Overpopulation and resource depletion in rural areas push individuals to urban centers where resources are more abundantly managed.

Economic

The limited scope of local economies in Satkhira and Bagerhat, heavily reliant on vulnerable agricultural sectors, contrasts with the diversified economic opportunities in Khulna, drawing migrants in search of better economic stability.

Social

The breakdown of social structures due to economic and environmental pressures in rural areas contrasts sharply with the more structured urban social frameworks found in Khulna.

Environmental

The environmental degradation in Satkhira and Bagerhat, characterized by frequent cyclones, flooding, and salinity, starkly contrasts with the relatively less affected Khulna, making it a more attractive destination for migrants seeking stability.

Meso Level factor

Political/legal frameworks

The lack of supportive policies for vulnerable populations in rural areas prompts migration to urban centers where policies more favorably support migrant integration and rights.

Cost of moving

While high costs can be prohibitive, many are compelled to absorb these costs, driven by the severe push factors at play. Financial aids and facilitation services in urban areas help mitigate these costs

Social network

Existing social networks in urban centers like Khulna play crucial roles in attracting migrants from more isolated rural areas, providing a support system that eases the transition and integration process.

Recruitment agencies

The presence of more proactive recruitment agencies in Khulna aids in the migration process by providing job placements that are often lacking in rural regions.

Disaporic links

Stronger diasporic connections in Khulna provide social and economic support structures that are appealing to migrants from Satkhira and Bagerhat, who often lack such networks in their home regions.

2.3.1.1 Economic pressures

Household experienced income loss

Total of 145 households experienced income damage due to climate change. The data on income damage due to climate change aligns closely with micro-level factors, particularly financial capital, as it highlights the economic challenges faced by households at the origin. The prevalence of moderate (60.69%) and severe (17.93%) income damage underscores a significant strain on household earnings, limiting their ability to sustain livelihoods and pushing individuals to consider migration as a coping strategy. This situation reflects a push factor, as economic hardship compels households to seek better opportunities elsewhere. At the same time, the slight income damage reported by 21.38% suggests that

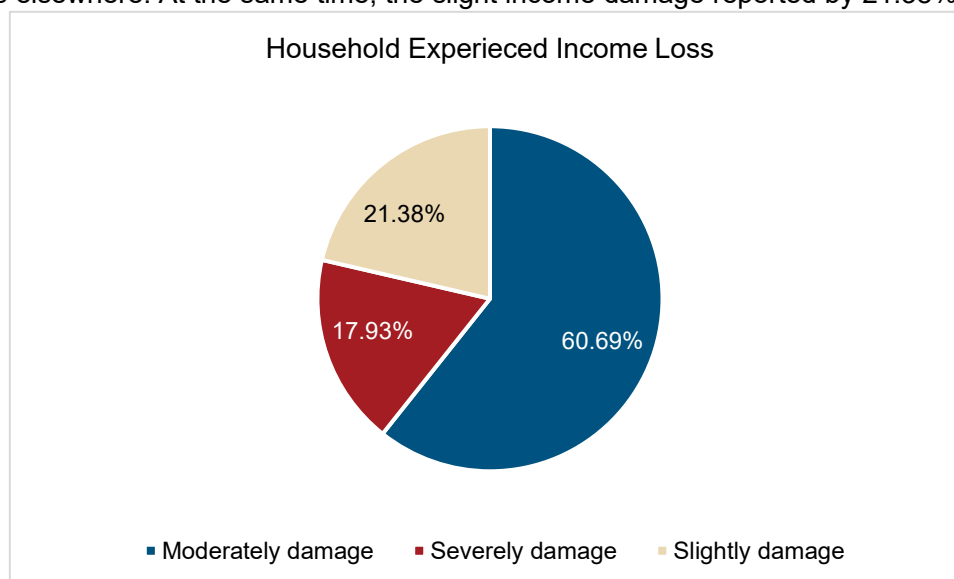
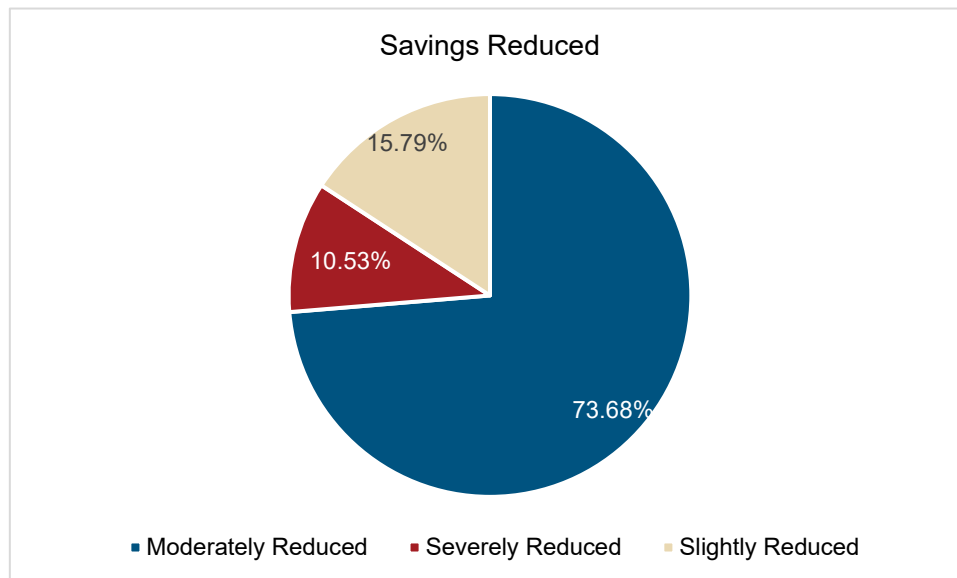


Figure 2-12: Household experienced income loss

not all households are equally vulnerable, indicating variations in resilience likely linked to differences in human capital (skills and education) and social capital (support networks). The financial instability acts as a driving force, prompting migration in search of more stable income sources, better job opportunities, and improved financial security, thereby linking this phenomenon to economic macro-level factors as well.

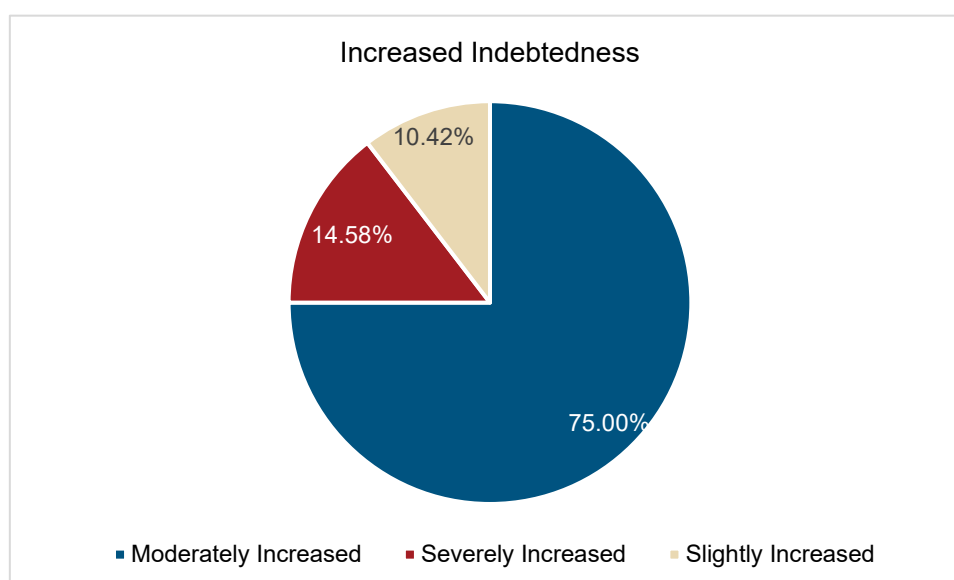
Savings Reduced



The reduction in savings due to climatic vagaries primarily connects to micro-level financial capital, as it directly affects household economic stability and resilience. The moderate depletion experienced by 73.68% of respondents indicates a widespread financial strain that limits their ability to invest in livelihood opportunities or recover from shocks, acting as a push factor for migration. Severe depletion, reported by 10.53%, reflects critical financial hardships, likely forcing these households to seek alternative income sources or support systems elsewhere. Conversely, the 15.79% experiencing slight reductions suggest some households retain a degree of financial resilience, potentially linked to stronger human or social capital. This dynamic underscores the interplay of financial insecurity as a push factor and the need for improved economic opportunities as a pull factor, particularly in destinations where households hope to rebuild their savings and secure economic stability

Figure 2-13: Household experienced decreased in savings

Indebtedness



The increase in indebtedness among households is closely tied to micro-level financial capital, highlighting the economic strain faced by families at the origin due to climatic and livelihood challenges. The 75% of respondents reporting moderate debt increases reflect a widespread but potentially manageable financial burden, likely pushing households to seek better income opportunities to alleviate their debt. The 14.58% experiencing severe indebtedness face critical financial hardships, often forcing migration as a survival strategy to escape the economic burden. On the other hand, the 10.42% reporting slight debt increases indicate minimal disruption, possibly due to stronger human or social capital enabling better coping mechanisms. These trends underscore indebtedness as a significant push factor, with migration serving as a potential pull factor for households seeking economic stability and relief from financial pressures.

Figure 2-14: Increment in indebted households

2.3.1.2 Loss of Livelihoods

The rising unemployment at the origin highlights the deterioration of micro-level financial and human capital, as households face growing economic distress due to a lack of job opportunities. The 51.4% perceiving a severe increase in unemployment reflects acute challenges in sustaining livelihoods, while the 39.25% reporting a moderate rise indicates widespread but less critical joblessness. These figures

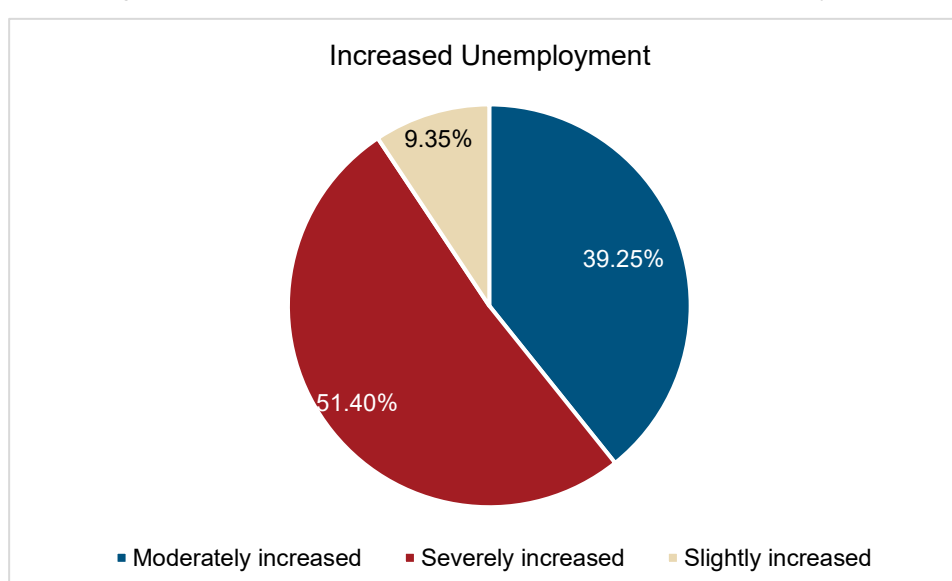


Figure 2-15: Increased unemployment at origin

underline the limited availability of employment, exacerbating financial instability and pushing families to migrate in search of better opportunities. Unemployment serves as a strong push factor, with the prospect of jobs in destination areas acting as the pull factor for migration, as households prioritize financial survival and stability. .

2.3.1.3 Climate Impacts

Impact of cyclone

The data on the impact of cyclones highlights the extensive disruption to physical and natural capital within the affected communities. The severe and very serious damages reported by over 73.56% of

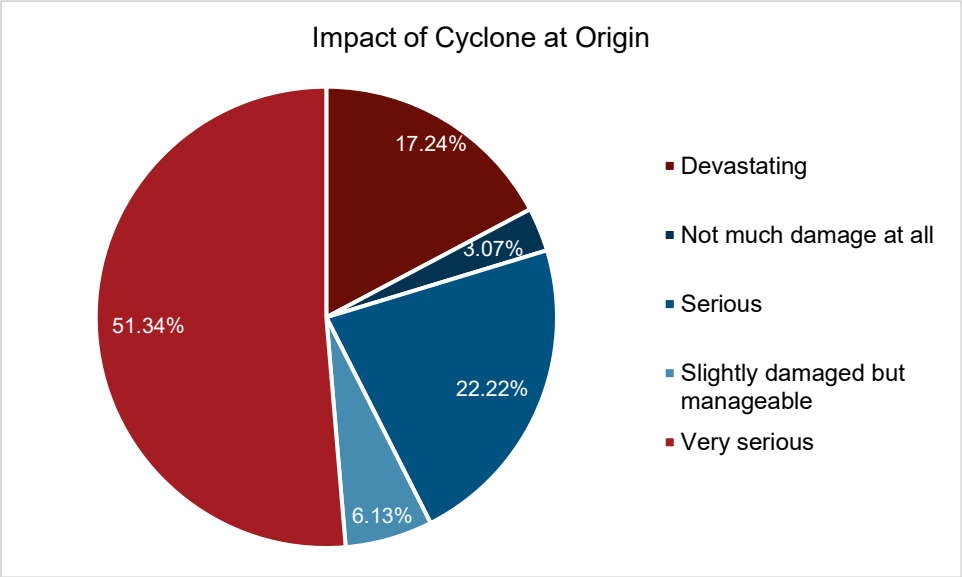


Figure 2-16: Impact of cyclone at origin

respondents illustrate the catastrophic effects on housing, infrastructure, and livelihoods. The 17.24% who faced devastating impacts indicate how such events exacerbate vulnerabilities, particularly in terms of human and financial capital, as families struggle to recover. The smaller proportions experiencing slight (6.13%) or minimal damage (3.07%) suggest some resilience among these households, likely due to better-prepared physical capital or access to financial resources. Cyclones serve as a powerful push factor, compelling migration due to the destruction of livelihoods and the necessity to seek stability in safer areas. This also underscores the need for strengthening disaster-resilient infrastructure and adaptive capacities to mitigate such impacts.

Impact of Flood

The data on the impact of flooding highlights significant disruption to physical and natural capital within the affected community. The 46.28% reporting very serious damage and 15.29% describing it as devastating emphasize the extensive loss to housing, infrastructure, and agricultural land, further stressing financial capital as families struggle to rebuild. The serious damage reported by 27.69% reflects widespread but slightly less catastrophic impacts, likely affecting livelihoods and social networks. The

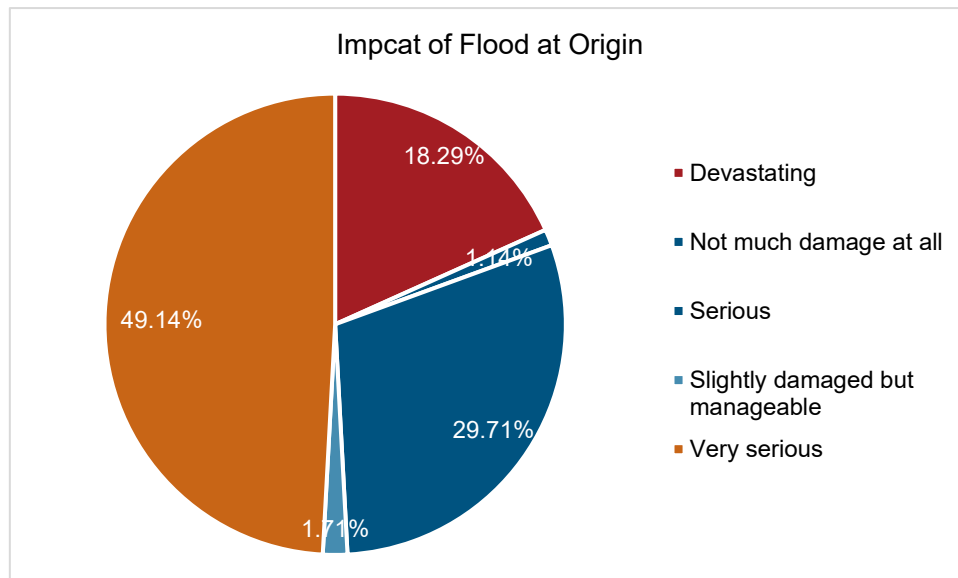


Figure 2-17: Impact of flood at origin

smaller proportions experiencing manageable (7.85%) or minimal damage (2.89%) suggest limited resilience in some areas, potentially due to better-prepared physical capital or access to financial resources. Flooding acts as a substantial push factor for migration, as the loss of livelihoods and basic needs compels affected households to seek alternative opportunities and stability in less vulnerable areas

Impact of Drought

The data highlights the profound effects of drought on the community, with 54.43% of respondents indicating very serious damage and 37.97% reporting serious impacts. These figures point to the significant strain on natural resources, particularly water and agricultural productivity, which disrupts livelihoods and exacerbates food insecurity. Meanwhile, 6.33% of households reported manageable

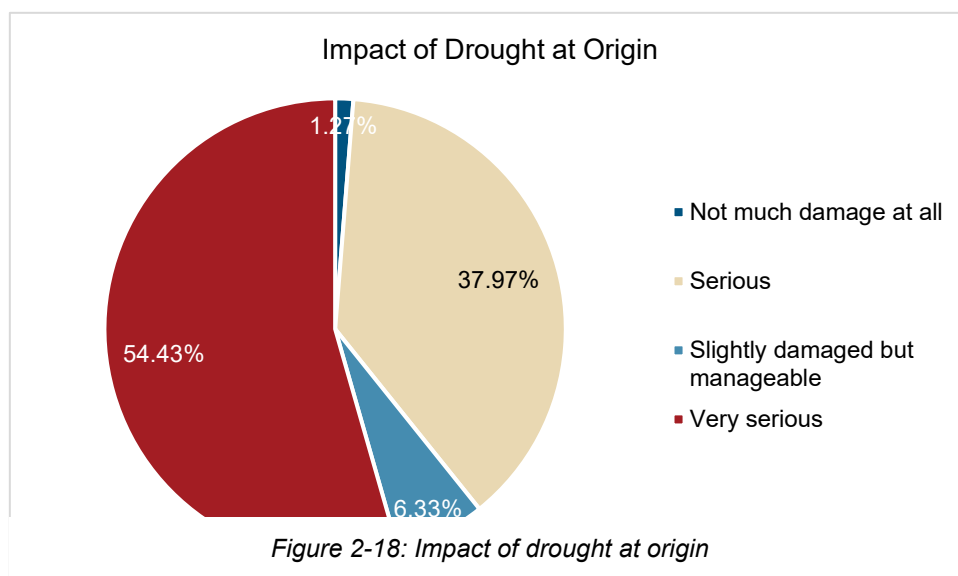


Figure 2-18: Impact of drought at origin

impacts, and only 1.27% experienced minimal disruption, suggesting some resilience due to better access to resources or adaptive strategies. Drought emerges as a strong push factor, undermining the viability of rural livelihoods and compelling families to migrate in search of more stable living conditions..

Impact of River Erosion

The data highlights the profound effects of river erosion on the community, with 49.14% of respondents describing the damage as very serious and 29.71% indicating serious consequences. These figures emphasize the strain on natural capital as agricultural land and residential areas are eroded, impacting

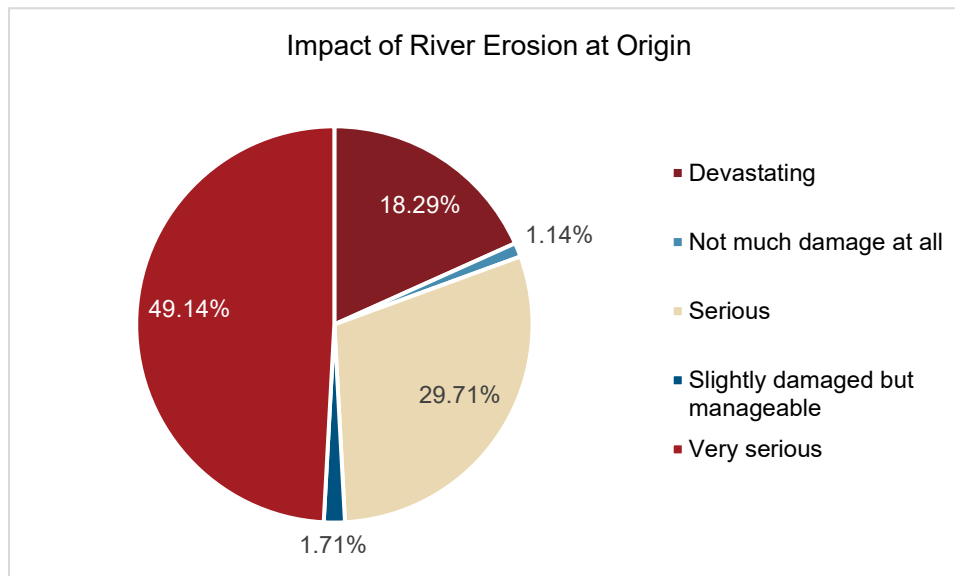


Figure 2-19: Impact of river erosion at origin

livelihoods and food security. Meanwhile, 18.29% of households reported devastating effects, while only 1.71% found the damage manageable, suggesting some resilience due to better access to resources or adaptive strategies like relocation or diversified livelihoods. From a micro-level perspective, erosion reduces human capital as people lose property and agricultural assets, weakening their ability to sustain livelihoods. Social capital may also be affected, as displacement disrupts community ties. At the macro level, the erosion highlights gaps in political action and economic stability, as rural communities struggle with the loss of their livelihoods and have limited support from government policies. The meso level is also significant, as legal frameworks regarding land protection and migration costs can influence how families adapt to these changes. River erosion acts as a strong push factor, displacing families and forcing migration to urban areas like Khulna, where economic opportunities may be more accessible, underscoring the need for urgent interventions to stabilize vulnerable areas and provide alternative livelihood opportunities. Access to Basic services

Sanitary facilities at origin

The data on toilet usage at the respondents' origin reveals a range of sanitation practices, with 33.59% of respondents using sanitary/ring-slab or pucca (water-sealed) toilets, indicating relatively good hygiene

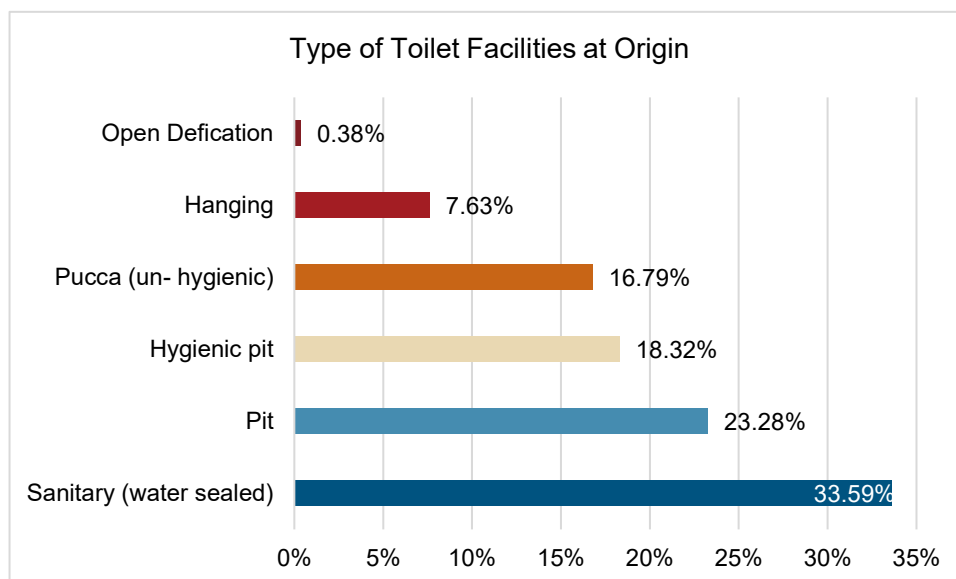


Figure 2-20: Sanitary facilities at origin

standards. However, 23.28% use pit toilets, while 18.32% use hygienic pit toilets. A concerning 16.79% of respondents still use unhygienic pucca toilets, and 7.63% rely on hanging toilets. Although 0.38% of respondents practice open defecation, this indicates ongoing sanitation challenges. From a micro-level perspective, unhygienic sanitation practices can impact health and quality of life, particularly in households with limited resources. At the macro level, there is a need for stronger governmental policies and investments in sanitation infrastructure to address these disparities. At the meso level, social networks and local community initiatives could play a role in improving access to hygienic facilities, though barriers such as cost and availability of resources remain. These findings highlight both progress in sanitation and the urgent need for continued improvements to ensure safe and hygienic facilities for all households [Source of Drinking Water](#)

The data on drinking water sources also reflects the push and pull migration factors. At the micro level, the reliance on ponds (15.27%) and the purchase of bottled water (9.92%) due to concerns over water quality can act as push factors, driving households to seek areas with more reliable and clean water sources. The use of personal tube wells (23.66%) and shared tube wells (14.89%) suggests some level of self-sufficiency, but the need for safer, more consistent water access may push families to migrate. At the macro level, the inadequacy of community-based water infrastructure (20.23%) and the limited use of filtration technologies like Pond Sand Filters (0.38%) point to gaps in government policies, which could exacerbate the migration push by making rural areas less sustainable for livelihoods. At the meso level, the reliance on social networks for shared tube wells and local water sources reflects the community's role in facilitating migration, but challenges like the cost of bottled water or limited resources could act as barriers, influencing migration patterns. Overall, poor water access, particularly in areas relying on unsafe sources, acts as a push factor, while areas with more reliable water infrastructure serve as pull factors, attracting migrants in search of improved living conditions

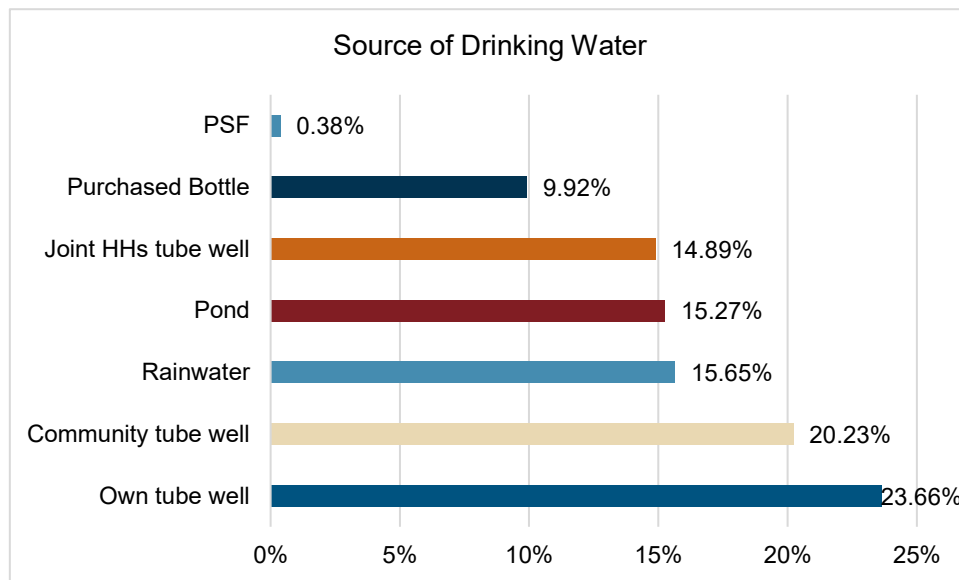


Figure 2-21: Source of drinking water at origin

Access to Electricity

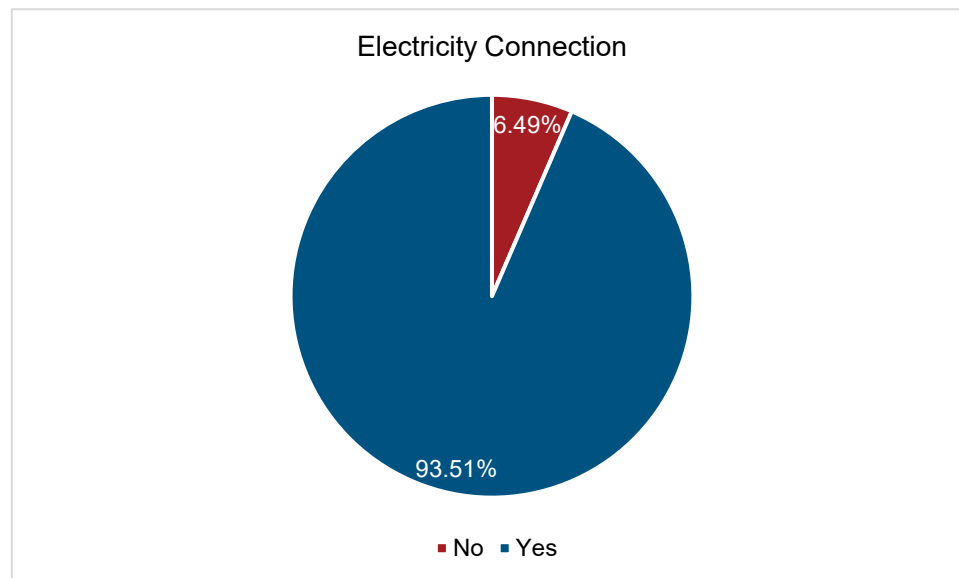


Figure 2-22: Household access to electricity

The data on electricity access shows that the majority of households (93.51%) have electricity, reflecting a high level of electrification in the area. This widespread access to electricity can enhance living standards, improve economic opportunities, and reduce migration pressures by supporting local businesses and education. However, the 6.49% of households without access to electricity indicates a gap in infrastructure, particularly in remote or underdeveloped areas. This lack of access may act as a push factor, driving migration to urban areas or regions with more reliable electricity services. At the micro level, the absence of electricity can limit household productivity and opportunities, while at the macro level, gaps in infrastructure can highlight the need for more targeted development policies. The meso-level factor of local government or community initiatives could play a role in addressing these disparities and ensuring universal access to electricity Household coping strategies.

Received support to cope with disaster

The data on climate change support reveals that 70.77% of households have not received assistance, suggesting significant vulnerabilities that can drive migration. At the micro level, the lack of support

hinders households' ability to adapt, impacting their livelihood security and access to resources. At the macro level, the absence of targeted climate adaptation policies and insufficient governmental intervention contribute to migration pressures. At the meso level, local support networks and community-based programs may offer some resilience, but gaps in resources highlight limitations in local efforts. The lack of climate change support drives migration as households seek areas with better resources and climate resilience interventions

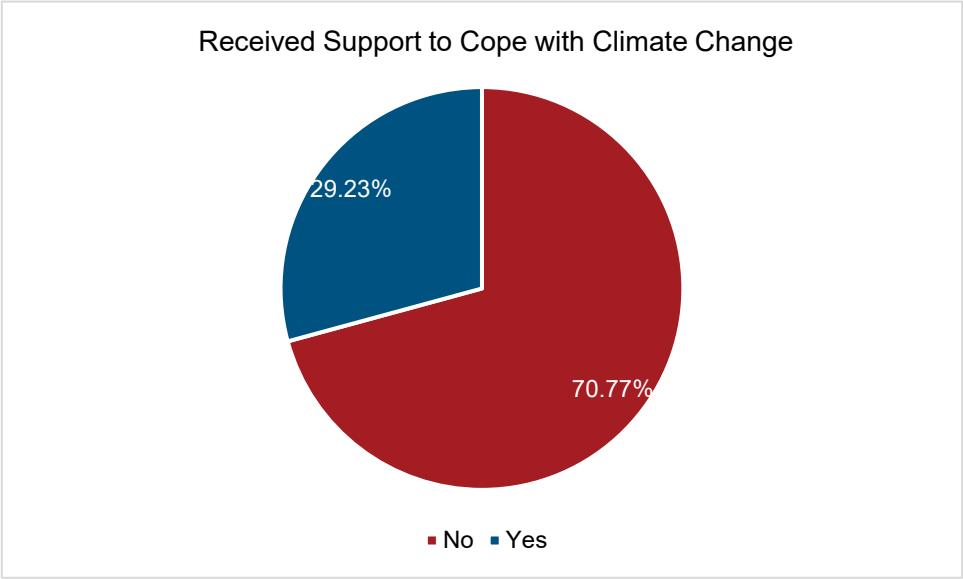


Figure 2-23: Household received support at origin

Household took loan to deal with last disaster

The data indicates that 70% of households either managed without taking loans or lacked access to loan support to cope with the impact of the last disaster, while 30% secured loans in cash or in-kind. This highlights the financial strain experienced by many in the community, with a significant portion navigating recovery without external financial assistance. From a micro-level perspective, the lack of access to loans can limit households' ability to recover and build resilience, affecting their livelihoods. At the macro level, gaps in financial services and credit access may reflect broader issues in financial inclusion and policy support. At the meso level, community-based lending or informal support networks may play a role, but the barriers to formal credit suggest the need for improved financial infrastructure and access to credit for vulnerable households. The lack of financial support acts as a push factor, as households may migrate in search of areas with better access to financial resources and credit facilities that support recovery and livelihood sustainability.

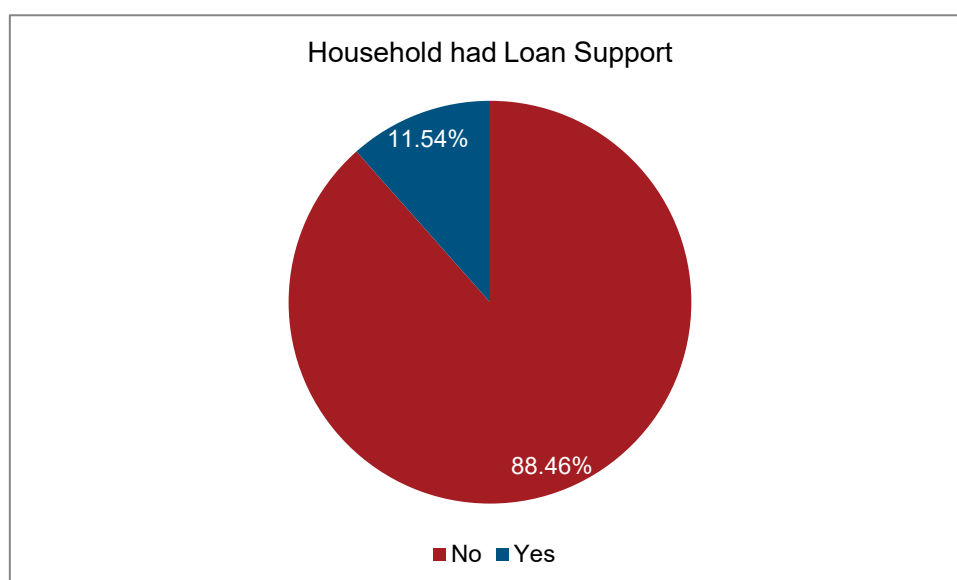


Figure 2-24: Household took loan to deal with last disaster

Household sold properties to deal

The data indicates that 88.46% of households did not sell their properties to cope with the impact of the last disaster, while 11.54% resorted to selling assets. This suggests that most households were able to recover without liquidating their property, highlighting some resilience. However, the 11.54% who had to sell assets reflect significant financial stress and the difficulty in accessing other forms of recovery support. At the micro level, selling assets can lead to a loss of long-term wealth, weakening households' financial capital. At the macro level, this suggests a lack of broader economic support or recovery programs. At the meso level, the availability of community-based support or informal financial options could have helped mitigate the need to sell assets. This situation can act as a push factor, as families may seek to migrate in search of better economic opportunities or safer environments to avoid further financial strain.

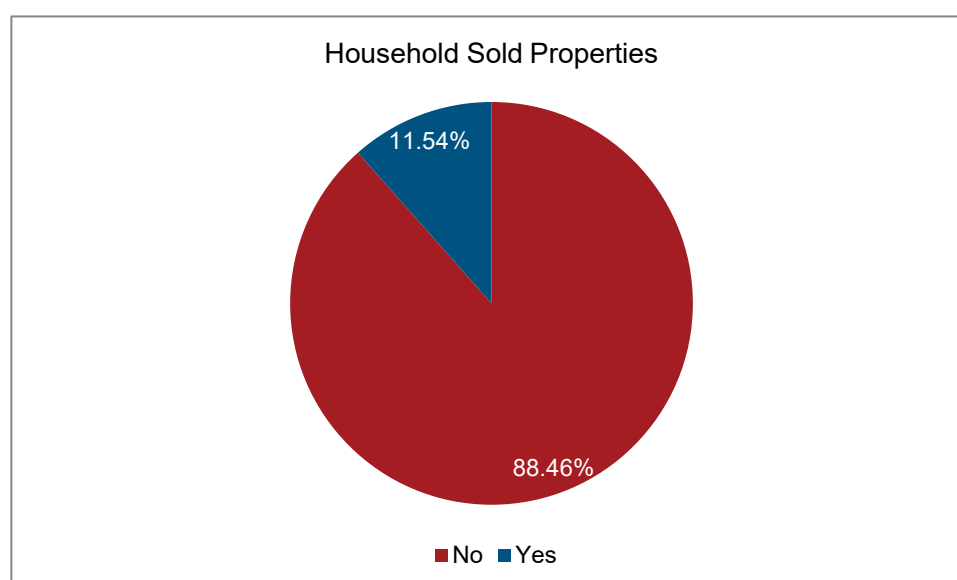


Figure 2-25: Household sold properties to deal with disaster

Household used buffer to cope with last disaster

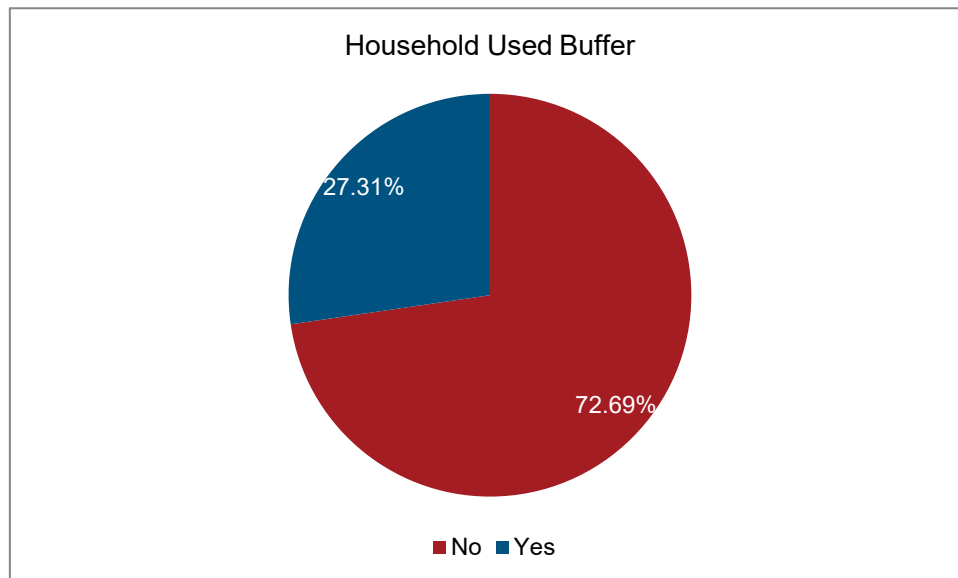


Figure 2-26: Household used buffer to cope with last disaster

The data indicates that 72.69% of households did not rely on buffers such as stored food or savings to cope with the last disaster, while 27.31% utilized these resources. This suggests that the majority either managed through other means or lacked sufficient reserves to rely on. For those who did use buffers, stored food and financial savings were crucial in mitigating the disaster's impact, highlighting the importance of household-level preparedness during crises. At the micro level, reliance on stored resources reflects the resilience of some households but also underscores vulnerabilities for those without such buffers. At the macro level, the lack of safety nets or support systems that could help households build reserves points to gaps in broader economic security policies. At the meso level, community-based support systems or local initiatives might play a role in helping households prepare, though the data suggests that many families were still unprepared. This situation acts as a push factor, as households with limited resilience may migrate in search of better resources, safety nets, and opportunities for disaster preparedness.

Household Members tried to earn more to cope with disaster

The data shows that 44.62% of households had members who tried to earn extra income to manage the impacts of disasters, while 55.38% did not engage in additional income-generating activities. This indicates that while some families diversified their income streams as a coping mechanism, most either found other ways to adapt or faced difficulties in pursuing extra work. At the micro level, the ability to earn extra income helps build financial capital and resilience, allowing households to recover more effectively. At the macro level, this points to the need for broader economic policies that support income diversification and reduce barriers to additional work. At the meso level, local support systems, such as community networks or informal job opportunities, may play a role in helping households cope with disaster impacts. The reliance on extra income as a coping strategy can be a push factor, as families seeking more stable and diversified economic opportunities may migrate to areas with better job prospects or support systems.

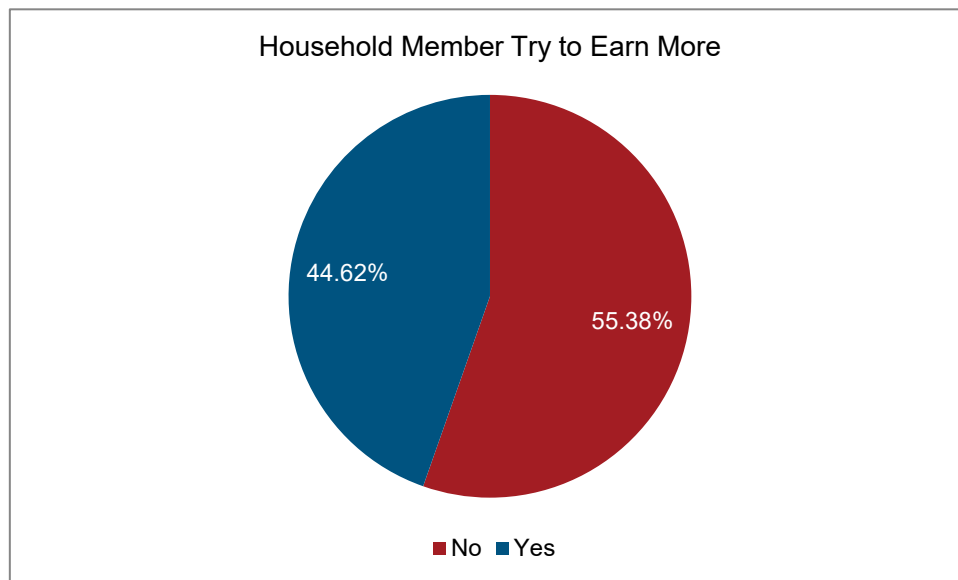


Figure 2-27: Household Members tried to earn more to cope with disaster

Household reduced expenses / spend less money to deal with the impact of the last disaster

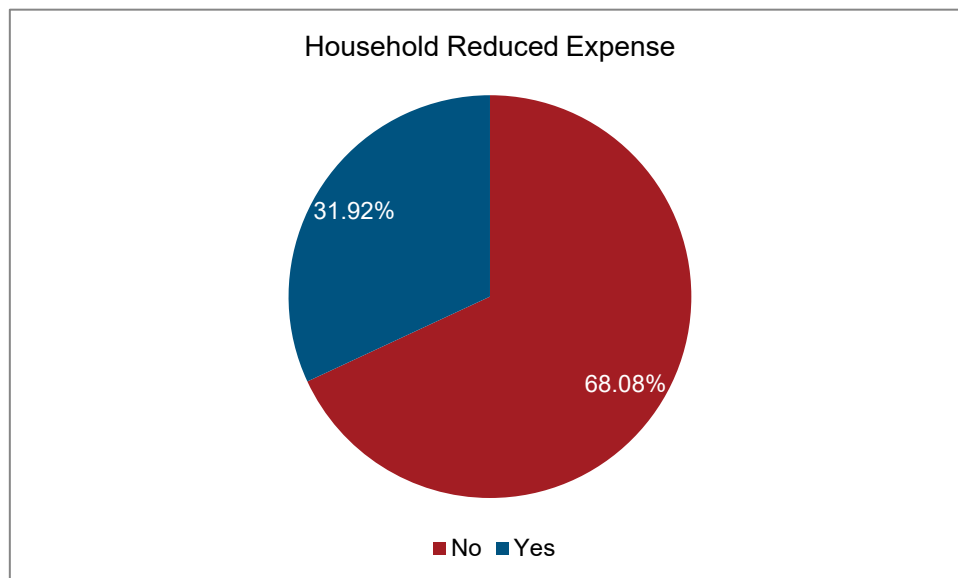


Figure 2-28: Household reduced expense to deal with disaster

The data shows that 31.92% of households reduced their expenses to cope with the impact of the last disaster, while 68.08% either maintained their usual spending or did not find it necessary to cut costs. This suggests that a significant portion of families adopted frugality as a resilience strategy, yet for the majority, expense reduction was not a primary coping mechanism. At the micro level, reducing expenses helps preserve financial resources, allowing households to better manage the crisis. At the macro level, the ability to cut costs could be influenced by broader economic conditions and the availability of public assistance or safety nets. At the meso level, community networks or local support could play a role in helping families reduce costs or access resources. The need for expense reduction can be a push factor, as households with limited resources may migrate in search of areas where living costs are lower or more manageable, or where economic opportunities provide more financial stability [Households modified food consumption to deal with the impact of the last disaster](#)

The data shows that 31.92% of households reduced their expenses to cope with the impact of the last disaster, while 68.08% either maintained their usual spending or did not find it necessary to cut costs. This indicates that a significant portion of families adopted frugality as a resilience strategy, but for the

majority, expense reduction was not a primary coping mechanism. At the micro level, reducing expenses allows households to stretch their available resources, enhancing financial resilience. At the macro level, the need to reduce expenses could reflect broader economic challenges, including limited access to financial support. At the meso level, local community networks might provide informal support to help households cope without reducing expenses. While expense reduction is a sign of resilience for some, it could also act as a push factor, as households facing ongoing financial stress may migrate to areas with better economic conditions or lower living costs.

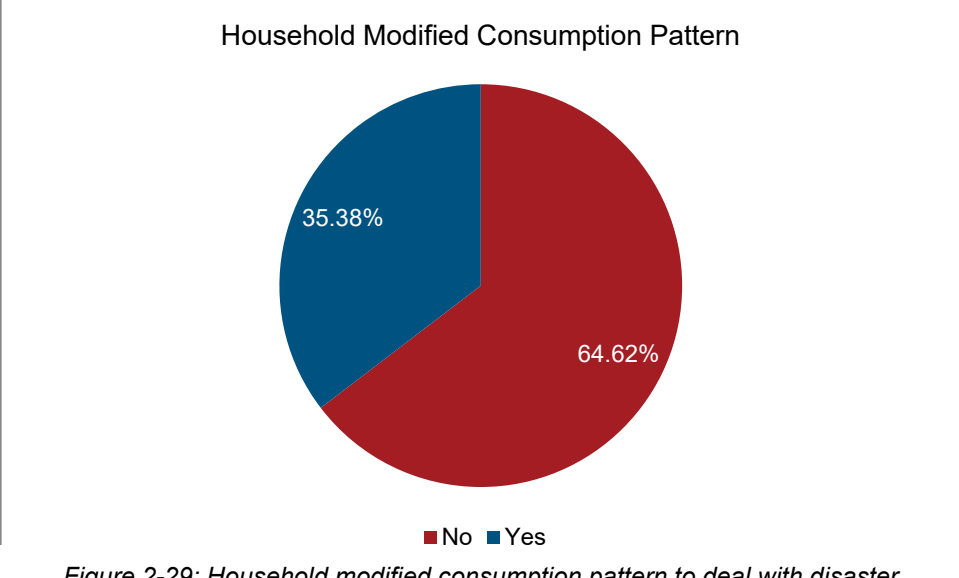


Figure 2-29: Household modified consumption pattern to deal with disaster

2.3.1.4 Qualitative Findings of Driving factors of climate-induced migration (Short-term)

In the southwestern coastal zone of Bangladesh, seasonal migration is driven by a complex mix of economic pressures, climate impacts, and the availability of basic services. The region, which includes districts like Khulna, Satkhira, and Bagerhat, faces recurring climate events such as salinity intrusion, flooding, and cyclonic storms, all of which severely disrupt local livelihoods, particularly agriculture and fishing—the primary sources of income for many families.

In Khulna District, communities such as those in Koyra and Paikgacha have long been accustomed to seasonal migration due to the unreliable nature of their agricultural livelihoods. In the dry season, the soil salinization caused by rising sea levels and tidal water inundation severely impacts rice cultivation and shrimp farming. Shahina Begum, a resident of Koyra, highlighted, “Saltwater has ruined our crops. My husband had to go to Khulna city to work as a rickshaw puller because we could not earn enough from farming.” Her neighbor, Abdul Rahman, added, “During the dry season, when the land is barren, half the village leaves for Dhaka or Khulna.”

The short-term nature of this migration is directly tied to the fact that rural households rely heavily on agriculture and fishing during certain seasons. When these livelihoods are impacted by flooding, salinity, or drought, families have little choice but to seek temporary work in nearby cities such as Khulna. During the monsoon season, the floodwaters often make fishing and agriculture even harder, forcing people to migrate in search of alternative income sources. In Assasuni, Md. Hasan Ali, a farmer, shared, “Every year, our lands are submerged during the floods. We have no choice but to leave for work in the city.” A Focus Group Discussion (FGD) in Assasuni further revealed that families depended on brickfield labor in nearby cities during the lean seasons as a survival strategy. According to Fatema Bibi, another participant, “When the floods come, the village becomes empty; everyone goes to find work elsewhere.”

In Satkhira District, Assasuni and Koyra are prime examples of areas where seasonal migration is a direct response to the economic pressures created by salinity, flooding, and cyclones. Fatema Khatun, a resident of Assasuni, described, “The floods take everything—our crops, our livestock. My sons have to

go to Dhaka to find work during those times.” A case study from Morrelganj, Bagerhat, emphasized the plight of Honufa, whose family relied on temporary urban labor after saltwater intrusion made farming impossible: “The river took our land. What else could we do but move?”

In Bagerhat District, areas like Morrelganj and Sarankhola are similarly affected by seasonal climate-induced migration. Ayesha Rahman, a local schoolteacher in Morrelganj, shared, “Many of my students drop out because their families leave for work in the city. It’s a loss for the community.” FGDs conducted in Sarankhola highlighted similar sentiments, with participants reporting that seasonal migration disrupted community cohesion and increased dependency on urban labor markets. “We see families break apart because of this. Fathers leave, and children are left with no role models,” said a community leader in Sarankhola.

The coping strategies employed by households in these areas often involve borrowing money, selling livestock, or relying on remittances sent by relatives who have migrated. For many, the most effective strategy remains migration, as it allows them to access jobs in urban areas that offer better wages, even though they are often temporary and unreliable. This migration pattern is especially evident in the months when farming and fishing are least productive due to salinity or flooding, which are typically exacerbated by climate change.

In addition to economic factors, the lack of access to basic services—such as drinking water, healthcare, and education—also drives seasonal migration. Rabeya Sultana, a healthcare worker from Koyra, highlighted the severe water scarcity during the dry season: “We have to travel miles for clean drinking water. It’s easier for families to move temporarily to the city.” Similarly, in Assasuni, Shamsul Alam, a community leader, pointed out, “Healthcare is almost nonexistent here during the floods. Families leave to protect their children.”

2.3.2 Permanent/ Displacement:

2.3.2.1 Land and Property Loss

Impact on Dwelling Unit

The data shows that 71.18% of households among the 118 who reported damage to their dwelling units in urban areas experienced either moderate or severe damage, with 35.59% reporting moderate damage and an equal percentage facing severe damage. A smaller portion (27.97%) experienced slight damage, and less than 1% reported no damage at all. This indicates a significant vulnerability of housing in urban areas to disasters, despite the generally higher level of infrastructure. At the micro level, the damage to housing can disrupt household stability and daily activities, leading to increased financial pressure. At the macro level, this data highlights potential gaps in urban disaster resilience and building codes, contributing to the widespread damage. At the meso level, local government and community initiatives may offer support in addressing the damage, but the extent of the damage suggests that more robust disaster preparedness and response measures are needed in urban centers to ensure the protection of residents' homes and livelihoods.

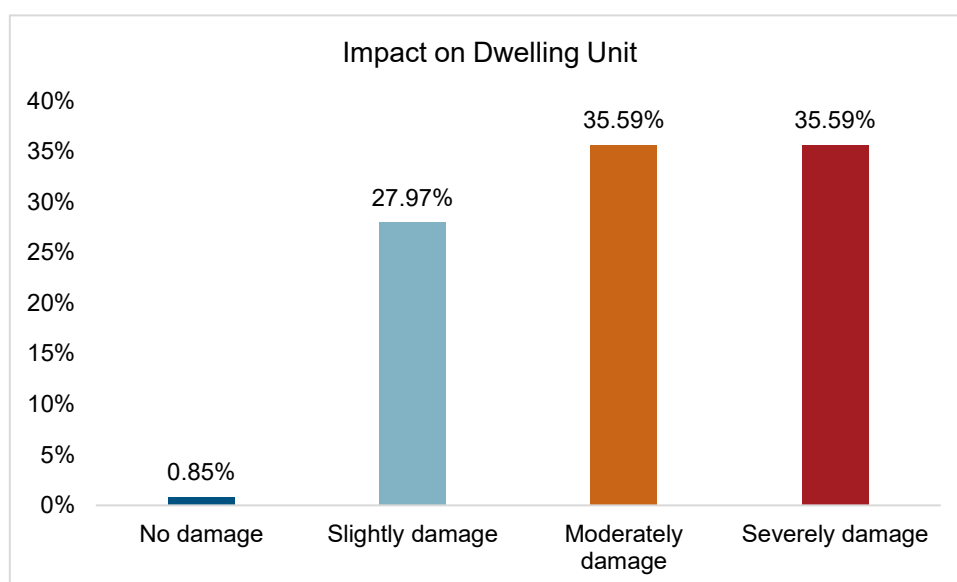


Figure 2-30: Disaster impact on dwelling unit

Impact on Kitchen and Cowshed

Total positive responses on this point were 106. The data shows that 74.53% of households reported moderate to severe damage to their kitchen and cowshed units, with 41.51% experiencing severe damage and 33.02% facing moderate damage. A smaller portion, 25.47%, reported slight damage. This indicates that essential household and livestock structures are highly susceptible to disaster-related damage, which can affect food preparation and livestock security. At the micro level, the destruction of kitchens and cowsheds directly impacts daily living and food security, making recovery more difficult. At the macro level, the widespread vulnerability of these structures suggests a need for more resilient building practices and disaster mitigation policies. At the meso level, local support systems or government initiatives could help in repairing or rebuilding these essential structures, but the extent of the damage highlights the importance of stronger disaster preparedness in safeguarding vital household and livestock infrastructure.

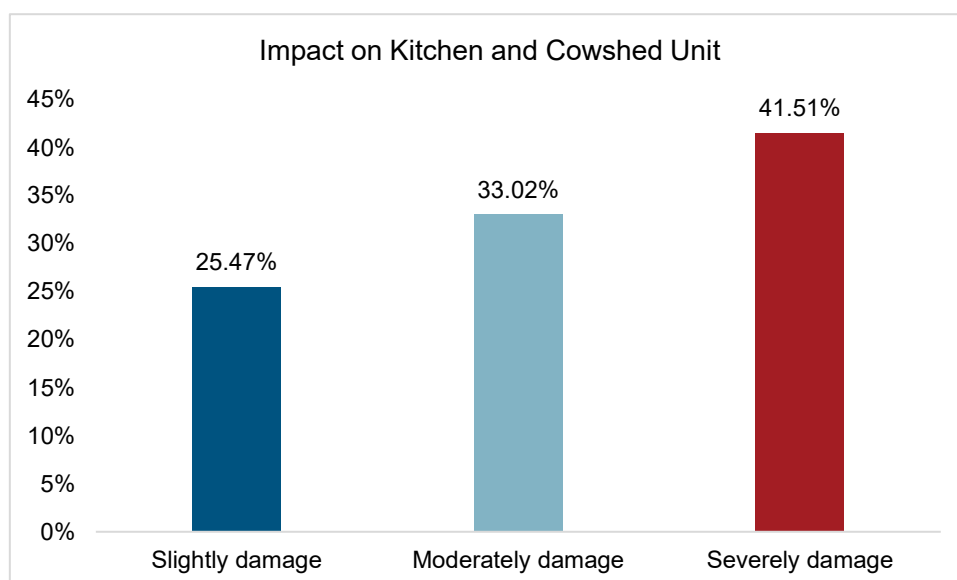


Figure 2-31: Disaster impact on kitchen and cowshed unit

Impact on Productive Assets

The data indicates that 45.83% of the 48 households reported severe damage to their productive assets, such as tools, machinery, and equipment, while 35.42% experienced moderate damage and 18.75% reported slight damage. This highlights the significant vulnerability of key resources crucial for income generation and agricultural productivity. At the micro level, the loss of productive assets severely hampers households' ability to recover and sustain their livelihoods, especially in agriculture-based economies. At

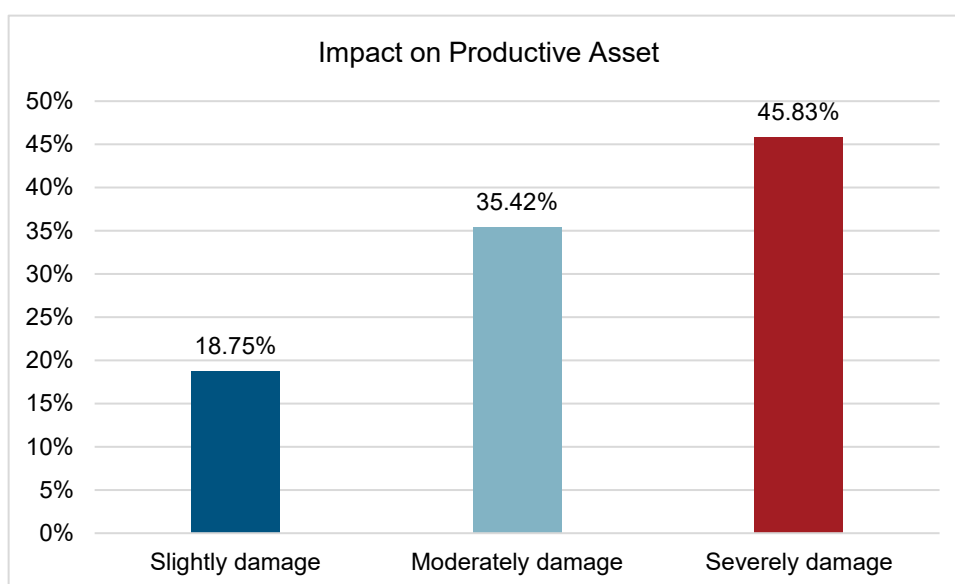


Figure 2-32: Disaster impact on productive asset

the macro level, this points to the need for policies and programs that support asset protection and recovery after disasters. At the meso level, community-based recovery programs or access to credit facilities could play a role in helping households rebuild their productive assets, but the scale of damage suggests that more comprehensive disaster preparedness and recovery plans are necessary to safeguard livelihoods. .

2.3.2.2 Long-term livelihood loss

The data shows that 36.19% of households reported that their livelihoods were impacted by climatic hazards, while 63.81% indicated that their livelihoods were not affected. This suggests that while a

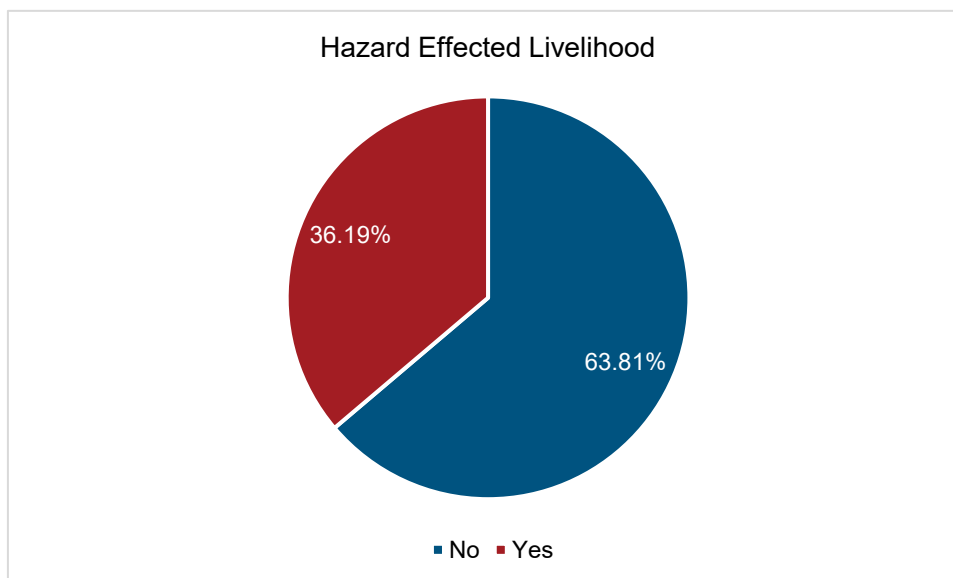


Figure 2-33: Disaster impact on livelihood

significant portion of the population faced disruptions due to climate-related factors, the majority were not directly affected. At the micro level, the impacts on livelihoods, such as loss of income or damage to assets, can severely affect household well-being and resilience. At the macro level, the data reflects a broader need for climate adaptation strategies and policies that address the vulnerability of livelihoods to climatic hazards. At the meso level, local community resilience and support systems may help buffer some of the impacts, but the variability in responses suggests that more targeted interventions are needed to protect livelihoods in climate-affected areas. .

2.3.2.3 Climatic impacts

Impact of Cyclone

The data shows that 17.62% of households faced devastating impacts from cyclones, while 24.29% described the damage as very serious. For 31.90%, the cyclone caused slight but manageable harm, and 10.48% experienced serious effects. A smaller portion, 15.71%, reported little to no damage. This reflects the varying degrees of vulnerability within the community to cyclone impacts. At the micro level, the severity of the damage significantly affects household well-being, particularly for those who suffered devastating losses, leading to potential displacement and loss of income. At the macro level, this highlights the need for stronger disaster preparedness and mitigation strategies, particularly in cyclone-prone areas. At the meso level, local community support and early warning systems may have helped some households manage the impacts better than others, but the range of damage suggests that more

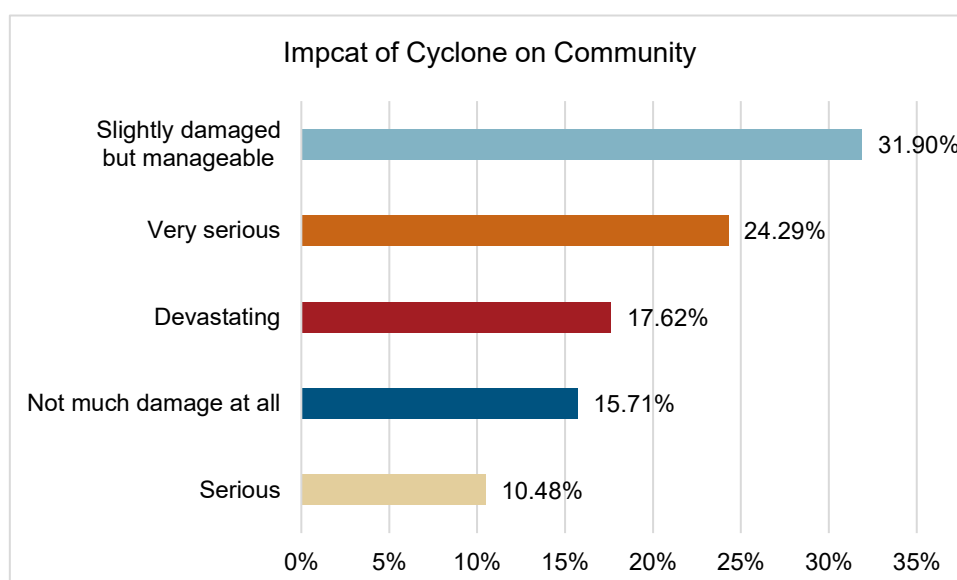


Figure 2-34: Cyclone impact on community

resilient infrastructure and disaster management strategies are needed across the community. [Impact of Flood](#)

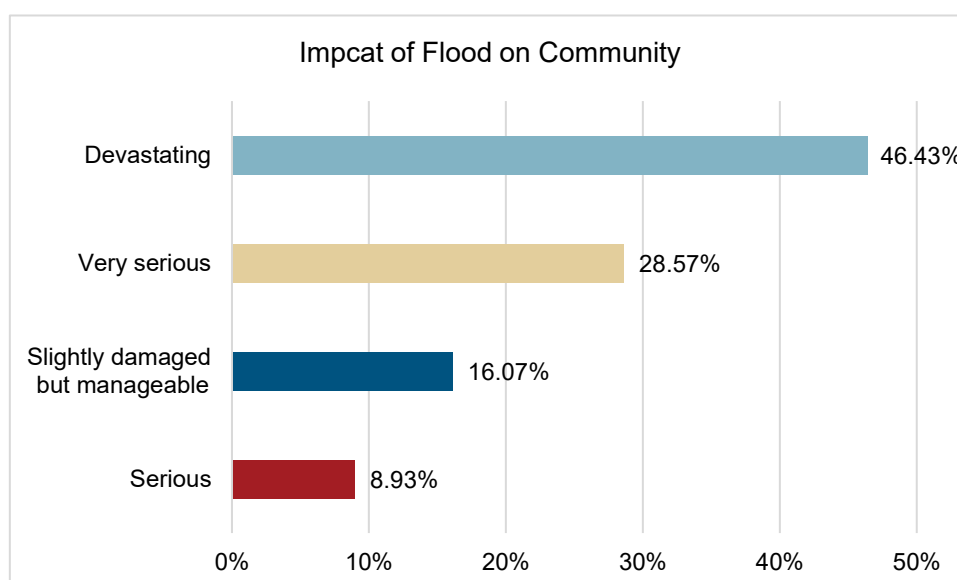


Figure 2-35: Flood impact on community

The data shows that 46.43% of households described the effects of floods as devastating, while 28.57% reported the damage as very serious. For 16.07%, the flood caused slight but manageable damage, and 8.93% faced serious but less extreme impacts. This highlights the severe toll flooding took on a large portion of the community, with only a small fraction being relatively unaffected. At the micro level, the extensive damage to homes, crops, and infrastructure significantly disrupts livelihoods, leading to financial strain and potential displacement. At the macro level, this underscores the need for stronger flood mitigation measures, including resilient infrastructure and effective early warning systems. At the meso level, local community-based recovery programs and support structures play a critical role in helping households recover, but the widespread nature of the damage suggests that broader, more comprehensive flood management strategies are necessary. [Impact of Drought](#)

The data shows that 53.57% of households described the impact of drought as serious, while 21.43% reported manageable but slight damage. Additionally, 17.86% experienced very serious effects, and 7.14% found the drought devastating. This underscores the widespread disruption and strain caused by

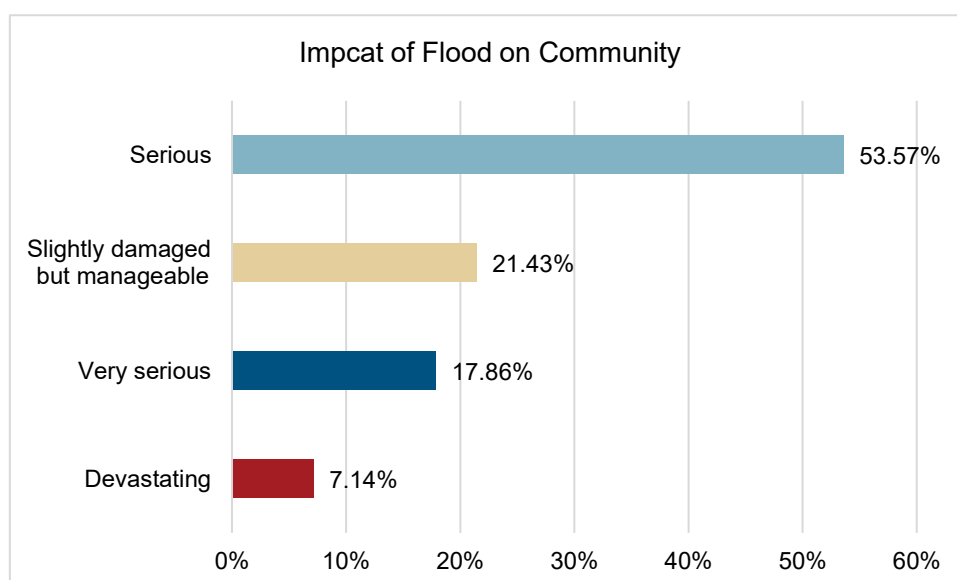


Figure 2-36: Drought impact on community

prolonged dry conditions in the community. At the micro level, the drought severely affects water availability and agricultural productivity, leading to economic hardship and food insecurity. At the macro level, the findings highlight the need for broader drought mitigation strategies, including water conservation and drought-resistant agriculture. At the meso level, local support systems and adaptation strategies are vital in helping affected households manage the consequences, but the significant toll suggests the need for more comprehensive planning and resources to address long-term drought impacts. [Impact of River Erosion](#)

The data shows that 30.43% of households described the impact of river erosion as devastating, while 17.39% reported the effects as very serious. An equal percentage (17.39%) felt the damage was serious, and 34.78% indicated that the damage, although present, remained manageable. This highlights the diverse experiences within the community, with some households facing significant loss, while others were better able to cope. At the micro level, river erosion can lead to loss of land, property, and livelihoods, creating displacement and financial strain for those most affected. At the macro level, the data points to the need for stronger river management, erosion control, and disaster preparedness strategies to protect vulnerable communities. At the meso level, local community initiatives and government interventions may

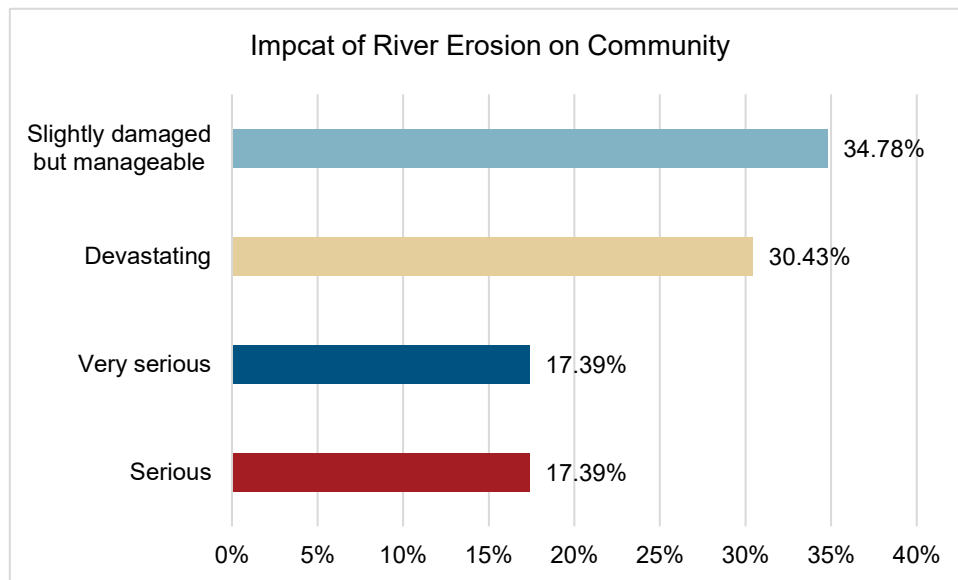


Figure 2-37: River erosion impact on community

help mitigate the impacts, but the range of responses suggests that more comprehensive erosion control measures are necessary. .

Depletion of Ground Water level

The data shows that 40.77% of households reported groundwater depletion, highlighting significant challenges related to declining water levels, which can impact access to drinking water and agricultural irrigation. Meanwhile, 59.23% of households have not observed this issue, indicating that groundwater depletion is not uniformly affecting all areas. At the micro level, households experiencing depletion may face increased costs and time spent sourcing water, affecting their overall well-being. At the macro level, this points to the need for sustainable water management policies and practices to address regional disparities and ensure equitable water access. At the meso level, local community-based water conservation initiatives could help mitigate the issue in affected areas, but the uneven distribution of impacts suggests a need for targeted interventions in regions facing the most severe depletion.

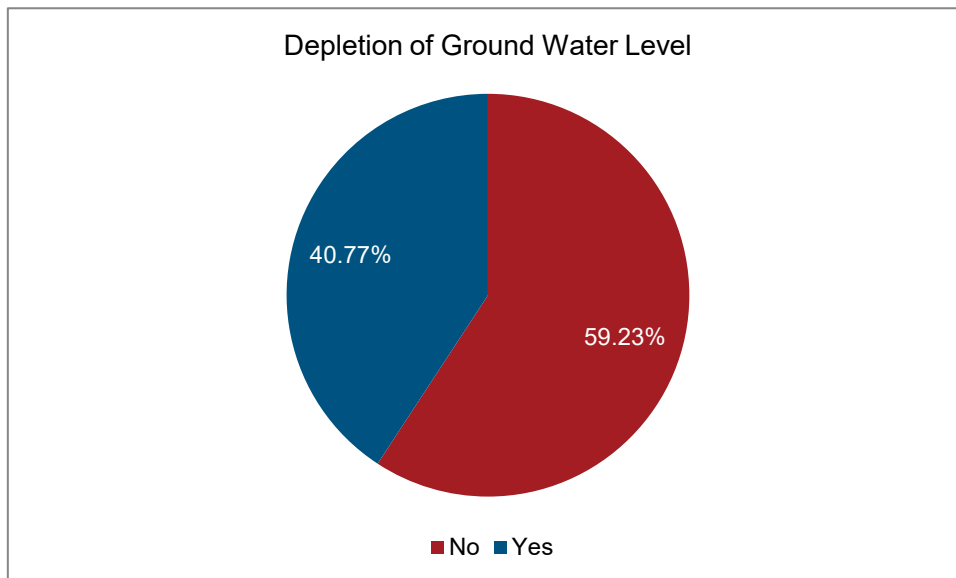


Figure 2-38: Respondent experienced with depletion of ground water level at origin

Shortage of Rainwater

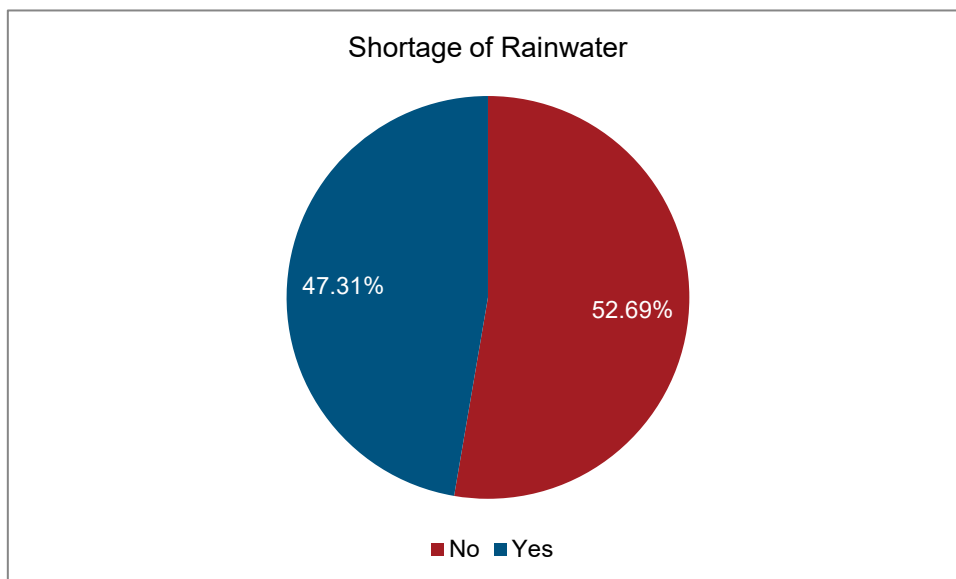


Figure 2-39: Respondent felt shortage of rainwater

The data indicates a near-equal distribution in the experiences of rainwater availability, with 47.31% of households reporting challenges in obtaining sufficient rainwater, while 52.69% face no such issues. This highlights the varying reliance on rainwater as a resource, with nearly half of the households potentially struggling with water access, particularly in areas dependent on rainwater for daily needs or agricultural activities. At the micro level, households facing shortages may experience strain in meeting water demands, leading to increased vulnerability. At the macro level, the data underscores the importance of enhancing rainwater harvesting infrastructure and water storage systems to address uneven availability. At the meso level, localized efforts such as community rainwater collection programs can help mitigate these shortages, especially in regions where rainwater serves as a critical water source.

2.3.2.4 economic opportunities

In the destination areas, economic opportunities were largely shaped by social capital, with 46.19% of households benefiting from support through social networks such as housing and job information. However, 53.81% lacked such support, limiting their access to stable economic opportunities. The macro-level environment posed challenges, as many migrants found work in the informal sector with limited job availability and low wages, reflecting economic constraints. Furthermore, there was minimal involvement from local organizations or government initiatives in supporting migrants, pointing to a gap in meso-level interventions. These factors collectively highlight the need for more structured programs and support systems to enhance economic integration and sustainability for migrants in destination areas.

2.3.2.5 Adaptation strategies

Support from the Relatives

The data shows that relatives played a crucial role in supporting households' adaptation in the destination area, with housing arrangements being the most common form of assistance, reported in 67 cases. Financial support and job information were provided in 36 cases each, highlighting the vital role of family networks in helping migrants secure stability and resources. At the micro level, these forms of support help migrants navigate the challenges of settling in a new area by providing shelter, financial resources, and job opportunities, which are key to livelihood stability. At the macro level, the reliance on family networks suggests gaps in formal support systems and the need for more structured assistance programs for migrants. At the meso level, local community support structures and migration policies may further enhance the assistance migrants receive, but the prominence of family-based support underscores the importance of these informal networks in facilitating migration and adaptation. .

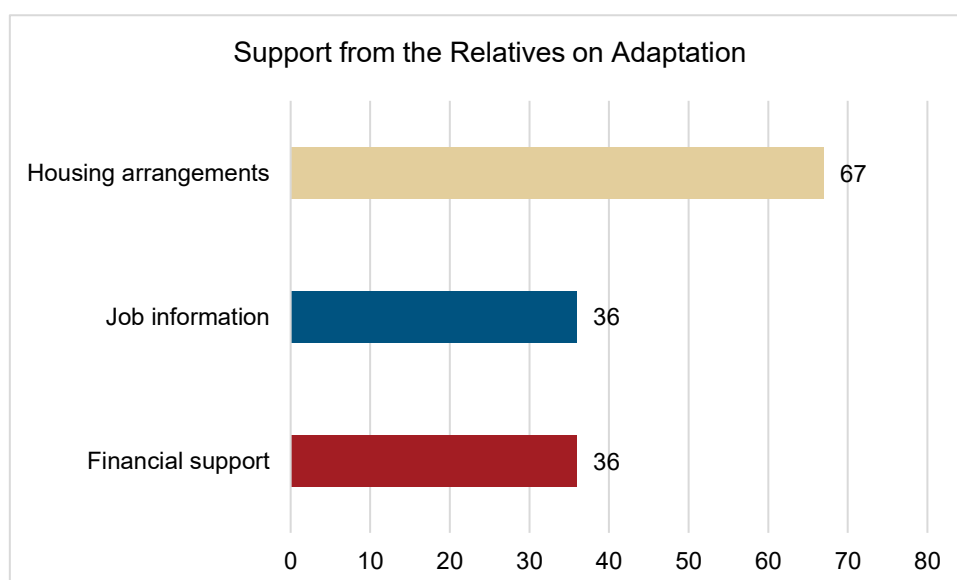


Figure 2-40: Support from the relatives

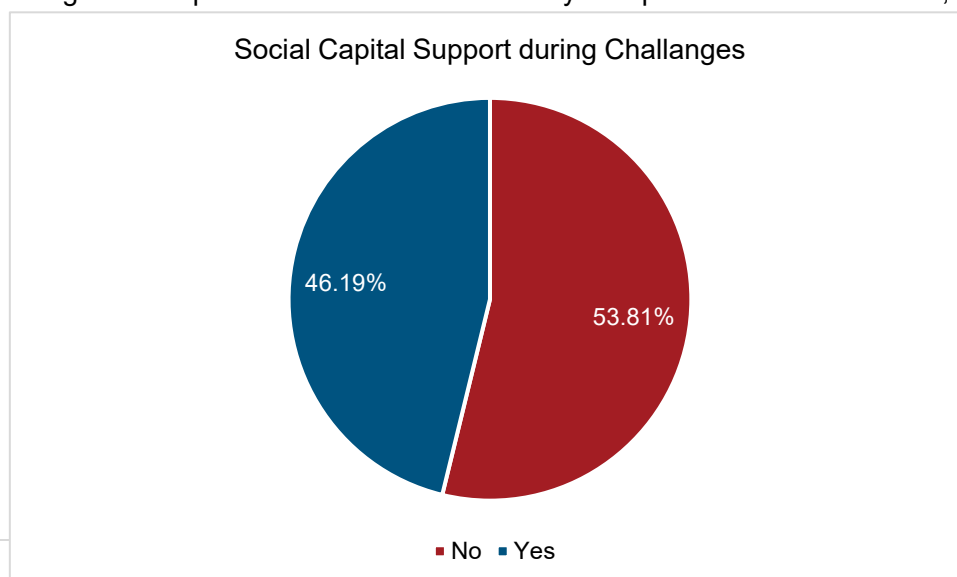
Social capital support during challenging time

Figure 2-41: Social capital support during challenges

The data shows that 46.19% of respondents indicated that social connections helped them overcome challenges during migration and adaptation at the destination, while 53.81% reported not receiving such support. This reflects a divide in the availability or utilization of social networks, with some migrants benefiting from strong social ties while others do not. At the micro level, social connections provide vital emotional and material support, easing the transition to a new environment and helping migrants cope with difficulties such as finding housing, jobs, and navigating local systems. At the macro level, the lack of social support for over half of the respondents highlights the need for more inclusive migration policies and community programs to enhance social integration and support. At the meso level, local community networks or government initiatives could bridge this gap by fostering connections and support systems for migrants, ensuring that everyone has access to the resources needed for successful adaptation. .

2.3.2.6 Qualitative Findings of Driving factors of climate-induced migration (Permanent)

While seasonal migration is a frequent response to immediate climate impacts, permanent migration is increasingly becoming a harsh reality for many families in the southwestern coastal regions of Bangladesh. Long-term displacement is often caused by the permanent loss of land, property, and



livelihoods due to salinity, sea-level rise, and river erosion, which make returning to the place of origin unsustainable. In areas like Khulna, Satkhira, and Bagerhat, families are increasingly finding that their land is no longer viable for agriculture or fishing due to the intensifying effects of climate change.

In Khulna District, particularly in Koyra, permanent migration is driven by land and property loss caused by salinity and river erosion. Abdul Karim, a former farmer from Koyra, shared, *“Cyclone Sidr destroyed everything we owned. Our land became useless, and we had no choice but to move to Khulna.”* Similarly, Jamal Uddin, a fisherman from Paikgacha, explained, *“The saltwater made farming impossible. We had to leave our home forever.”* A case study of Chandiram Biswas from Paikgacha illustrates the devastating impact of river erosion, which forced him to abandon his land and live under a bridge with his family after repeated climatic shocks: *“We lost everything to the river. Even my boat was taken away by the storm.”*

In Bagerhat District, Morrelganj and Sarankhola also experience significant permanent migration due to the loss of land and livelihoods. Halima Akhter, a widow from Morrelganj, shared, *“The river claimed our home. Now, I live with my son in the city. It’s not easy, but at least we have a roof over our heads.”* Similarly, in Sarankhola, families displaced by Cyclone Aila described how the loss of cultivable land and freshwater resources made it impossible to rebuild their lives in the village. Honufa’s case study from Morrelganj highlights the long-term impact of river erosion and flooding, which left her family destitute and dependent on urban migration for survival: *“We waited for years, but nothing grew on our land. Moving was the only option.”*

In Satkhira District, particularly in Assasuni, permanent migration is driven by the increasing frequency of flooding and salinity, which has caused severe land degradation. Shafiqur Rahman, a farmer from Assasuni, explained, *“Every flood takes a little more of our land. After the last one, we had to leave.”* An FGD in Assasuni emphasized the emotional and financial toll of permanent migration, with many families lamenting the loss of their ancestral lands and traditional livelihoods.

The loss of land and property has also created economic instability in these regions. Without viable livelihoods, many families are turning to urban migration as their only option for survival. Rahim Uddin, a small trader from Tala, described, *“When the floods destroyed our crops, we sold the little land we had left and moved to the city. There was no other way.”*

The adaptation strategies of these migrants also reflect the dire nature of their situation. For many, urban migration has become not just a survival strategy but a long-term necessity. In urban areas, migrants often settle in slums, where they face challenges related to housing, access to services, and employment. However, these urban centers still provide a more stable environment than the increasingly uninhabitable rural areas. A displaced family from Morrelganj highlighted how their move to Khulna city, despite its challenges, has provided them with better opportunities for their children and access to essential services that were unavailable in their village: *“At least here, our kids can go to school, even if it’s not the best. Back home, we had nothing.”*

These stories reflect the growing trend of permanent migration as a response to the relentless impacts of climate change in the southwestern coastal zone of Bangladesh. Addressing these challenges requires targeted interventions, including disaster-resilient infrastructure, diversified livelihood programs, and enhanced access to basic services for affected communities.

2.4 Economic and Non-Economic Loss and Damages

2.4.1 Short-term/ seasonal

2.4.1.1 Economic Loss and Damage at Origin

The economic losses incurred at the origin due to climate change and disasters reveal the severe financial strain experienced by households across multiple sectors. Agricultural land damage stands out as the most significant loss, with an average cost of 777,977 BDT. This highlights the profound impact on one

of the primary sources of livelihood for many families, jeopardizing long-term agricultural productivity and economic stability.

Damage to agricultural production also represents a substantial financial hit, averaging 78,558 BDT. This not only affects immediate income but also disrupts food security and future planting cycles. The fisheries sector, another critical component of rural economies, experienced an average loss of 61,659 BDT in fish and shrimp production. Homestead vegetable cultivation, though smaller in scale, faced average damages of 9,630 BDT, reflecting the vulnerability of even small-scale food sources to climatic events. In addition to direct production losses, households suffered an average income loss of 26,020 BDT, further exacerbating financial instability. Coping with disasters often led to increased expenses, averaging 12,286 BDT, which placed additional pressure on already strained household budgets. Savings were also significantly reduced, with an average depletion of 14,293 BDT, limiting the ability of families to buffer against future shocks.

Perhaps most concerning is the rise in indebtedness, with an average increase of 78,927 BDT. This indicates that many households were forced to borrow heavily to recover from disasters, pushing them into cycles of debt that can take years to overcome.

Table 2-2: Average economic damage at origin

Sectors of Damage	Average Damage amount
Average of Amount of agricultural production damage (taka)	78557.97
Average of Amount of agricultural land damage (taka)	777976.7
Average of Amount of fish/shrimp production damage (taka)	61658.54
Average of Amount of Homestead vegetables damage (taka)	9630.263
Average of Amount of Income damage (taka)	26019.52
Average of Amount of Increased expenses (taka)	12285.88
Average of Amount of Reduced savings (taka)	14293.33
Average of Amount of Indebtedness Increases (taka)	78927.08

2.4.1.2 Non-economic Loss and damage at origin

Please relate the non-economic loss and damage according to below categories.

Increase Number of Waterborne Diseases

The increase in waterborne diseases directly relates to the physical health and ecosystem services and biodiversity categories of non-economic loss and damage. The 41.92% of households reporting a rise in these diseases are likely experiencing the consequences of degraded water quality, which can strain physical health, leading to increased illness and healthcare costs. This is particularly important in areas like Satkhira, where salinity intrusion impacts both water quality and agriculture, exacerbating health risks. Moreover, poor water quality can signal a broader degradation of ecosystem services, such as clean water provision, that local ecosystems historically offered. The lack of clean water in these areas may also disrupt the natural balance, affecting both human well-being and biodiversity.

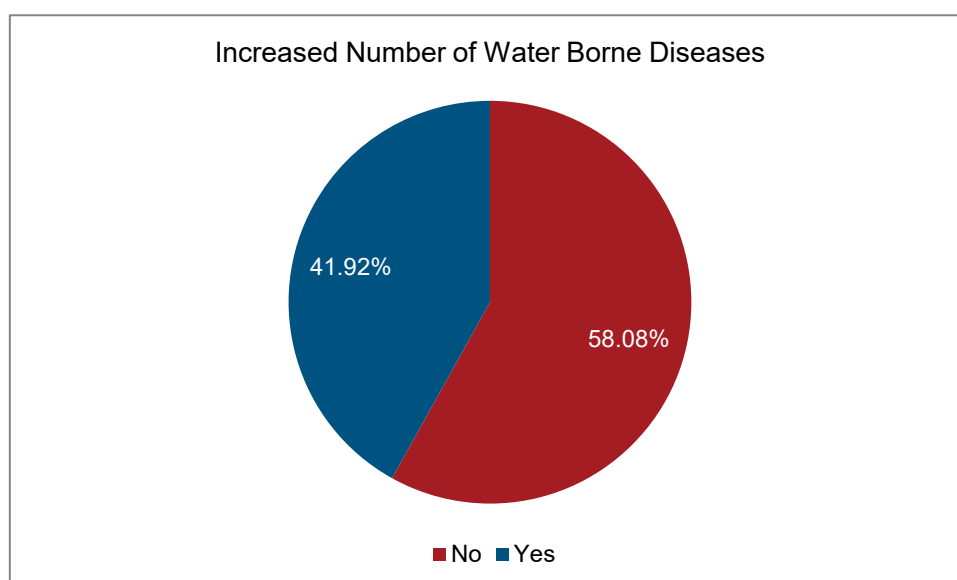


Figure 2-42: Increased number of waterborne diseases

Increase in pregnancy related complication

The reported increase in pregnancy-related complications is closely linked to the physical health category of non-economic loss and damage. The 28.08% of households experiencing complications suggest that a segment of the population is dealing with health challenges that may be exacerbated by environmental stressors, including climate change impacts such as extreme weather events or poor living conditions. In regions like Satkhira, where frequent flooding and salinity intrusion affect both the environment and access to healthcare, pregnant women may be especially vulnerable. Such complications reflect the broader strain on physical health, as maternal health is often closely tied to the overall stability of the community's living conditions and access to adequate medical care.

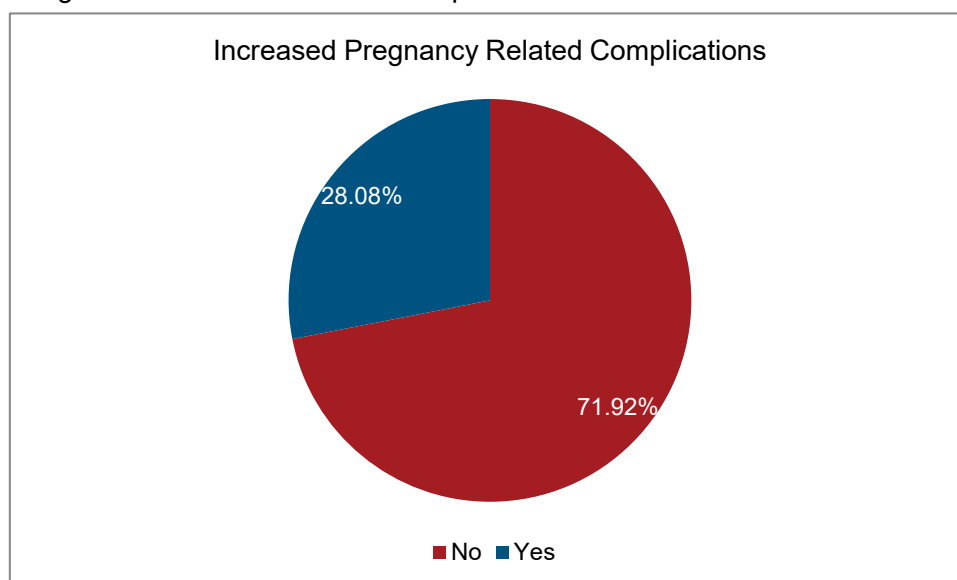
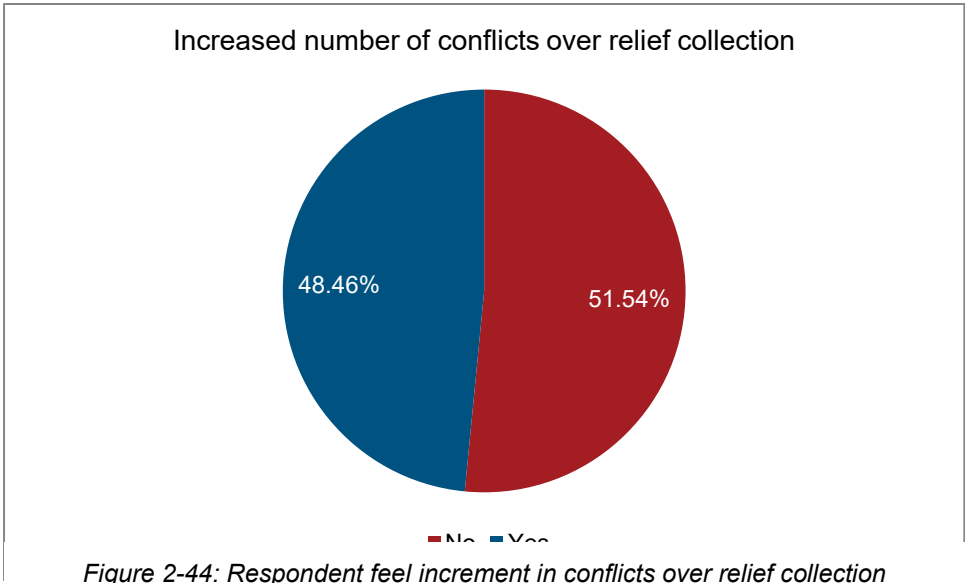


Figure 2-43: Respondent feel increment in pregnancy related complication

Increased number of conflicts over relief collection

The reported increase in conflicts over relief collection is associated with the social fabric category of non-economic loss and damage. The nearly equal split between households experiencing conflicts and those who did not suggests that the distribution of aid may have strained social cohesion in the community. In areas like Satkhira and Bagerhat, where repeated disasters cause widespread

vulnerability, competition for limited resources such as relief supplies can exacerbate tensions. This, in turn, disrupts social networks and community bonds, leading to greater fragmentation and weakening the social fabric. The impact of these conflicts further undermines the ability of households to collectively recover and adapt.



2.4.1.3 Qualitative Findings of Economic and Non-Economic Loss and Damages (Short-term)

In the southwestern coastal zone of Bangladesh, short-term or seasonal migration is heavily influenced by economic and non-economic losses resulting from the immediate impacts of climate change, such as salinity, flooding, and cyclones. These climate events disrupt local livelihoods, particularly in agriculture and fishing, forcing many households to seek temporary work in urban areas. The economic losses experienced during these periods are immediate and often severe, while the non-economic losses—including disruptions to family and community life, health, and well-being—are felt deeply but are less immediately quantifiable. Economic losses include immediate income disruptions, crop failures, and asset depletion, while non-economic damages manifest in the form of social disintegration, psychological stress, and disrupted education for children.

In Khulna District, particularly in Koyra and Paikgacha, the economic losses from seasonal migration are evident in the destruction of agricultural land due to saltwater intrusion and the erosion of fishing grounds due to flooding. As Md. Bellal Hossain from Koyra explained, "The saltwater ruins our crops and the fishing area becomes useless during the dry season. We lose our income, and we have to leave to find work in the city." Similarly, Rabiul Islam from Koyra shared, "We lose our crops during the summer because of salinity. This year, I had to go to Khulna city to work in construction. My family lost everything in the flood and the fishing season was over." These testimonies illustrate the economic pressure that forces families to migrate temporarily in search of alternative sources of income.

In Satkhira District, areas like Assasuni and Tala also face similar challenges. The economic loss in these areas primarily comes from lost agricultural productivity, which severely affects the livelihoods of local communities. Md. Salauddin from Assasuni explained, "The saltwater comes during the summer, and we can't grow crops. We rely on fishing, but the flooding destroys that as well. So, we leave for Khulna city to do any kind of work just to survive." The loss of productive land is a significant driver of seasonal migration, as families seek alternative jobs in urban areas, often in construction or brick kilns, where work is seasonal but provides necessary income.

Non-economic losses during seasonal migration are often related to the disruption of social structures, health issues, and the emotional toll on family members. In Assasuni, Md. Salauddin shared, "When we

leave for the city, we are separated from our families. It's hard for us, especially for the children. They miss their schools and their friends. It's a difficult life, and we have to cope with it." Similarly, Md. Bellal Hossain from Koyra mentioned, "When we migrate, we leave our homes, our community behind. It's not just the work; it's the emotional strain of not being able to be with your family during hard times." The psychological impact of separation from family members and the social disintegration that occurs when families are separated for long periods is a significant non-economic loss experienced by climate migrants.

In Bagerhat District, areas like Morrelganj and Sarankhola also report economic losses stemming from loss of agricultural production and fishing resources. Md. Madhu Sardar, a migrant from Morrelganj, emphasized, "During the monsoon, the floods come, and we lose everything. Our fields are submerged, and we can't grow anything. The saltwater kills the fish, too. That's when we go to the city for work. If we didn't migrate, we wouldn't survive." Non-economic losses, such as the disruption of family life and health deterioration, are also common in these regions. The lack of healthcare facilities and poor sanitation during migration often leads to health complications, particularly for the elderly and children, which aggravates the overall hardship faced by families.

2.4.2 Permanent/ displacement

2.4.2.1 Economic Loss and Damage at Destination

At the destination, economic losses due to climate change and disasters, while lower compared to the origin, still reflect notable financial burdens on households. The average income damage is calculated at 7,772 BDT, suggesting that even in relocated areas, livelihoods remain vulnerable to environmental hazards. Households faced an average increase in expenses of 2,652 BDT, indicating the additional costs incurred in managing disaster impacts and adapting to new environments. Savings were also significantly affected, with an average reduction of 6,050 BDT, further limiting financial security for many families. Indebtedness at the destination rose by an average of 8,115 BDT, reflecting the ongoing reliance on borrowing as a coping mechanism in the aftermath of disasters. This pattern of debt accumulation highlights persistent economic strain and limited access to alternative resources. Damage to housing units represents one of the largest financial burdens, with an average cost of 12,120 BDT. This illustrates the vulnerability of physical infrastructure in destination areas, often requiring significant repair and rebuilding efforts following climatic events.

Overall, while the scale of losses at the destination is relatively lower than at the origin, the data underscores the continuous financial challenges that migrants face, complicating their efforts to rebuild stable and resilient lives in new areas.

Table 2-3: Average economic damage at destination

Sectors of Damage	Average Damage amount
Average of Amount of Income damage (taka)	7772.222
Average of Amount of Increased expenses (taka)	2651.587
Average of Amount of Reduced savings (taka)	6050
Average of Amount of Indebtedness Increases (taka)	8115.385
Average of Amount of Damage of housing unit (taka)	12120

2.4.2.2 Non-economic Loss and damage at destination

Increase number of water borne diseases at Destination

The reported increase in waterborne diseases at the destination area can be related to the physical health category of non-economic loss and damage. While a majority of households have not faced an increase in waterborne diseases, the 20.48% who have experienced such issues suggest that inadequate water quality and sanitation infrastructure in some destination areas are contributing to health challenges. In urban areas like Khulna, where overcrowding and industrialization can strain water systems, the lack of proper sanitation and limited access to clean water may exacerbate these health risks. This increase in waterborne diseases further underscores the vulnerability of migrants in destination areas, where poor living conditions can adversely impact physical health.

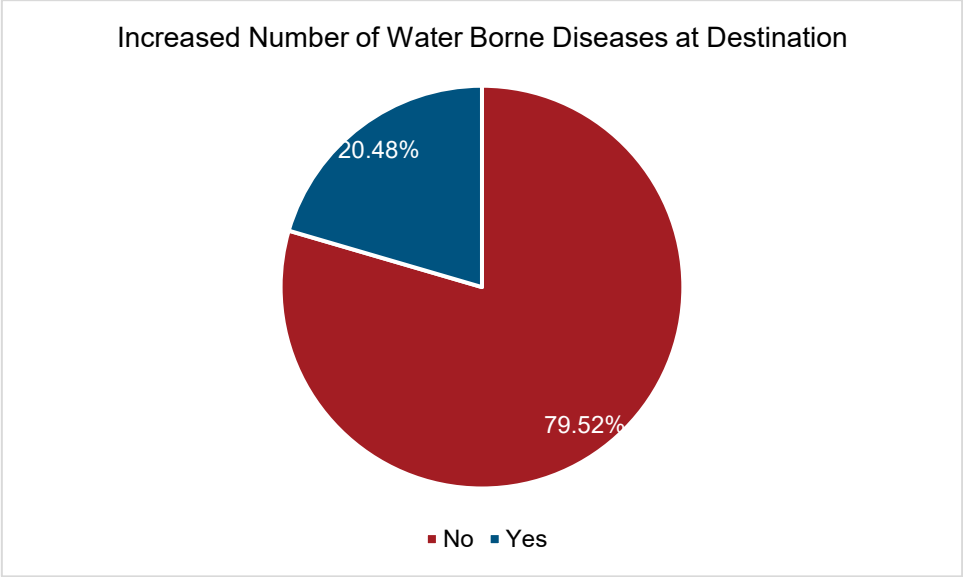


Figure 2-45: Increased number of waterborne diseases at destination

Increased number of conflicts over relief collection at destination

The reported increase in conflicts over relief collection at the destination area can be associated with the social fabric category of non-economic loss and damage. Although the majority of households did not face increased conflicts, the 20.48% who reported such issues suggest that there are social tensions linked to the management of relief resources. These disputes could be indicative of weakened community cohesion, as competition for scarce resources during times of crisis leads to disputes and undermines social solidarity. This issue highlights the need for improved coordination and fair distribution of aid to reduce tensions and foster a stronger social fabric in destination areas.

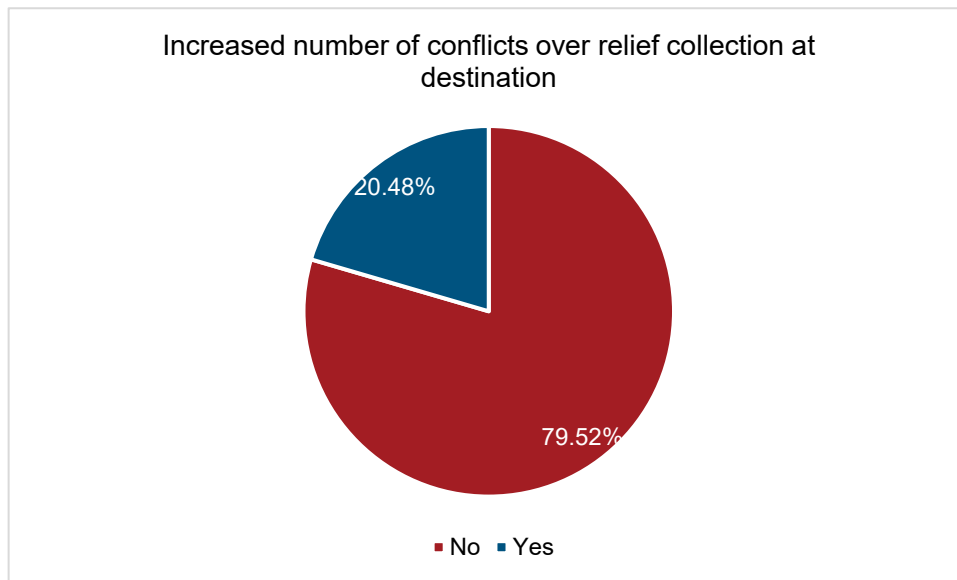
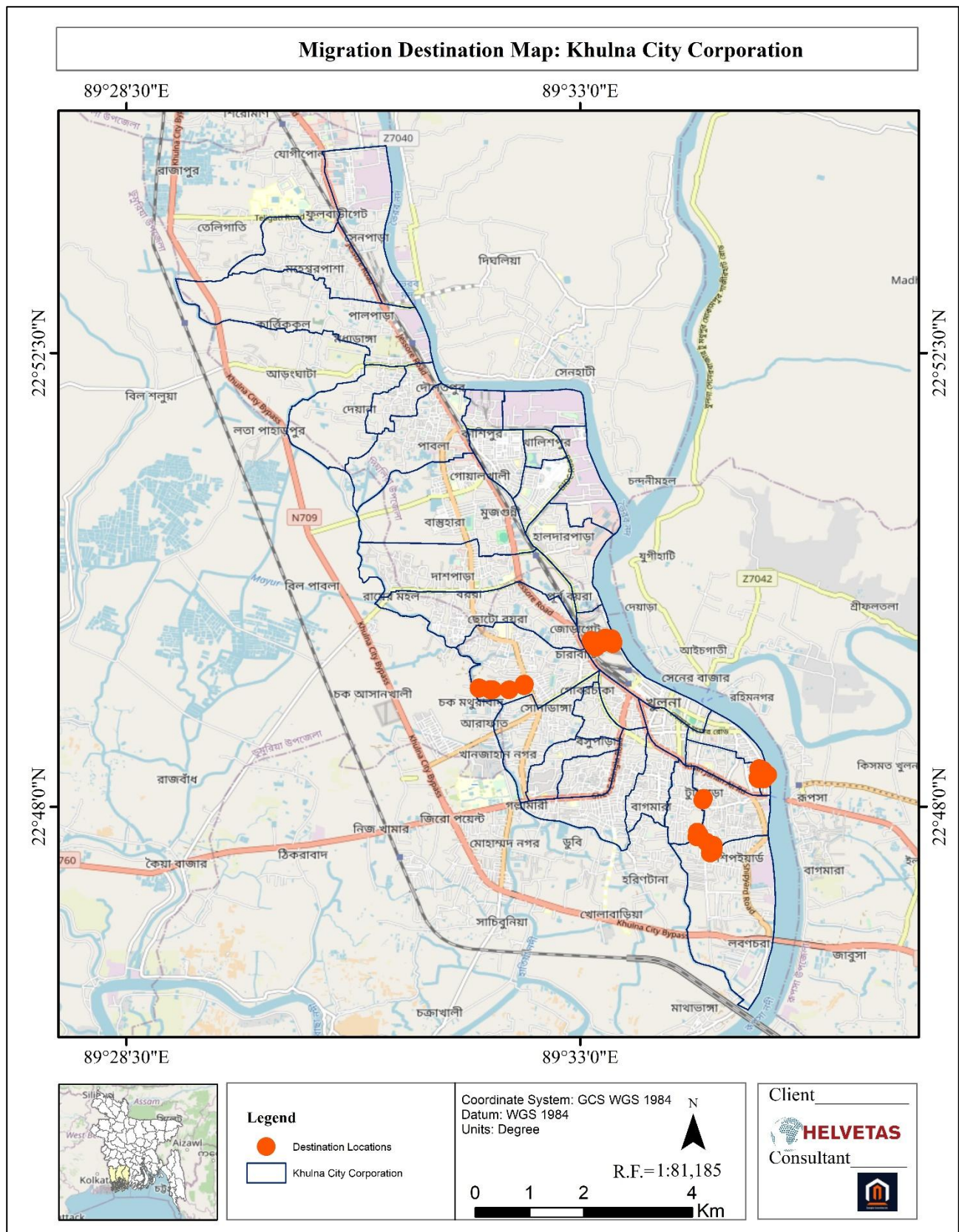


Figure 2-46: Respondent feel increment in pregnancy related complication at destination

2.5 Primary destinations of climate-induced migran

2.5.1 Short-term/ Seasonal:

Provide a map of primary destination from the hotspot.



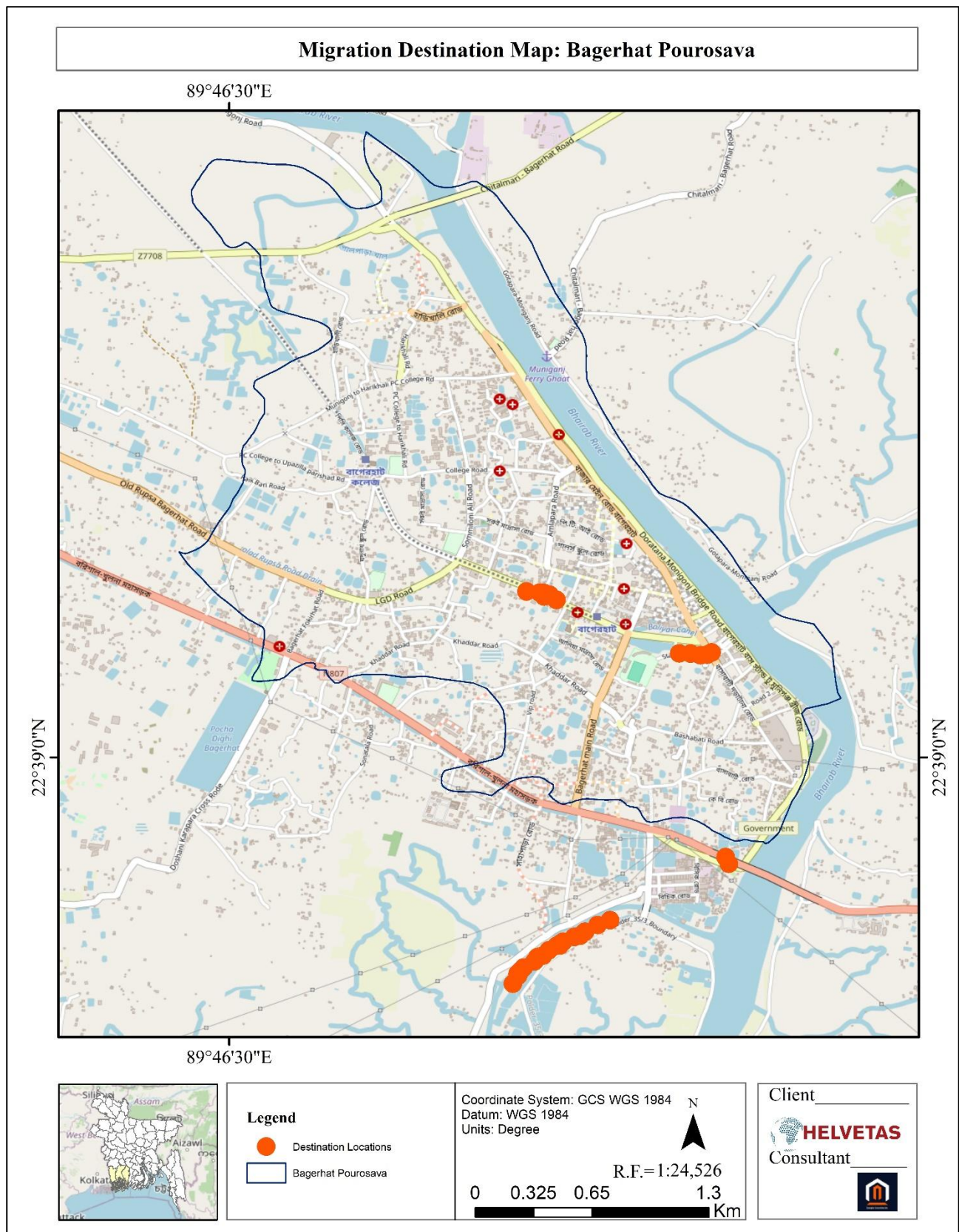


Figure 2-48: Primary Destination Bagerhat

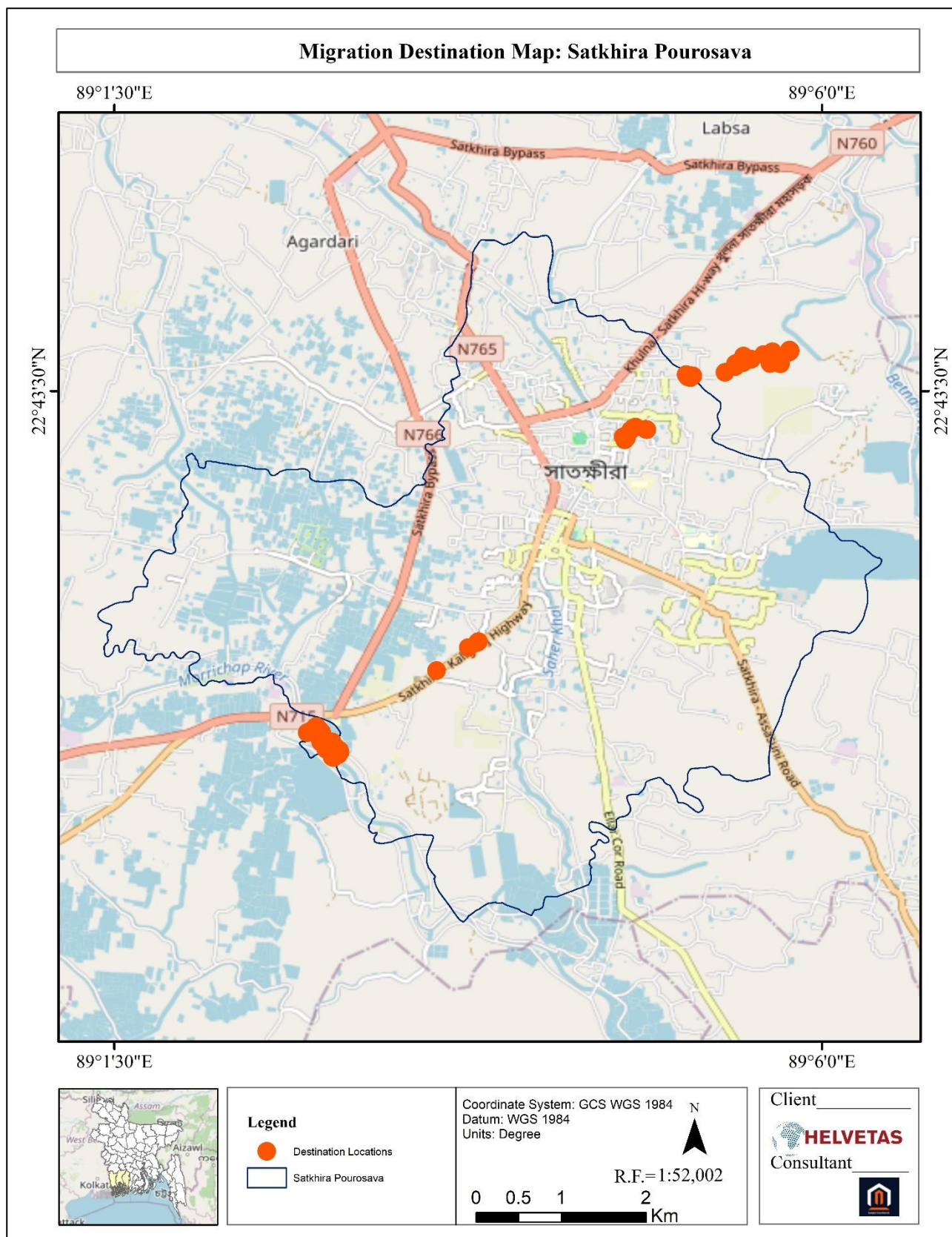


Figure 2-49: Primary Destination Satkhira

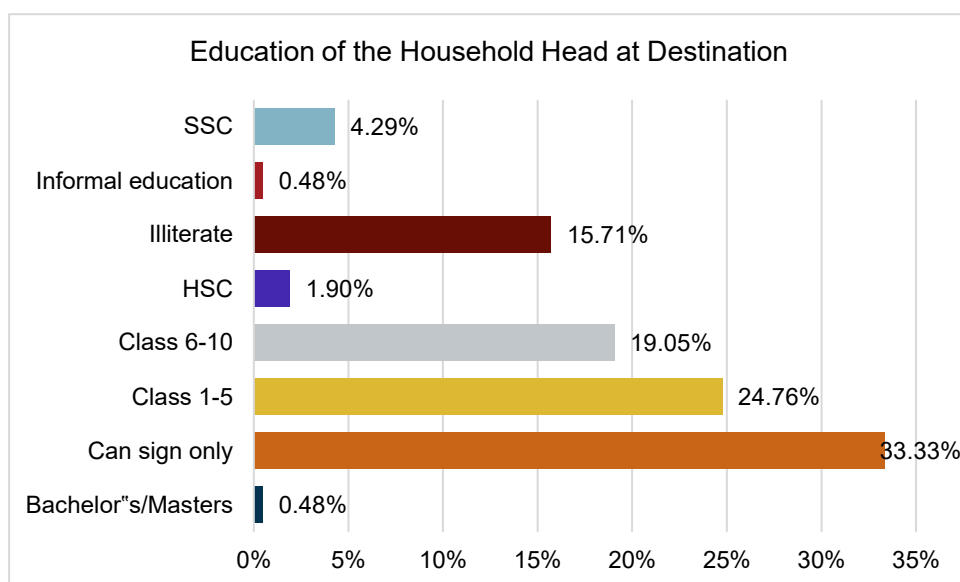


Figure 2-50: Education of household head at destination

2.5.1.1 Household Composition

The average household size in the community is approximately 4.98, meaning that, on average, each household consists of just under five members. This suggests that the family structure is relatively small, with nearly five individuals per household, which is typical for many regions aiming for a more manageable household size due to economic or social factors.

In terms of gender distribution, the total number of male household members is 665, while the total number of female household members is 630. This results in a nearly equal male-to-female ratio. The difference between male and female members is relatively small, which may indicate balanced gender representation within households. Specifically, for every 1.05 males, there is roughly 1 female, which suggests a relatively equal gender distribution within the community.

The average number of male members per household is about 2.56, indicating that slightly more than half of the average household consists of male members. Meanwhile, the average number of female members per household is about 2.42, which is just slightly lower than the number of males per household. This difference of 0.14 suggests that male members are slightly more prevalent than female members on average in each household, though the gap is minimal.

2.5.1.2 Employment Status

The employment profile of respondents shows that most rely on labor-intensive and agricultural work. Day labor is the most common occupation, with 62 respondents engaged in it, highlighting a dependence on temporary and informal jobs. Farming, including both ownership and sharecropping, is the next most prevalent, involving 29 respondents, reflecting the community's strong ties to agriculture. Domestic roles are also significant, with 26 housewives and 23 respondents engaged in household tasks like cleaning, cooking, and childcare. Fishing employs 20 people, while others are involved in agricultural labor, small businesses, and driving jobs such as Easybike or rickshaw driving. A smaller portion works in self-employment, factory jobs, and skilled labor. Migration work accounts for 10 respondents, indicating economic movement outside the community. Government jobs, gher (aquaculture) ownership, and specialized roles like software engineering and religious leadership represent less common but important forms of employment. Unemployment affects a small group, with four respondents relying on alms. Retirees and pension earners make up a small percentage, contributing to household income despite not actively working.

Table 2-4: Employment of the Respondents

Sector	Respondent
Day labour	62
Farming (Own/ share agriculture)	29
Housewife	26
Domestic work (cleaning, cooking, water fetching, child care, washing clothes, etc.)	23
Fishing	20
Agriculture labour	13
Petty business	12
Driver (Easy bike, Van, Rickshaw, Bus, Truck etc.)	10
Migration worker	10
Self-employed	9
Factory worker	7
Retired	7
Skilled labour	7
Unemployed	4
Alms	4
Gher owner	3
Government job or Service	3
Boatman	2
Pension earner	2
Employment based on Sundarbans	1
Remittance earner	1
Student	1
Kobiraj	1
Software Engineer	1
Imam	1

2.5.1.3 Housing Conditions

Construction Material of Wall at Origin

The construction materials used for walls at the origin reflect a mix of traditional and modern approaches, driven by economic conditions and resource availability. Tin is the most common material, used in 46.15% of homes, indicating a preference for affordable and durable structures. Pucca or brick walls account for 19.23%, representing households with the means to invest in permanent housing. Wooden walls make up 18.85%, while mud walls are found in 11.54% of homes, highlighting the continued reliance on natural and locally sourced materials. Smaller portions of homes are constructed from straw (2.31%) and bamboo (1.92%), reflecting low-cost or temporary housing solutions.

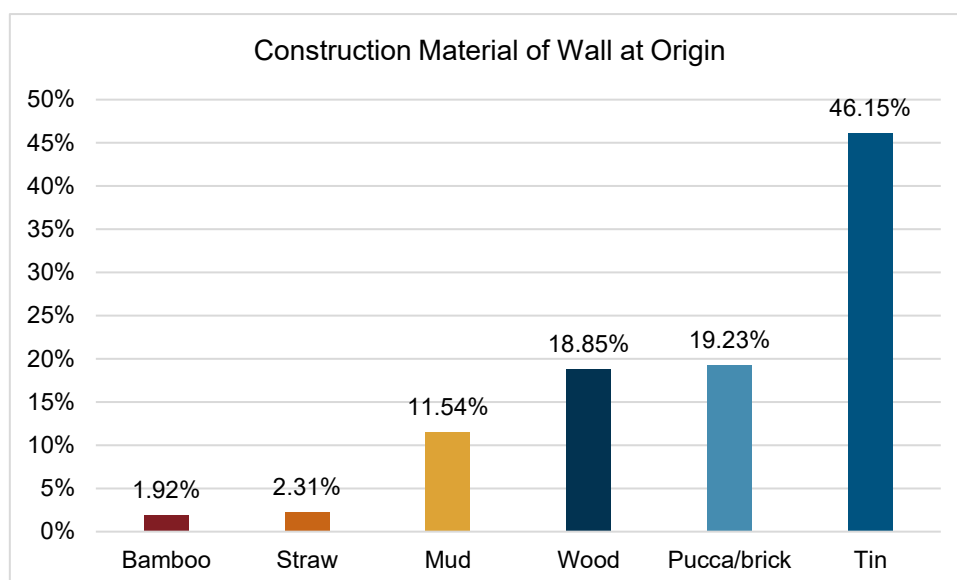


Figure 2-51: Construction Material of Wall at Origin

Construction Material of Roof at Origin

The construction materials used for roofing at the origin predominantly feature tin, covering 78.85% of households. This reflects a community preference for durable, affordable, and weather-resistant materials

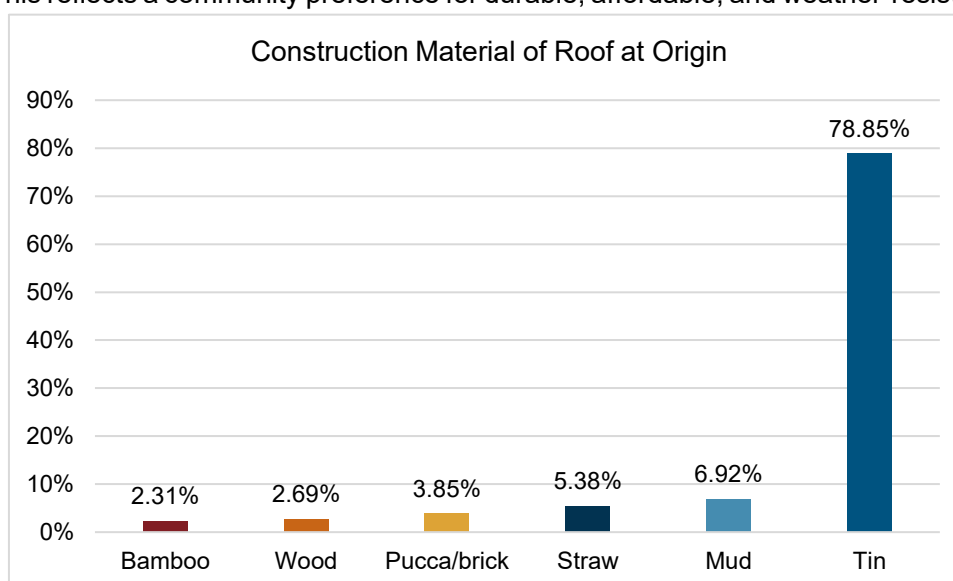


Figure 2-52: Construction Material of Roof at origin

that provide protection against heavy rains and

harsh weather conditions. Mud roofs account for 6.92%, indicating the use of traditional and cost-effective building techniques in some homes. Straw, used by 5.38% of households, represents a low-cost but less durable roofing option. Pucca or brick roofs, which offer a more permanent and robust structure, are found in 3.85% of homes. A smaller percentage of households use wood (2.69%) and bamboo (2.31%) for roofing, reflecting limited use of these materials compared to tin.

Construction Material of Floor at Origin

The flooring materials used at the origin overwhelmingly consist of mud, accounting for 84.62% of households. This highlights the reliance on locally available and cost-effective materials, aligning with

traditional building practices. Pucca or brick floors, which provide greater durability and protection from environmental factors, are present in 14.62% of homes, reflecting a smaller but significant portion of households that can invest in more permanent flooring. Bamboo and tin floors are rare, each making up only 0.38% of the total, suggesting minimal use of these materials for flooring purposes.

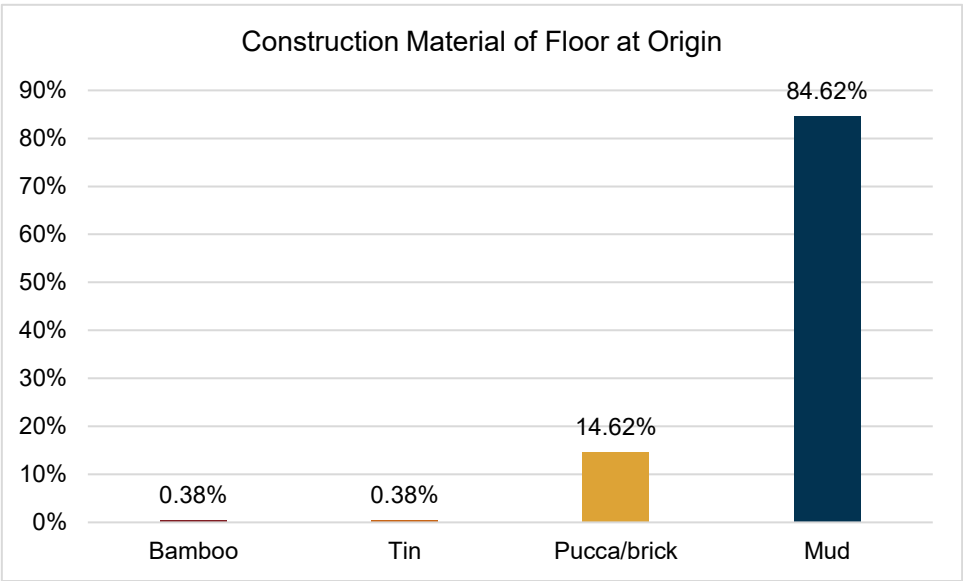


Figure 2-53: Construction Material of Floor at Origin

2.5.1.4 Access to services.

Household have access to safety net

The majority of households, accounting for 85.24%, do not have access to a safety net, while only 14.76% have some form of safety net available. This highlights a significant vulnerability, as most households lack financial support mechanisms to help cope with economic hardships or disasters.

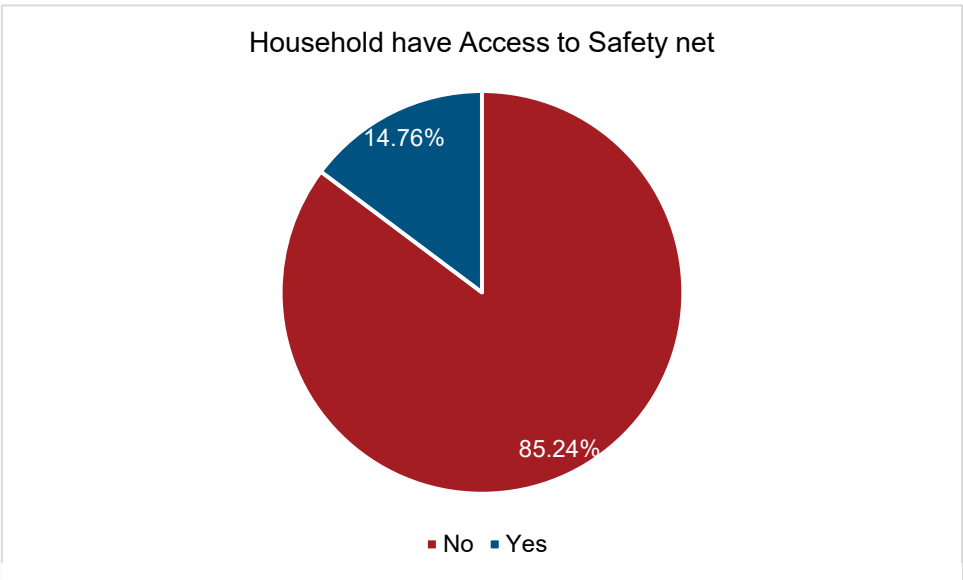


Figure 2-54: Household have access to safety net

Household Land Access Pattern

The land access pattern among households reveals that the majority, 67.31%, possess land solely for housing, reflecting limited engagement in agricultural activities. A significant portion, 25.38%, are landless, indicating vulnerability and a lack of assets that could contribute to their livelihoods. Only 6.92% of households have both housing and farmland, which suggests a small segment balancing residence and cultivation. A negligible 0.38% have farmland without residential land.

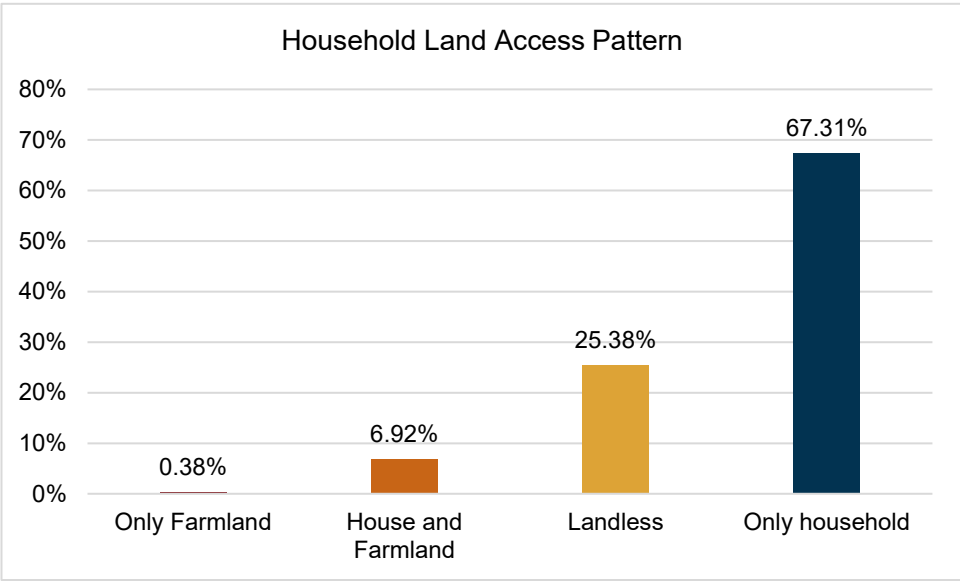


Figure 2-55: Household land access pattern

2.5.1.5 Qualitative Findings of Destinations of Climate-Induced Migrants (Short-term)

In the context of short-term or seasonal migration, the southwestern coastal regions of Bangladesh—especially areas like Koyra, Paikgacha, Assasuni, and Morrelganj—witness substantial movement of individuals towards nearby urban centers such as Khulna, Bagerhat, and Satkhira. These regions are highly vulnerable to the impacts of climate change, including salinity intrusion, flooding, and cyclones, which severely disrupt livelihoods. Seasonal migration often becomes a necessary survival strategy for rural populations who, during the off-season for agriculture or fishing, face challenges in maintaining their household income.

The migrant demographic profiles in these areas reveal a clear pattern of migration driven by economic pressures and limited employment opportunities in the affected rural regions. Many migrants from these coastal areas are in their late twenties to early forties, typically in the working age group, and have limited formal education. Md. Bellal Hossain, a seasonal migrant from Koyra, explained, "I go to Khulna every year for work. I am in my 40s and have limited education. But here, there is work in construction, and I need to support my family." This points to the significant role of age and education in determining migration patterns. Individuals like Md. Bellal have limited opportunities to develop skills that would allow them to find stable work locally, which pushes them to urban centers in search of temporary employment.

Women, particularly in regions such as Assasuni and Morrelganj, often take on household duties during the absence of male members but may engage in informal sector work when required. Rabiul Islam, another migrant from Koyra, stated, "I have to leave my wife and children behind and go to the city for construction work. There is no work here because of floods." This underscores the gendered nature of migration, with men generally seeking wage labor in cities while women stay behind to maintain the household. However, in certain instances, women also migrate temporarily, often to take up housekeeping jobs in urban settings. Momena Khatun, a woman from Koyra, mentioned, "During the off-season, I work in the brickfields in Khulna to help with household expenses."

These seasonal migrants primarily seek work in low-wage, unskilled sectors such as construction, brick kiln labor, and fishing. These sectors are attractive because they require minimal education and experience, which suits the skill sets of many rural migrants. However, employment status in the cities is

often precarious, with low wages and unstable work conditions. Md. Bellal described his experience: "I work long hours, but the wages are too low. Sometimes, we don't get paid on time. It's hard to keep up with rent and daily expenses." This statement highlights the vulnerability of migrants who move to cities in search of work but often find themselves in low-paying, seasonal jobs with limited financial security. The housing conditions of seasonal migrants also reflects their economic vulnerability. Most seasonal migrants live in overcrowded, informal settlements in cities, where rent is cheaper but access to basic services such as clean water, sanitation, and healthcare is minimal. Md. Bellal explained, "We live in a slum area in Khulna, and it is always crowded. There is no sanitation, and the roads are full of mud."

While these seasonal migrants find employment in urban centers, they often face significant challenges in accessing services. Healthcare, education, and sanitation facilities are scarce in the slums where they reside. Many seasonal migrants, especially those who are in the informal sector, lack access to social protection services such as healthcare or insurance. For example, Md. Madhu, a seasonal migrant in Khulna, mentioned, "When I got sick, I couldn't afford treatment, and I had to rely on traditional medicines." This reflects the healthcare vulnerabilities that seasonal migrants face in urban centers, as they often cannot access public health services due to the high cost or inadequate infrastructure.

2.5.2 Permanent/ displacement:

2.5.2.1 Population Changes

The data highlights significant population changes in both origin and destination areas due to permanent migration driven by climate-induced hazards. In origin areas like Koyra, Assasuni, and Morrelganj, the out-migration of families is depleting the local population, contributing to declining community structures and labor shortages. Md. Bellal Hossain from Koyra shared, *"After the cyclone, we couldn't return. We lost our land and our livelihoods. We had to sell everything to come to Khulna for good."* This reflects the trend of declining rural populations as households relocate to urban areas. Conversely, urban centers like Khulna and Satkhira are experiencing population growth, primarily in slum areas, as displaced families migrate in search of work and shelter. Md. Madhu from Morrelganj described the urban influx, noting, *"The city is better than my village, but the rent is too high, and the conditions here are still harsh."* This influx contributes to the rapid expansion of informal settlements, placing pressure on urban infrastructure and services. The population shift from coastal villages to cities is altering demographic patterns, with rural areas becoming increasingly depopulated while urban areas face growing overcrowding and resource strain.

2.5.2.2 Urbanization Effects

Urbanization in coastal Bangladesh, driven by climate-induced migration, reflects a complex interplay of survival, opportunity, and strain. Key informant interviews reveal that recurring disasters such as cyclones, floods, and salinity intrusion steadily erode local livelihoods, prompting migration to urban centers. As one academician noted, *"The southwestern region of Bangladesh is very disaster-prone. Every year after the disaster, a large group of people who lose their capacity to sustain in the area move to nearby cities looking for better livelihood opportunities."*

However, this influx places significant pressure on urban infrastructure and services. Cities like Khulna struggle to accommodate the rising demand for housing, utilities, and waste management. *"Our cities are already struggling to serve their own people... the extra pressure of migrant people creates more demand, and the cities are struggling more to accommodate these services,"* the academician added. Informants highlighted those informal settlements often become the primary option for migrants, exacerbating vulnerabilities and limiting access to formal employment or social services.

Economically, the interviews indicate that while urban migration provides new job opportunities, it disrupts rural economies. Migrants frequently engage in low-wage sectors such as rickshaw pulling, day labor, and domestic work. This shift reduces rural labor availability, increasing costs for agricultural laborers. As one informant reflected, *"With the increment in migration, the local labor force is shifting to city areas, and it has become difficult to find local labor at a cheap cost."*

Socially, migration fragments communities and disrupts education. Children’s schooling is interrupted, and elderly or sick individuals face adaptation challenges. Additionally, cultural friction arises as rural migrants adapt to urban environments. Efforts by NGOs to provide skills training in tailoring, baking, and basic technology offer some relief, but the scale remains insufficient. The key informants emphasized the need for integrated coastal management plans to enhance local livelihoods and reduce the need for migration. Additionally, incorporating climate migrants into urban planning frameworks is critical to ensuring long-term stability and reducing urban strain.

2.5.2.3 Socio economic disparities

The data reveals stark socio-economic disparities between origin and destination areas for climate migrants from regions like Koyra, Assasuni, and Morrelganj. In origin areas, economic deprivation is widespread, with declining agricultural productivity and loss of land due to salinity intrusion and flooding. Md. Madhu from Morrelganj shared, *“I had to leave my home because farming was no longer possible. My land got flooded, and I couldn’t grow crops.”* This highlights the economic struggles faced by rural populations, where livelihood opportunities are diminishing. In contrast, urban areas like Khulna offer more job opportunities, but socio-economic inequality persists. Migrants often end up in informal settlements with substandard living conditions. Md. Madhu further noted, *“The city is better than my village, but the rent is too high, and the conditions here are still harsh. There are more job opportunities, but most of the time, the work is temporary, and the wages are low.”* This reflects how, despite the availability of jobs, urban migrants face economic insecurity, low wages, and high living costs, exacerbating their vulnerability. The disparity is evident in access to services and infrastructure. Rural areas suffer from poor economic opportunities, while urban areas, though providing better infrastructure, are overcrowded and lack affordable housing, reinforcing inequality for climate migrants.

2.5.2.4 Housing Conditions

Construction material of wall at destination

At the destination, the predominant construction material for household walls is tin, accounting for 57.14%, reflecting a reliance on affordable and readily available materials. Pucca or brick walls constitute 30.95%, indicating a significant portion of more durable and permanent structures. Bamboo and wood are used equally, each making up 4.76%, while mud walls are less common at 1.90%. Straw, the least

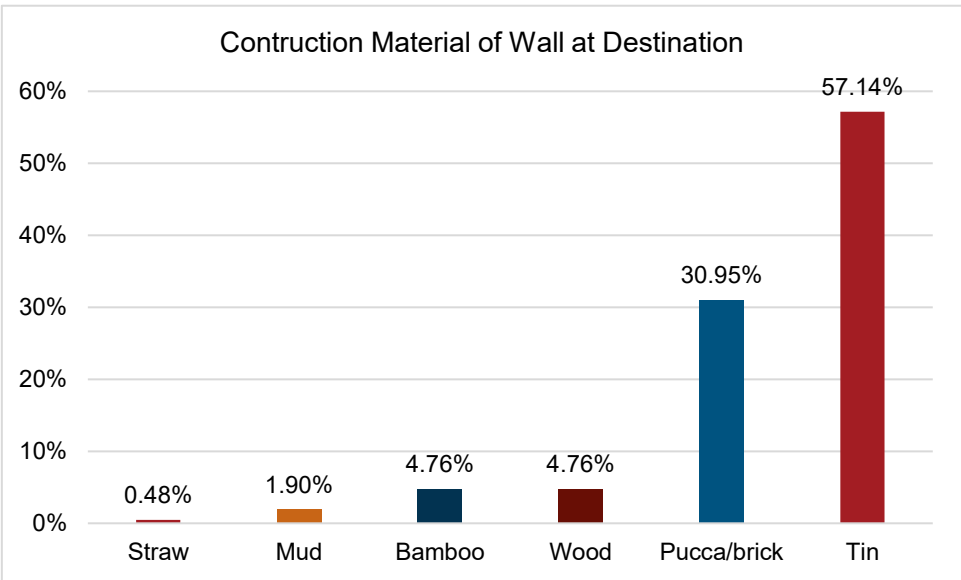


Figure 2-56: Construction material of wall at destination

used material, accounts for only 0.48%.

Construction material of roof at destination

At the destination, tin is the most commonly used material for roofing, making up 90.95% of households. This suggests a preference for durable, weather-resistant, and widely available roofing options. Pucca or brick roofs account for 3.81%, indicating some investment in more permanent and sturdy roofing structures. Bamboo and mud are used in 1.43% and 2.86% of cases, respectively, reflecting a relatively minor use of natural materials for roofing. Straw, the least used material, is found in only 0.95% of roofs, indicating its limited application at the destination.

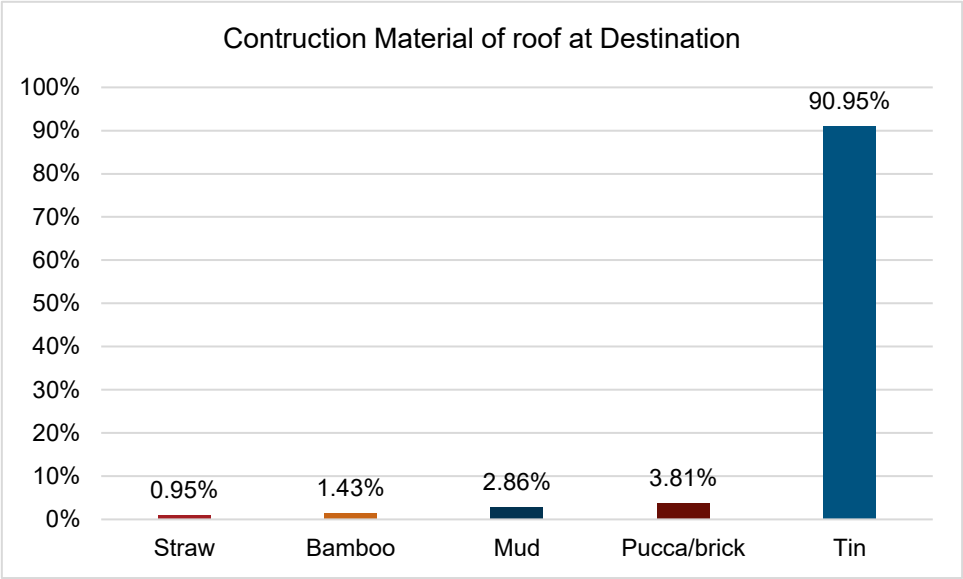


Figure 2-57: Construction material of roof at destination

Construction material of floor at destination

At the destination, the majority of households use mud for flooring, accounting for 51.90% of homes. This reflects a significant reliance on natural and readily available materials, which are often cheaper and

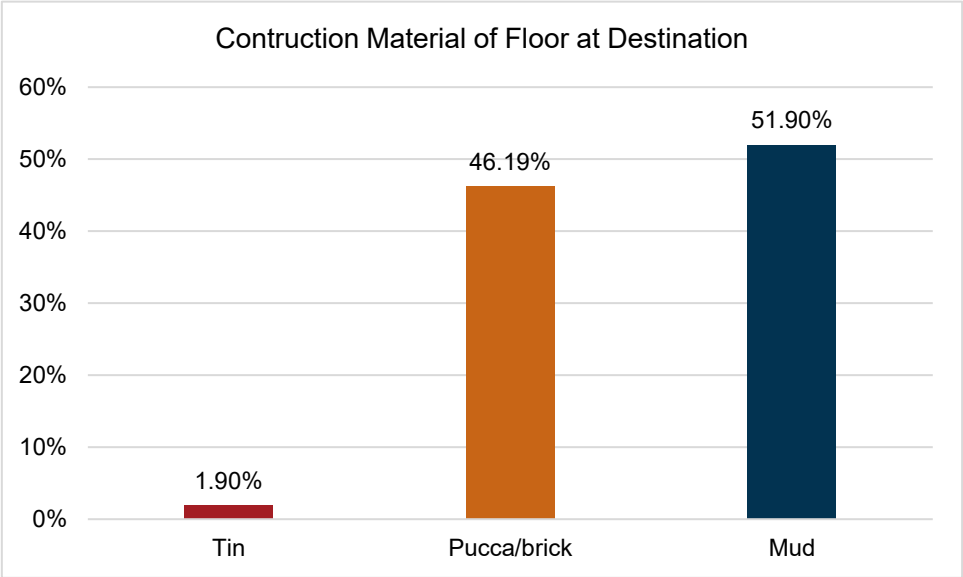


Figure 2-58: Construction material of floor at destination

easier to work with. Pucca or brick floors are the second most common, making up 46.19% of the households, suggesting that some households have invested in more durable and permanent flooring options, possibly due to higher economic stability or long-term habitation. Tin is the least used material

for flooring, appearing in only 1.90% of households, indicating its limited application in this context, as it is generally more expensive and less common for flooring purposes.

2.5.2.5 Infrastructure Needs

The infrastructural needs of urban areas receiving climate migrants, such as Khulna, are becoming increasingly urgent as migration patterns intensify. The growing influx places immense pressure on housing, utilities, and essential services, exposing vulnerabilities in urban planning. One key informant observed, *“Our cities are already struggling to serve their own people. the extra pressure of migrant people creates more demand, and the cities are struggling more to accommodate these services.”* This highlights the pressing requirement for expanded urban infrastructure that can support both current residents and incoming populations. Housing shortages remain a critical concern, with many migrants settling in informal or unsafe structures. Without affordable housing options, new arrivals frequently rely on temporary accommodations or family networks, exacerbating overcrowding and strain on limited resources. Informants emphasized that water supply, sanitation, and electricity systems are increasingly inadequate, contributing to service disruptions. Additionally, transportation networks require upgrades to alleviate congestion caused by population growth. Education and healthcare facilities in urban areas are also under pressure, unable to meet the needs of expanding communities. As one informant recounted, *“Post-disaster, the irony is when they become able to rebuild, another hazard hits them. And the cycle continues.”* This perpetual rebuilding process reflects the need for resilient infrastructure capable of withstanding climate shocks.

To mitigate these challenges, coordinated urban development initiatives must prioritize affordable housing, expand public services, and invest in resilient, climate-adaptive infrastructure. This proactive approach, grounded in inclusive urban planning, will help cities like Khulna address the evolving needs of climate migrants and build sustainable urban environments.

2.5.2.6 Qualitative Findings of Destinations of Climate-Induced Migrants (Permanent)

The phenomenon of permanent migration is deeply tied to the long-term loss of livelihoods, especially in regions like Koyra, Assasuni, and Morrelganj, where communities are increasingly being displaced due to sea-level rise, salinity intrusion, and frequent cyclonic events. These climate-induced hazards have rendered agriculture and aquaculture the two primary sources of livelihood unsustainable, pushing communities to permanently relocate to cities in search of better living conditions and opportunities.

Md. Bellal Hossain, who was forced to permanently migrate from Koyra, explained, *“After the cyclone, we couldn’t return. We lost our land and our livelihoods. We had to sell everything to come to Khulna for good.”* This statement underscores how land and property loss are critical triggers for permanent migration. In coastal areas, where agriculture is heavily reliant on saline water and seasonal flooding, permanent displacement becomes inevitable for many families who no longer have the means to support themselves in their original locations.

The socio-economic push factors driving permanent migration are compounded by economic deprivation. For instance, Md. Madhu from Morrelganj shared, *“I had to leave my home because farming was no longer possible. My land got flooded, and I couldn’t grow crops. We moved to Khulna where there were no floods, but work is scarce here too.”* This highlights how economic hardships and the inability to sustain livelihoods in their original areas force migrants to look for more stable living conditions. These economic pressures are compounded by environmental degradation a combination that exacerbates the vulnerability of already marginalized populations. In Assasuni, Md. Madhu’s experience is echoed by others, who describe the same process of selling land and losing livestock to natural disasters before migrating to urban areas.

As permanent migrants flood cities like Khulna, Bagerhat, and Satkhira, they experience significant socio-economic disparities in terms of housing conditions and employment. These disparities are especially stark when comparing the urban settings to the rural areas they left behind. While urban areas like Khulna offer better access to infrastructure such as electricity and roads, the housing conditions for migrants are still substandard, with many families residing in overcrowded slums where access to sanitation and clean water is limited. Md. Madhu noted, *“The city is better than my village, but the rent is too high, and the conditions here are still harsh. There are more job opportunities, but most of the time, the work is*

temporary, and the wages are low.” This sentiment reflects the economic insecurity that permanent migrants often face in cities, despite the apparent opportunities that urban areas may offer. In Khulna, as the population of climate migrants increases, the city’s infrastructure is becoming strained. Urbanization is evident in the growing number of migrants seeking refuge in the city, but at the same time, the city struggles to meet the needs of this influx. Migrants from coastal regions are often found in slum areas, which face poor infrastructure, including unreliable waste management, lack of sanitation, and poor-quality housing. Md. Bellal from Koyra explained, *“We live in a slum area. The roads are not paved, and there is no proper drainage system. The flooding in the monsoon season makes living here more difficult.”* This reflects the growing challenges that urban areas face in accommodating climate migrants, particularly in terms of providing adequate infrastructure and basic services.

2.6 Availability and nature of employment opportunities

2.6.1 Short-term/ seasonal:

2.6.1.1 Availability of Jobs

In climate-affected areas like Koyra, Assasuni, and Morrelganj, job availability in origin areas is limited, primarily tied to agriculture, fishing, and seasonal aquaculture, all of which are increasingly disrupted by environmental stressors. This scarcity pushes individuals to migrate seasonally to urban centers like Khulna, Satkhira, and Bagerhat for low-wage, unskilled work.

In Khulna, migrants from Koyra frequently find work in construction and brick kilns. Shahina Begum from Koyra noted, *“Most men work in construction sites or brick kilns in Khulna city during the dry season. The work is hard, but there are no better options.”* This reflects the limited employment landscape in rural areas, where opportunities dwindle during the dry season due to salinity intrusion affecting farming and aquaculture. Similarly, in Assasuni, available jobs in the destination areas like Khulna and Dhaka include factory work or housekeeping, but they remain uncertain and inconsistent. Fatema Khatun explained, *“In Dhaka or Khulna, jobs like housekeeping or factory work are available, but they are not guaranteed.”* This highlights the precarious nature of urban employment for migrants, where competition is high and job security is low. In Morrelganj, seasonal migrants often find jobs in informal fishing-related activities in Khulna or Bagerhat’s urban markets. Ayesha Rahman mentioned, *“Men from this area work as daily laborers at fish markets in Khulna or Bagerhat. The wages are low, but it’s better than staying idle in the village.”* This underscores how urban areas provide more job options compared to rural origin areas, even though the wages remain minimal.

Across these regions, the availability of urban jobs contrasts sharply with the declining employment opportunities in rural origin areas, compelling seasonal migration as a survival strategy.

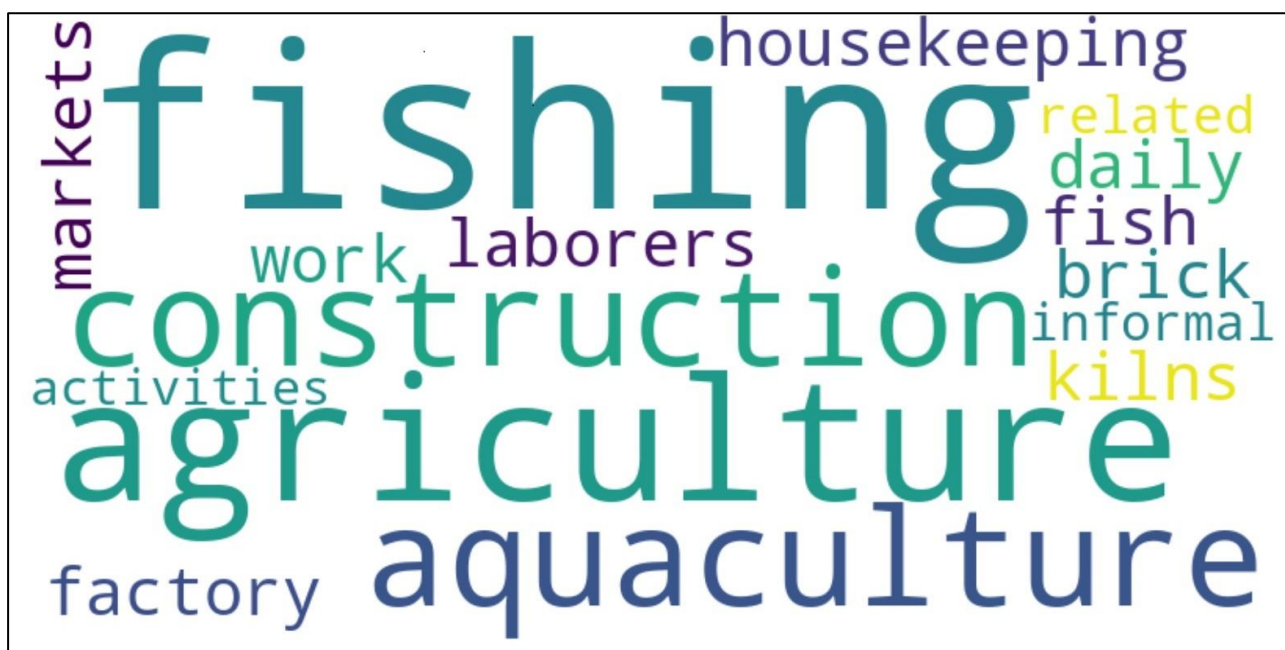


Figure 2-59: Wordcloud of job availability

2.6.1.2 Skill Demands

In the origin area, the demand for skilled workers reflects a diverse and evolving set of needs within the local economy. Transport services, including rickshaw and van pulling, as well as easy bike driving, are integral to the daily functioning of the area. These occupations are likely in response to a lack of formal public transportation systems, where such services fulfill crucial roles in enabling mobility and connectivity. As urbanization progresses and logistical networks expand, the demand for drivers and operators in this sector may grow, along with the need for efficient and affordable transport solutions.

The health sector is another critical area of demand, particularly in the fields of nursing and caregiving. The growing need for healthcare support, especially in rural or underserved areas, indicates a demand for skilled individuals who can provide essential medical assistance. This could be driven by an aging population or a lack of readily available healthcare facilities, making local caregivers and nurses essential in addressing these gaps. As healthcare access improves and the community continues to grow, there may be an increasing demand for healthcare professionals across various specializations.

In terms of technical skills, there is considerable demand for professions like plumbing, mobile repair, and mechanics. These skills highlight the importance of maintaining infrastructure, machinery, and technology. In a region where technological advancement may be catching up, such technical roles become crucial to sustaining daily life and supporting local businesses. Additionally, these skills are indispensable for maintaining homes, vehicles, and local industries, contributing significantly to the region's overall development.

Handicrafts also remain a central part of the community, with skills such as tailoring, dressmaking, and weaving in demand. These traditional crafts provide not only a livelihood for many but also help preserve cultural heritage. With a growing emphasis on sustainability and locally produced goods, there is potential for these skills to see a resurgence in demand. Custom garments and handmade products may appeal to a broader market, further enhancing the region's economic potential.

Woodworking and furniture making are also valued in the origin area, reflecting a need for skilled artisans capable of producing durable and high-quality products. Whether for personal or commercial use, the demand for well-crafted furniture suggests a market that values quality craftsmanship. The tradition of

woodwork is likely a long-standing one, and as infrastructure and housing development continue, so too will the need for skilled carpenters and furniture makers.

While agricultural work was not specifically detailed in the skill list, it is likely that agriculture plays a foundational role in the local economy. Farmers and agricultural workers skilled in crop production, livestock management, and sustainable farming practices are vital to the community's economic survival. The increasing challenges posed by climate change, such as floods, droughts, and soil erosion, may create new opportunities for skills related to sustainable farming, water management, and conservation techniques. These skills would be essential in adapting to the changing climate and ensuring the sustainability of local agriculture.

As climate change also affects the region, there is a growing need for skills in environmental management and renewable energy. Water conservation, sustainable farming, and flood mitigation skills may become increasingly necessary as the area deals with more frequent and intense climatic events. This need for environmental expertise could extend to other areas, such as renewable energy, where training in solar energy or green building practices might be increasingly relevant to both residents and businesses.

Additionally, the rise of small businesses and entrepreneurship could further influence the demand for skills. As more individuals seek to diversify their livelihoods, skills in business management, marketing, and finance will be crucial for success. Small businesses could serve as a vital avenue for economic growth and resilience, particularly as the local population works to overcome the economic challenges posed by climate change.

Overall, the demand for skills in the origin area is multifaceted, reflecting both traditional livelihoods and emerging needs shaped by technological advancements and environmental challenges. The diversity of skills required—from transportation and healthcare to craftsmanship and technical work—highlights the dynamic nature of the local economy. Addressing these needs through targeted training and skill development can help equip the community to thrive in an evolving landscape, ensuring both short-term adaptation and long-term resilience.

The skill demand analysis highlights a significant reliance on transport-related occupations, with rickshaw/van pulling (12 workers) and easy bike driving (11 workers) being the most common sources of income at the origin. Traditional manual trades like tailoring and dressmaking (4 workers) and weaving (3 workers) also play a notable role, reflecting the community's reliance on local craftsmanship. Specialized skills such as plumbing and pipe fitting (2), mobile repairing (1), nursing/caregiving (1), mechanics (1), and wood furniture design/making (1) are present but limited, suggesting either lower demand or fewer trained individuals. This skill distribution indicates an opportunity to enhance employability by focusing on training programs in high-demand fields like transport, tailoring, and mechanics, while also expanding into specialized areas such as mobile repair and caregiving, which

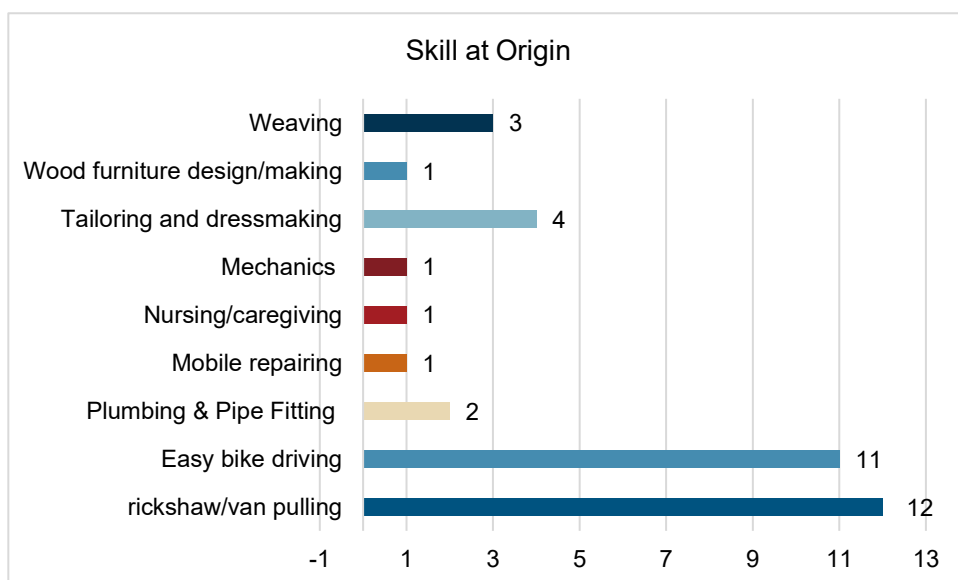


Figure 2-60: People have skill at origin

could align with urban job market needs. Supporting traditional crafts like weaving could also help sustain local industries and create micro-enterprise opportunities. Wage levels

The income level among households at the destination exhibits considerable variation, reflecting a diverse socioeconomic profile. The incomes range from as low as 2,000 to as high as 30,000 BDT. The

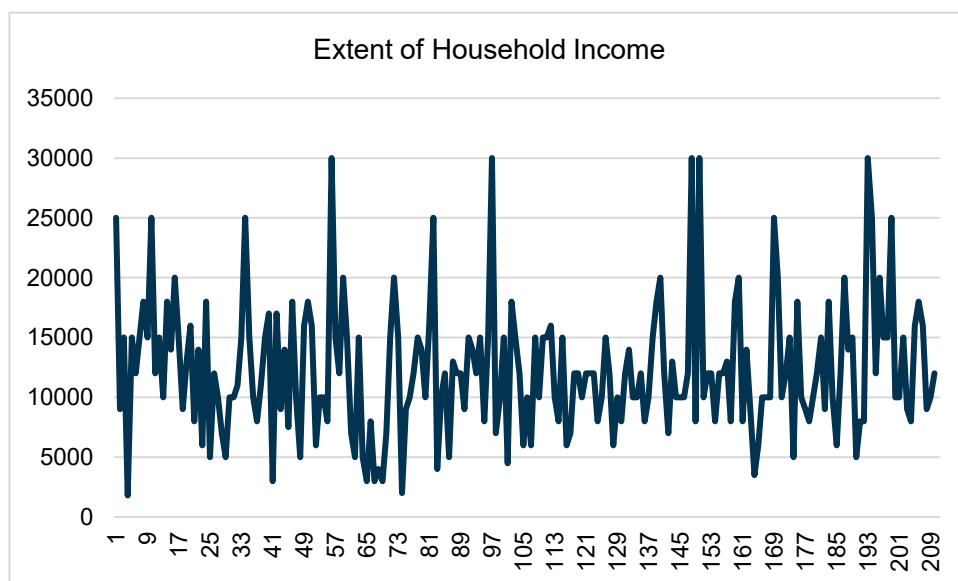


Figure 2-61: Extent of Household income level

most frequent income level is 15,000 BDT, indicating that a significant portion of households earn around this amount. A substantial number of households also fall within the 10,000 to 20,000 BDT range, suggesting a concentration of middle-income earners. However, there are also a notable number of lower-income households earning below 10,000 BDT, as well as a few higher-income households earning 25,000 BDT or more.

2.6.1.3 Barriers to employment

Barriers to employment at the origin are largely driven by natural disasters, with 104 respondents citing floods and cyclones as significant obstacles. Additionally, 73 respondents identified a lack of opportunities, and 99 reported low wages, particularly in agriculture and manual labor. Landlessness affects 51 individuals, further limiting employment prospects. Other minor barriers include young age (3 respondents) and a general lack of opportunity (1 respondent). These factors combine to create a challenging environment for securing stable employment at the origin.

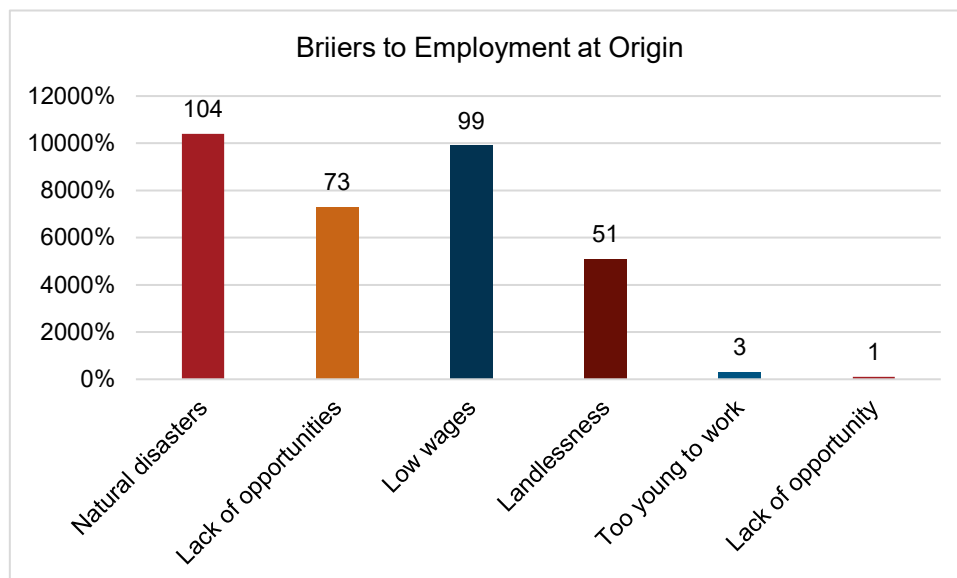


Figure 2-62: Barriers to employment at origin

2.6.1.4 Employer Perceptions

Employer perceptions of seasonal and permanent migrants in urban areas like Khulna, Satkhira, and Bagerhat often reflect a bias against rural workers, contributing to wage disparities and limited job mobility for migrants. Employers frequently view migrants from coastal areas such as Koyra, Assasuni, and Morrelganj as less skilled, less reliable, and expendable, reinforcing their employment in low-wage, physically demanding sectors like construction, brick kilns, and fish markets.

Md. Hasan Ali from Assasuni highlighted this disparity, stating, *“The wages are barely enough to cover living expenses in the city. We often skip meals to save money.”* This reflects the undervaluation of migrant labor, where wages remain low despite the critical roles migrants play in urban economies. Employers' reluctance to offer higher wages or stable employment stems from perceptions that rural migrants lack formal education or technical skills. This is reinforced by Rabeya Sultana from Koyra, who noted, *“Without local connections, getting a job in the city is very difficult. Many of us rely on middlemen who take a share of our earnings.”* Employers may perceive rural migrants as having fewer social networks and less bargaining power, allowing them to offer lower wages and fewer benefits. In addition, focus group discussions (FGDs) in Satkhira and Bagerhat revealed that employers often regard migrants as temporary labor, limiting their chances for advancement. While migrants bring valuable skills in agriculture, fishing, and manual labor, these are often mismatched with the demands of urban employers, further restricting their job opportunities.

Overall, employer perceptions contribute to reinforcing socio-economic inequalities between urban residents and rural migrants, perpetuating cycles of poverty and limiting the upward mobility of those who migrate from climate-affected areas.

2.6.1.5 Alignment with Migrant Skills

The skills that seasonal and permanent migrants from coastal areas like Koyra, Assasuni, and Morrelganj bring to urban centers are often rooted in agriculture, fishing, and manual labor. However, these skills are frequently misaligned with the types of jobs available in urban areas like Khulna, Satkhira, and Bagerhat. This mismatch restricts employment opportunities and forces migrants into low-wage, physically demanding sectors that require minimal training, such as construction, brick kilns, and fish markets. Migrants with experience in farming and aquaculture often lack the technical skills needed for urban industries, leading to underemployment or engagement in informal labor. This is particularly evident among male migrants who predominantly find work in construction or as day laborers, while women often enter domestic work or garment factories, where job security is low and wage disparities are common.

Additionally, the lack of formal education, limited access to vocational training, and inadequate urban networks further widen the gap between migrant skills and urban labor demands. Employers may prefer local workers with more relevant experience or view migrants as expendable, exacerbating the issue. This misalignment underscores the need for targeted skill development programs that bridge the gap between rural and urban job markets, enhancing migrants' employability and economic resilience.

2.6.1.6 Gaps in Opportunities

The gap in opportunities for migrants from coastal areas like Koyra and Assasuni is driven by a combination of skill mismatches, lack of formal networks, and employer biases. Migrants often lack the specialized skills required for stable urban jobs, limiting them to low-wage sectors such as construction, brick kilns, and informal market labor. This restricted access to better-paying, stable employment perpetuates economic insecurity and forces migrants into precarious living conditions. One key factor is the absence of local connections or formal job placement channels, which creates barriers to entry even for available low-skill jobs. Rabeya Sultana from Koyra highlighted this issue, saying, *“Without local connections, getting a job in the city is very difficult. Many of us rely on middlemen who take a share of our earnings.”* This reliance on intermediaries reduces earnings and limits upward mobility, reflecting how migrants' lack of urban networks reinforces unequal access to job opportunities.

Addressing this opportunity gap requires not only skill development but also systems to connect migrants directly with employers, bypassing exploitative intermediaries and fostering more equitable employment opportunities.

2.6.1.7 Qualitative Findings of availability and nature of employment opportunities (Short term)

In the context of short-term or seasonal migration, individuals from climate-affected areas in the southwestern coastal zone—particularly from Koyra, Morrelganj, Assasuni, and Paikgacha—typically migrate to nearby urban areas such as Khulna, Satkhira, and Bagerhat in search of temporary employment. The availability of jobs in these urban destinations is largely concentrated in low-wage, unskilled sectors such as construction, brick kilns, and fishing. These jobs are crucial for the seasonal migrants who leave their homes in search of income opportunities during the off-seasons for agriculture or fishing in their home regions.

Employment opportunities for short-term seasonal migrants in Bangladesh's southwestern coastal regions, including Khulna, Satkhira, and Bagerhat, are highly contingent on urban labor markets. In Khulna, migrants from Koyra primarily find jobs in the construction and brick kiln sectors. Shahina Begum, a resident of Koyra, noted, *“Most men work in construction sites or brick kilns in Khulna city during the dry season. The work is hard, but there are no better options.”* FGDs in Koyra revealed that these jobs often demand physical strength but do not require formal education or technical skills, making them accessible to unskilled rural workers.

In Satkhira's Assasuni, migrants face similar employment patterns but with higher competition for low-wage jobs. Fatema Khatun, a migrant, explained, *“In Dhaka or Khulna, jobs like housekeeping or factory work are available, but they are not guaranteed.”* FGDs highlighted that women from Assasuni often

migrate to urban areas to work in garment factories, where they face barriers such as wage discrimination and lack of job security.

In Bagerhat's Morrelganj and Sarankhola, seasonal migrants often engage in informal fishing-related activities in urban markets. Ayesha Rahman, a local resident, shared, *"Men from this area work as daily laborers at fish markets in Khulna or Bagerhat. The wages are low, but it's better than staying idle in the village."* FGDs revealed that while these jobs align with the fishing skills of migrants, they are seasonal and highly dependent on market demand.

Across all three regions, wage levels for seasonal migrants remain low. Migrants from Koyra reported earning an average of 300-400 BDT per day, with no additional benefits. Md. Hasan Ali from Assasuni remarked, *"The wages are barely enough to cover living expenses in the city. We often skip meals to save money."* FGDs in Morrelganj highlighted that wage disparities exist between local and migrant workers, with employers perceiving migrants as more expendable and less skilled.

Barriers to employment include language differences, lack of formal identification, and limited networks in urban areas. Rabeya Sultana from Koyra pointed out, *"Without local connections, getting a job in the city is very difficult. Many of us rely on middlemen who take a share of our earnings."* FGDs in Satkhira and Bagerhat emphasized the mismatch between the skills of rural migrants and the demands of urban employers, creating a gap in opportunities. Employers in urban centers often perceive rural migrants as less reliable and less skilled, further restricting their access to better-paying jobs

2.6.2 Permanent/ displacement:

2.6.2.1 Long-term Job availability

Long-term job availability for permanent migrants from climate-affected areas like Koyra, Assasuni, and Morrelganj remains limited at both origin and destination points. In rural areas, long-term employment options in agriculture and fishing have diminished due to environmental stressors such as salinity intrusion, cyclones, and flooding. This loss of livelihood forces many families to migrate permanently to urban areas like Khulna, Satkhira, and Bagerhat, where job opportunities are also constrained by saturated labor markets and skill mismatches.

At the origin, agricultural jobs are becoming increasingly unreliable. As Md. Bellal Hossain from Koyra described, *"The saltwater ruined everything. Our land was flooded, and crops died. We couldn't farm anymore, so we came to Khulna."* This reflects how long-term rural employment is eroded by environmental degradation, leaving little alternative but to seek work in urban centers. However, in cities like Khulna, the influx of displaced families has created intense competition for limited unskilled jobs in construction, transportation, and informal markets.

At the destination, oversupply of labor results in further job insecurity. Abdul Karim, a displaced farmer, highlighted this challenge: *"I work in construction, but there are too many workers and not enough jobs. We often go days without work."* FGDs in Khulna confirmed that the informal labor market is saturated, reducing wages and increasing underemployment among migrants.

In Satkhira and Bagerhat, long-term job opportunities are even scarcer. Migrants often find themselves restricted to unstable, low-wage jobs, with limited prospects for upward mobility. Shafiqur Rahman from Assasuni remarked, *"We don't have the skills needed for city jobs. Most of us end up as day laborers, earning very little."* This lack of urban job readiness highlights the gap in long-term employment sustainability for migrants, reinforcing the urgent need for vocational training and income diversification. Overall, while urban centers offer more job diversity than rural areas, the saturation of informal labor markets and skill mismatches significantly limit the long-term employment prospects of permanent migrants. Addressing this requires not only job creation but also targeted skill-building programs to bridge the gap between rural livelihoods and urban job demands.

2.6.2.2 Vocational Training Needs

The need for vocational training is critical for permanent migrants from climate-affected areas like Koyra, Assasuni, and Morrelganj, as they transition from rural livelihoods to urban employment. Migrants arriving in cities such as Khulna, Satkhira, and Bagerhat often face significant skill gaps that limit their access to stable, higher-paying jobs. Many displaced individuals have backgrounds in agriculture or fishing—skills that do not easily transfer to urban labor markets, where demand is higher for technical, mechanical, and service-oriented roles.

FGDs consistently highlighted that migrants lack formal education or vocational training, leaving them reliant on low-wage, unskilled labor in sectors like construction, domestic work, and street vending. This perpetuates income instability and economic vulnerability. In urban areas, there is growing recognition of the importance of providing training in fields such as tailoring, electrical work, poultry farming, and mechanics, which could offer alternative livelihood opportunities and increase income potential.

Vocational training programs could also support female migrants by offering skills in garment work, handicrafts, and domestic service, aligning with existing employment opportunities in urban areas. However, the availability of such programs remains limited, creating a barrier for many migrants seeking long-term stability. Addressing this gap through targeted training initiatives would not only enhance employment prospects but also contribute to more sustainable economic integration for displaced

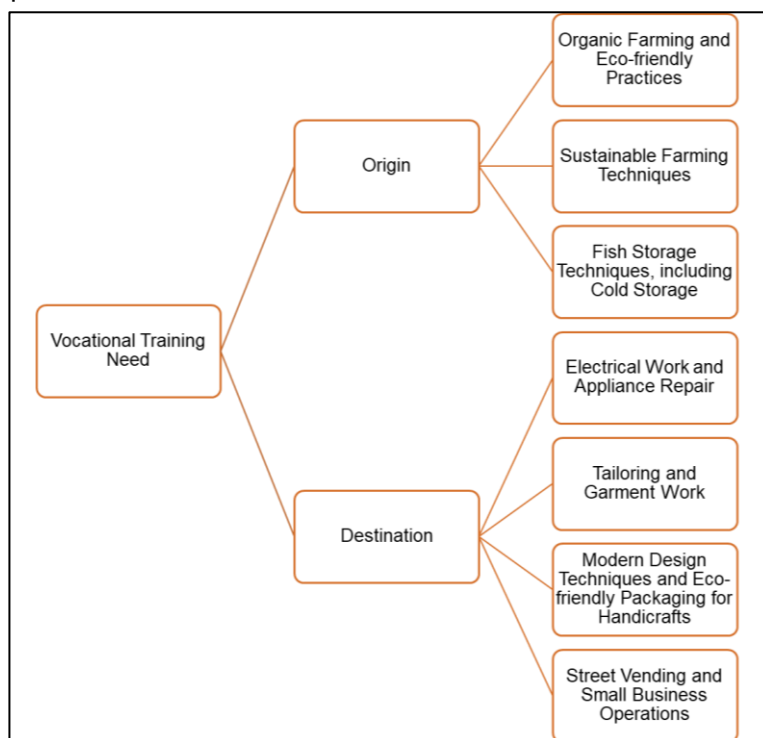


Figure 2-63: Vocational Training Needs

communities in urban centers.

2.6.2.3 Skill Gaps

The skill gap among climate-induced migrants from Bangladesh's southwestern coastal regions, particularly Koyra, Assasuni, and Morrelganj, is a significant barrier to their successful integration into urban labor markets. Many of these migrants come from agricultural and fishing backgrounds, where their livelihoods were closely tied to rural occupations that do not translate easily to urban settings. In cities like Khulna, Satkhira, and Bagerhat, the availability of jobs primarily exists in low-wage, unskilled sectors like construction, domestic work, and street vending. For example, Abdul Karim, a displaced farmer from Koyra, shared, *"I work in construction, but there are too many workers and not enough jobs. We often go days without work."* This highlights the oversupply of unskilled labor in urban centers, making it difficult

for migrants to find stable employment. The mismatch between the skills migrants bring with them and the demands of the urban job market exacerbates their vulnerability, as they are left to take on labor-intensive and low-paying jobs. Moreover, there is an urgent need for vocational training programs to bridge this skill gap. Without proper training, many migrants are stuck in cycles of underemployment and income instability, as they lack the technical skills required to access better-paying jobs. As one community leader in Khulna noted, *“If we had training centers, people could learn new skills and get better jobs.”* Addressing this gap through targeted skill development initiatives is critical to improving the economic prospects of climate-induced migrants, helping them secure stable livelihoods and reduce their dependency on low-wage, unskilled labor.

2.6.2.4 Income stability

After migrating to the destination, a significant portion of households, 48.57%, reported an increase in income, although not a substantial one. This suggests that many migrants experienced some improvement in their economic conditions, though not to the extent they might have hoped. Meanwhile, 30.95% of households saw a moderate increase in income, indicating that migration did provide some financial benefit, but not dramatically. On the other hand, 16.19% of households reported either no change or a slight decrease in their income, reflecting some challenges faced by migrants in securing stable income levels comparable to their previous situation. A small percentage, 3.81%, experienced a substantial decline in income, and only 0.48% indicated that their income was not even comparable to what it was before migration.

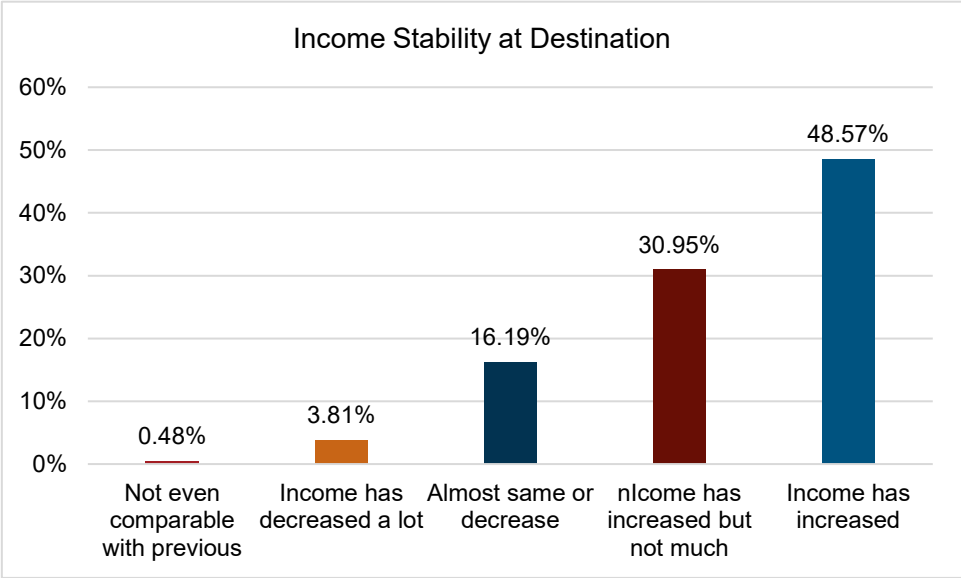


Figure 2-64: Income stability at destination

2.6.2.5 Migration induced employment challenges

Migration-induced employment challenges for climate migrants from Bangladesh’s southwestern coastal regions are multifaceted, driven by both environmental stressors and the mismatch between their skills and available job opportunities in urban areas. As these migrants move to cities like Khulna, Satkhira, and Bagerhat in search of work, they often encounter a saturated labor market with limited access to stable, well-paying jobs. The primary employment sectors available to them, such as construction, brick kilns, domestic work, and street vending, offer low wages and poor working conditions. This has led to a situation where many migrants, despite being employed, are unable to achieve economic stability. For example, in Khulna, Abdul Karim, a migrant from Koyra, explained, *“I work in construction, but there are too many workers and not enough jobs. We often go days without work.”* This oversupply of labor, particularly in the informal sector, drives wages down and exacerbates income insecurity.

In addition to low wages, migration-induced workers face exploitation and discrimination. Migrants often experience wage disparities compared to local workers, with employers taking advantage of their desperation for work. In Satkhira, Fatema Khatun shared, *“They know we are desperate, so they give us less pay and more work.”* Furthermore, migrants’ lack of formal identification and social networks in urban areas makes it difficult for them to access better job opportunities, and they often depend on middlemen who charge high fees to secure employment. The absence of vocational training and skill development programs further compounds these challenges, leaving many migrants in precarious, low-wage positions without a clear path to upward mobility. These employment challenges highlight the need for targeted interventions to support climate migrants, such as skill development programs, fair wage policies, and stronger labor protections to help them transition to more stable and sustainable livelihoods.

2.6.2.6 Qualitative Findings of availability and nature of employment opportunities (Permanent)

For those who have migrated permanently from climate-affected areas like Koyra, Assasuni, and Morrelganj, the availability of long-term jobs becomes an even more pressing concern. The shift from rural livelihoods such as agriculture and fishing to urban-based livelihoods is challenging, especially as the migrants face not only limited employment opportunities but also the long-term nature of their displacement. Permanent migrants from Khulna, Satkhira, and Bagerhat face distinct challenges in securing stable, long-term employment in urban areas. In Khulna, the influx of displaced families from Koyra and Paikgacha has saturated the informal labor market. Abdul Karim, a displaced farmer, shared, *“I work in construction, but there are too many workers and not enough jobs. We often go days without work.”* FGDs in Khulna revealed that the oversupply of labor has driven wages down, exacerbating income instability for migrants.

In Satkhira’s Assasuni, permanent migrants often struggle to transition from agricultural livelihoods to urban employment. Shafiqur Rahman, a former farmer, explained, *“We don’t have the skills needed for city jobs. Most of us end up as day laborers, earning very little.”* FGDs highlighted the urgent need for vocational training programs to bridge the skill gaps and improve employability. Women from Assasuni who migrate permanently often work as domestic helpers, facing issues like job insecurity and exploitation.

In Bagerhat, particularly in Sarankhola and Morrelganj, displaced migrants often find themselves engaged in low-paying jobs such as rickshaw pulling or street vending. Honufa, a displaced resident, shared, *“My husband now pulls a rickshaw in Khulna, but the income is not enough to cover rent and food for our family.”* FGDs revealed that income stability remains a significant challenge, with most migrants relying on multiple, inconsistent sources of income.

Vocational training needs are particularly pronounced in all three regions. FGDs in Khulna emphasized the importance of programs in tailoring, mechanics, and poultry farming to diversify income sources. Shamsul Alam, a community leader in Assasuni, noted, *“If we had training centers, people could learn new skills and get better jobs. Right now, we’re stuck with what we know.”* However, such initiatives are limited, leaving most migrants without the skills required to access stable employment in urban areas.

Migration-induced employment challenges also include discrimination and exploitation in the workplace. FGDs in Satkhira highlighted that rural migrants are often paid less than urban workers for the same jobs. Fatema Khatun shared, *“They know we are desperate, so they give us less pay and more work.”* In Khulna, migrants reported facing harassment from local authorities while working in informal sectors, further limiting their economic opportunities.

The area-wise comparison underscores that while Khulna offers the most diverse job opportunities, the saturation of labor markets reduces income stability. Satkhira’s migrants face significant skill gaps, limiting their access to urban jobs, while Bagerhat’s migrants encounter persistent underemployment and low wages. Addressing these challenges requires targeted interventions, including skill development programs, fair wage policies, and support for sustainable livelihoods in urban areas.

2.7 Models of entrepreneurship and skills development

2.7.1 Feasibility of Entrepreneurship

In the context of climate-induced migration, entrepreneurship can serve as a crucial means of economic resilience for migrants, especially in urban areas where traditional employment opportunities are limited. However, the feasibility of entrepreneurial activities for migrants from the southwestern coastal zones of Bangladesh particularly from Koyra, Morrelganj, Assasuni, and Paikgacha is influenced by several factors, including access to resources, training, and market demand.

In Khulna, where many climate migrants from the coastal regions settle, there is a growing demand for small-scale entrepreneurship in sectors such as tailoring, food stalls, small retail businesses, and repair shops. Md. Bellal Hossain, a permanent migrant from Koyra, shared, *“I have seen people from my village starting small businesses like tea stalls or mobile repair shops here in Khulna. It’s tough, but if you can get a small loan, you can manage.”* This reflects a growing trend of migrants attempting to engage in small entrepreneurship to sustain their families. However, the feasibility of such businesses is limited by access to capital, skills, and market saturation. Many migrants, especially those with no prior business experience, struggle to break into competitive markets, particularly when they lack the necessary start-up capital or knowledge of business management.

Md. Madhu, a migrant from Morrelganj, emphasized the lack of financial support: *“I’ve been thinking of starting a small tailoring business, but the problem is I don’t have enough money to buy a sewing machine or materials. I can’t even get a loan from the bank because I don’t have collateral.”* This illustrates the financial barriers to entrepreneurship, which are particularly acute for migrants who arrive in urban centers with few resources. The lack of formal employment history or collateral prevents them from accessing formal financial channels like banks or microfinance institutions, leaving them reliant on informal lending circles or family loans, which are often insufficient.

In Assasuni and Koyra, the lack of market opportunities for entrepreneurial activities beyond the agricultural sector further restricts entrepreneurship feasibility. For instance, Saleha Khatun, a migrant from Assasuni, noted, *“Back in my village, I had a small shop where I sold fish and vegetables. But in the city, no one buys fresh fish from a small shop, especially with all the big markets around.”* The transition from rural-based enterprises to urban-based markets has proven difficult for many, as their skills are more aligned with agriculture or fishery, which are not easily adaptable to the urban entrepreneurial landscape. Thus, the feasibility of entrepreneurship is not only contingent on access to capital but also on the alignment between market demand and the skills migrants bring with them.

2.7.2 Training Needs

The training needs of climate-induced migrants are a critical aspect of enabling them to build sustainable livelihoods in urban areas. Many migrants possess valuable traditional skills, such as farming or fishing, but they lack the skills required for urban employment or entrepreneurship. For example, Momena Khatun, a migrant from Assasuni, shared, *“I know how to sell fish, but I don’t know how to run a business in the city. I need training on managing a shop and understanding customer needs.”* This reflects the skills gap that many climate migrants face when trying to transition from rural livelihoods to urban-based activities.

In Khulna, several local NGOs and community groups have attempted to bridge this gap by offering skills training in areas such as tailoring, electronics repair, small business management, and computer literacy. However, these programs are often limited in scope and not widely accessible to all migrants. Md. Madhu noted, *“I’ve seen training programs for tailoring and carpentry here, but most of them are full or require a long wait. I need work now, not in a few months.”* The accessibility and timeliness of these programs are often barriers to their success. Migrants who are in immediate need of work may not be able to wait for months before they can gain the skills necessary to start a new livelihood. Moreover, many of these

training programs are gendered, with women often pushed toward low-paying roles such as domestic labor or handicrafts, while men are given opportunities in fields like carpentry or electrician work.

In Assasuni and Koyra, the demand for training in vocational skills such as carpentry, tailoring, plumbing, and electricity work is especially high. Migrants from these areas often lack the skills needed to participate in the urban economy, which is why many rely on temporary labor or menial jobs. The lack of formal education and limited vocational training in rural areas mean that when migrants arrive in urban areas, they are forced to compete for low-wage jobs or small-scale businesses.

2.7.3 Access to Credit

Access to Credit Program

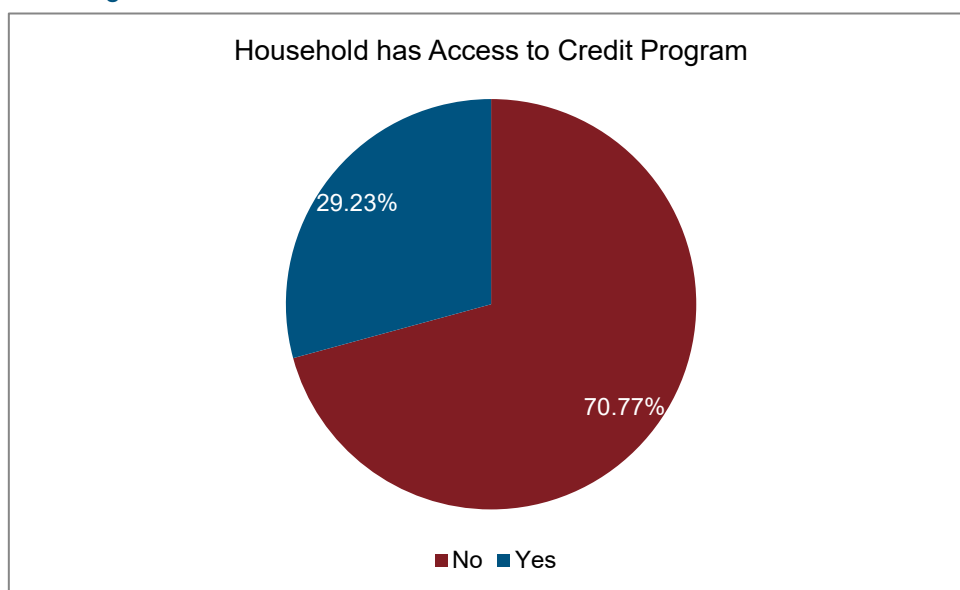


Figure 2-65: Household Access to Credit Program

The majority of households, 70.77%, do not have access to credit programs, reflecting limited financial inclusion and potential barriers to economic resilience. Only 29.23% of households reported having access to such programs, highlighting the gap in financial support systems. This lack of access can hinder the ability of many families to invest in income-generating activities, recover from economic shocks, or cope with disasters.

Another significant barrier to entrepreneurship is the lack of access to credit. Most migrants, especially from rural areas like Morrelganj and Paikgacha, do not have access to formal credit channels, such as banks or microfinance institutions. Md. Madhu expressed his frustration, saying, *“I tried to apply for a loan from the bank, but they rejected me because I don’t have a house or land to pledge. I can’t even think about starting a business without financial help.”* The absence of collateral often makes it difficult for migrants to access formal loans, which are necessary for starting businesses.

Although microfinance institutions like BRAC, Grameen Bank, and others do offer loans to poor and marginalized groups, the amounts are often small, and the interest rates can be burdensome. Saleha Khatun, a migrant from Assasuni, explained, *“I got a small loan from a microfinance institution, but the repayment schedule was very strict. Sometimes, I struggled to pay it back on time.”* This debt burden further exacerbates the financial stress of migrants, making them reluctant to engage in entrepreneurial activities.

2.7.4 Market Demands

The demand for goods and services in urban areas also plays a significant role in determining the feasibility of entrepreneurship. In Khulna, the market demand for low-cost products like food and clothing is high, particularly in slum areas where many climate migrants settle. Md. Bellal Hossain, a migrant from Koyra, commented, *“People here buy food and cheap clothes all the time. If I could make something cheap, I could sell it in the market.”* The market for affordable products and services is relatively large, but competition is also fierce, with many other migrants and locals already offering similar products.

However, in more remote areas like Assasuni or Koyra, the market for entrepreneurship is more limited. Many migrants in these regions struggle to identify niche markets that would support their small businesses. Saleha Khatun shared, *“I used to sell fish in my village, but here, no one wants to buy from a small shop. There are big markets everywhere.”* This highlights the competition migrants face in urban markets, where larger, more established businesses dominate.

2.7.5 Successful Models of Entrepreneurship in Similar Contexts

1. Small Urban Businesses (Mobile Repair, Tailoring, Food Carts, etc.)

SWOT Analysis

- **Strengths:**
 - These businesses require low startup capital and have proven demand in urban settings.
 - They build on skills that can be quickly taught and adopted.
 - Flexibility in scaling operations based on initial success.
- **Weaknesses:**
 - Migrants often lack basic business and financial literacy.
 - High competition in densely populated urban areas.
- **Opportunities:**
 - Urbanization and economic shifts create consistent demand for affordable services.
 - Partnerships with NGOs for microfinance and mentorship offer significant growth potential.
- **Threats:**
 - Market saturation may lead to reduced profitability.
 - Economic instability or rapid urban growth could strain local infrastructure, impacting businesses.

2. Rural-Based Enterprises (Fish Processing, Agriculture, and Handicrafts)

SWOT Analysis

- **Strengths:**
 - Utilizes traditional skills and practices that migrants are already familiar with.
 - Offers niche opportunities in value-added and artisanal products (e.g., organic or ready-to-eat fish).
 - Low operational costs in rural areas with local labor availability.
- **Weaknesses:**
 - Lack of access to advanced processing techniques or storage facilities.
 - Difficulty in scaling up production due to limited infrastructure and market access.
- **Opportunities:**
 - Increasing demand for unique, locally sourced products in urban and global markets.
 - Expansion into eco-friendly or organic certifications to capture higher-value markets.
- **Threats:**
 - Climate variability affecting the availability of raw materials.

- Competition from industrial-scale producers with better resources.

3. Innovative Urban-Rural Hybrid Businesses

- Examples include blending rural skills (e.g., fish processing) with urban market demands (e.g., ready-to-eat products or handicrafts tailored to modern tastes).
- Focus on leveraging e-commerce platforms to connect rural producers with urban consumers.
- Encouraging collective entrepreneurship through cooperatives for shared resources and better bargaining power.

SWOT Analysis

- Strengths:
 - Adaptability of Traditional Skills: Migrants possess expertise in rural crafts (e.g., fish processing, handicrafts) that can be innovatively adapted for urban markets.
 - Market Differentiation: Value-added products, like ready-to-eat fish or customized handicrafts, can cater to niche urban demands, creating a unique selling point.
 - Local Resource Utilization: Businesses leverage locally sourced raw materials, reducing production costs and supporting sustainability.
 - Resilience to Climate Shocks: Hybrid models blend rural sustainability with urban market access, offering diverse income streams.
- Weaknesses:
 - Skill Gaps: Many migrants lack the technical know-how to modify traditional practices for urban markets.
 - Limited Financial Resources: Access to capital is a significant barrier for scaling such hybrid ventures.
 - Infrastructure Deficiency: Urban migrants, particularly those in informal settlements, face inadequate facilities for storage, production, and transportation.
 - Low Awareness of Market Trends: Migrants often lack insight into urban consumer preferences and packaging requirements.
- Opportunities:
 - Urban Market Demand: Growing interest in organic, handmade, or culturally unique products creates opportunities for innovative rural-urban hybrids.
 - Training and Capacity-Building Programs: NGOs and local institutions can provide tailored skills development to bridge knowledge gaps.
 - E-commerce Platforms: Digital tools can connect entrepreneurs to larger markets, bypassing traditional distribution barriers.
 - Government and NGO Support: Policies promoting sustainable urban entrepreneurship and financial incentives could enhance scalability.
- Threats:
 - Market Competition: Urban markets often have established players, making it challenging for small-scale migrants to compete.
 - Economic Instability: Inflation, fluctuating demand, or economic downturns may affect profitability.
 - Climate Impacts: Further environmental degradation could disrupt access to raw materials from rural areas.
 - Policy and Regulatory Barriers: Bureaucratic hurdles and lack of formal business registration can limit growth.

Feasibility and Viability

Small Urban Businesses

- **Feasibility:** Highly feasible due to the relatively low startup costs and training needs. Urban centers like Khulna already provide a conducive environment for small-scale ventures.
- **Viability:** Strongly viable, especially with microfinance and ongoing technical support. Businesses like food carts and tailoring address essential urban demands.

Rural-Based Enterprises

- **Feasibility:** Moderately feasible, requiring infrastructure upgrades (e.g., cold storage for fish) and capacity building. However, traditional knowledge provides a strong foundation.
- **Viability:** Promising, particularly if rural products are adapted for urban and export markets (e.g., dried fish packaged for urban consumers).

Hybrid Businesses

- **Feasibility:** Challenging but achievable with strategic investment in training, digital tools, and logistical support.
- **Viability:** High potential for long-term success, especially in markets emphasizing sustainability, authenticity, and locally produced goods.

Market Demand

- **Urban Areas:**
 - Increasing population and urbanization drive demand for services like tailoring, food carts, and mobile repair.
 - Urban consumers are showing interest in ready-to-eat products and sustainable, eco-friendly goods.
- **Niche Markets:**
 - Artisanal and traditional handicrafts, especially when marketed as environmentally friendly or culturally authentic.
 - Organic or ready-to-eat processed fish products cater to health-conscious urban consumers.
- **Export Potential:**
 - High-value markets for unique Bangladeshi products such as handcrafted items, dried fish, or organic produce.

Strategic Considerations

Training and Capacity Building

- Establish technical training centers focusing on:
 - Mobile repair, tailoring, and food cart operations.
 - Value-added processing for rural products (e.g., ready-to-eat fish or organic produce).

Access to Finance

- Expand microfinance schemes tailored to climate migrants.
- Provide grants for early-stage entrepreneurs and cooperatives.

Infrastructure Development

- Advocate for better infrastructure, such as cold storage facilities for fish processing and affordable market spaces for small businesses.
- Improve transportation networks to link rural producers with urban markets.

Mentorship and Networking

- Build mentorship programs where experienced entrepreneurs guide new entrants.
- Foster peer-to-peer networks for sharing knowledge and resources among migrant entrepreneurs.

Policy and Social Protections

- Integrate climate migrants into social safety nets, ensuring access to health care, insurance, and educational opportunities.
- Simplify licensing and business registration processes for small and informal businesses.

Market Linkages

- Develop partnerships with urban retailers, wholesalers, and online platforms to market rural products.
- Promote cooperatives to pool resources and strengthen bargaining power.

Outcome

The proposed entrepreneurial models aim to transform the livelihoods of climate-vulnerable communities in the southwestern coastal regions of Bangladesh. By building on existing skills and aligning with market demands, these models can provide:

- Sustainable livelihood opportunities for migrants.
- Increased financial independence and stability for marginalized groups.
- Enhanced integration of rural economies with urban markets.
- A pathway for long-term resilience against climate change impacts

2.7.6 Skill-building Programs

In rural areas, skill-building should focus on enhancing traditional practices while adapting them for modern, sustainable markets. This includes training in value-added product development, such as fish processing, organic farming, and artisan crafts, along with modern techniques like cold storage and eco-friendly packaging. Additionally, business and financial literacy programs are essential to help migrants manage their enterprises effectively, access microfinance, and develop an entrepreneurial mindset. Digital literacy is also crucial, enabling rural entrepreneurs to reach urban or international markets via e-commerce platforms and digital marketing.

In urban areas, training needs center around technical and vocational skills for small businesses, such as mobile repair, tailoring, and food cart operations, along with customer service and time management. Financial literacy programs will help migrants navigate the urban economy, manage finances, and access credit. Additionally, fostering mentorship and cooperative models will help them leverage networks and resources for growth. Cross-cutting themes like cultural adaptation, legal knowledge, and resilience training are essential for successful integration and long-term sustainability, empowering migrants to establish thriving businesses in both rural and urban settings.

The data reveals that a vast majority of respondents (96.15%) did not receive any skill development training in the last two years at the destination. Only a small fraction (3.85%) had access to such training opportunities. This indicates limited access to capacity-building initiatives, which may hinder the respondents' ability to improve their employability, income levels, and overall socioeconomic status

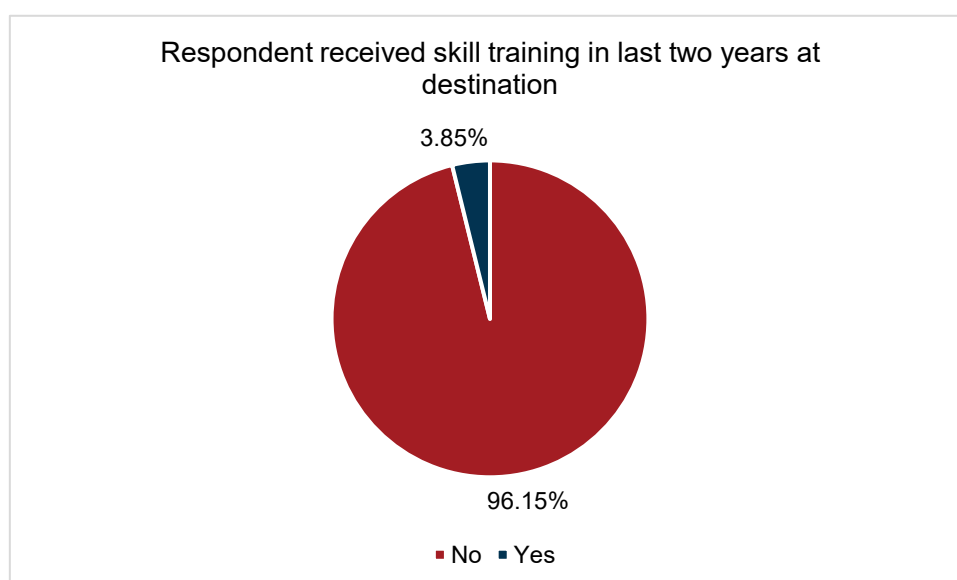


Figure 2-66: Respondent received skill training in last two years at destination

2.7.7 Role of Government and NGOs

Both NGOs and the government play vital roles in promoting entrepreneurship among climate-induced migrants. Md. Madhu, a migrant, mentioned, “NGOs provide some loans and training, but it’s still not enough. The government should create more opportunities and support for people like me.” NGOs have provided some microfinance loans and training programs, but the overall support system is still inadequate. The government could play a larger role in creating business incubators, offering low-interest loans, and facilitating market access for migrant entrepreneurs. However, as observed in Assasuni and Koyra, government programs have been largely ineffective due to poor implementation and lack of targeted support for migrants.

3 Recommendations

Addressing climate vulnerability in the place of origin and destination requires a comprehensive and multi-faceted approach that involves both local communities and external stakeholders. Here are some strategies to consider:

Place of Origin

1. Promote Entrepreneurship and Local Economic Development
 - Foster entrepreneurship by supporting small businesses and startups in climate-affected areas. Provide training, seed funding, and market access to enhance local economies.
 - Responsible Body: Office of the UNO, Union Parishad, SME Foundation, and local NGOs.
 - Method: Organize business incubation programs and access to microfinance initiatives. Engage with development partners to provide mentorship and financial support for climate-resilient enterprises.
2. Strengthen Climate-Resilient Infrastructure
 - Build and maintain embankments, flood barriers, and stormwater drainage systems to protect communities from extreme weather events.
 - Responsible Body: Bangladesh Water Development Board (BWDB), LGED, Union Parishad, and local NGOs.

- Method: Conduct participatory mapping to localize infrastructure projects with funding from sources like the Green Climate Fund (GCF).
- 3. Promote Sustainable Land and Water Management
 - Encourage afforestation, reforestation, and sustainable agricultural practices to enhance ecosystem resilience.
 - Responsible Body: Bangladesh Agricultural Development Corporation (BADC), BWDB, LGED, and Union Parishad.
 - Method: Organize workshops on social forestry and sustainable farming with local NGOs supporting the initiatives.
- 4. Diversify Livelihoods
 - Provide vocational training and introduce alternative income-generating activities to reduce reliance on climate-sensitive occupations.
 - Responsible Body: Union Parishad, local NGOs, and development partners.
 - Method: Leverage experiences from existing projects (e.g., USAID, GIZ) to design context-specific programs.
- 5. Implement Effective Early Warning Systems
 - Strengthen community-based early warning systems to prepare for and mitigate disaster impacts.
 - Responsible Body: Union Disaster Management Committees (UDMC), Union Parishad, and local NGOs.
 - Method: Train women-based community organizations to disseminate warnings effectively.
- 6. Foster Community-Based Adaptation
 - Support community-led initiatives that empower locals to design and implement adaptation strategies.
 - Responsible Body: Office of the UNO, Union Parishad, and NGOs.
 - Method: Promote monthly courtyard meetings and form community-based organizations (CBOs) to amplify community voices.
- 7. Improve Access to Finance and Insurance
 - Provide financial resources through microfinance and climate insurance to support recovery from climate-related shocks.
 - Responsible Body: Department of Cooperatives, Union Parishad, and local NGOs.
 - Method: Advocate for microfinance systems and introduce group savings programs to build financial resilience.
- 8. Enhance Climate Education and Awareness
 - Incorporate climate education into school curriculums and organize workshops to foster intergenerational awareness.
 - Responsible Body: Directorate of Secondary and Higher Education, Union Parishad, and local NGOs.
 - Method: Establish school-based study circles and encourage students to take active roles in community adaptation efforts.

Place of Destination

1. Encourage Entrepreneurship Among Climate Migrants
 - Develop entrepreneurial programs for migrants, including access to microfinance, skill training, and market linkages, to promote self-reliance and economic integration.
 - Responsible Body: Khulna City Corporation (KCC), Bagerhat Pourosova, Satkhira Pourosova, Khulna Development Authority (KDA), SME Foundation, and local NGOs.
 - Method: NGOs can organize business development workshops and facilitate access to funding sources such as SME grants or microloans.
2. Inclusive Urban Planning
 - Integrate climate migrants into urban planning processes to ensure their needs are considered in city development.
 - Responsible Body: KCC, Bagerhat Pourosova, Satkhira Pourosova, KDA, and local NGOs.

- Method: Form specialized community development committees (CDCs) to represent climate migrants and advocate for participatory urban planning.
3. Provide Affordable Housing
 - Develop affordable and climate-resilient housing for migrants, including rental and ownership options.
 - Responsible Body: KCC, Bagerhat Pourosova, Satkhira Pourosova, KDA, and NGOs.
 - Method: Implement group savings programs for housing schemes and advocate for low-income rental housing provisions.
 4. Create Livelihood Opportunities
 - Offer tailored vocational training and link migrants to job opportunities in small and medium enterprises (SMEs).
 - Responsible Body: KCC, Bagerhat Pourosova, Satkhira Pourosova, CDCs, and NGOs.
 - Method: NGOs can facilitate training programs and establish connections with employers to integrate migrants into the workforce.
 5. Ensure Access to Basic Services
 - Guarantee access to education, healthcare, water, and sanitation for migrant populations.
 - Responsible Body: KCC, Bagerhat Pourosova, Satkhira Pourosova, KWASA, and local NGOs.
 - Method: Create service hubs in migrant-dense areas and establish a collaborative network to coordinate basic service delivery.
 6. Promote Social Integration
 - Encourage cultural exchange and community events to foster cohesion between migrants and existing residents.
 - Responsible Body: KCC, Bagerhat Pourosova, Satkhira Pourosova, CDCs, and NGOs.
 - Method: Organize events like cultural festivals and street dramas showcasing the migrants' traditions.
 7. Develop Social Safety Nets
 - Establish targeted assistance programs, such as cash transfers, food security initiatives, and emergency support for migrants.
 - Responsible Body: KCC, Bagerhat Pourosova, Satkhira Pourosova, and NGOs.
 - Method: Create an automated registration system to include migrants in existing safety net programs.
 8. Leverage Smart Technology
 - Use technology for urban resource allocation and to improve access to services for migrants.
 - Responsible Body: KCC, Bagerhat Pourosova, Satkhira Pourosova, and NGOs.
 - Method: Implement ICT-based networks to keep migrants informed about urban services via SMS notifications.

4 Conclusion

In conclusion, climate-induced migration in Bangladesh's southwestern coastal zone reflects the multifaceted challenges posed by environmental, economic, and social vulnerabilities. Recurring natural disasters, long-term climatic stressors, and the degradation of livelihoods are driving both short-term and permanent migration, reshaping the socio-economic dynamics of affected regions. Migrants, whether seasonal or displaced, encounter significant barriers, including loss of livelihoods, limited access to essential services, precarious employment conditions, and difficulties in adapting to new environments.

The findings from the Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) conducted across Khulna, Satkhira, and Bagerhat districts highlight the complex nature of climate-induced migration and the vulnerabilities faced by communities in these areas. These districts are severely impacted by

climate change, with recurring events such as cyclones, sea-level rise, salinity intrusion, and river erosion causing significant displacement and economic loss.

The study reveals that short-term migration is heavily influenced by the immediate impacts of flooding, salinity, and extreme weather events, which result in economic stress and force people to seek temporary refuge in urban centers or peri-urban areas. Livelihoods in these regions, primarily based on agriculture and fishing, are greatly disrupted by these climatic events, leading to seasonal migration as a key coping strategy. Urban areas, particularly Khulna, become attractive destinations due to better access to employment opportunities, despite the poor living conditions and limited access to basic services such as water, sanitation, and healthcare.

In terms of permanent displacement, long-term migration is driven primarily by the gradual degradation of natural resources, particularly agricultural land and freshwater sources, exacerbated by rising salinity levels. The loss of productive land has led to diminished agricultural yields, which, in turn, drives people to migrate permanently in search of more stable livelihoods. In many areas, migration is no longer a temporary response but a necessity for survival as local economies continue to suffer. Communities dependent on agriculture and fisheries are particularly vulnerable, as these sectors face the dual challenge of environmental degradation and economic instability.

The economic losses experienced by these populations are significant. In addition to property loss, income loss, and livestock loss, there are severe disruptions to social structures and community ties, with many migrants experiencing emotional stress due to displacement. The destruction of homes, loss of livelihoods, and the resulting economic instability contribute to a heightened sense of insecurity and anxiety. Migrants, particularly those who move to urban slums, face poor housing conditions and inadequate access to services. These living conditions add to the psychological and social stress, particularly for families who are forced to separate in search of work. The non-economic losses are just as profound. The social fabric of communities is disrupted when families are forced to relocate, and the loss of traditional ways of life and local cultural practices takes a toll on the emotional well-being of migrants. Many migrants, especially women and children, experience mental health challenges as they adapt to their new living conditions, often marked by poverty, uncertainty, and alienation in urban areas. Moreover, the loss of indigenous knowledge and local ecosystems, particularly in fishing and agriculture, leads to the erosion of community identity and resilience.

The migration patterns observed in this study indicate a mismatch between the skills of the migrants and the employment opportunities available in the destination areas. While urban centers like Khulna offer a range of jobs, many migrants are forced into low-skilled, low-paying jobs due to their lack of vocational training or technical skills. This skills gap limits the potential for migrants to achieve economic stability and often traps them in a cycle of poverty and underemployment. There is a clear need for training programs and vocational education to help migrants develop marketable skills that can align with the demands of the urban labor market.

At the policy level, while existing frameworks like the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) and the National Adaptation Program of Action (NAPA) address climate-related challenges, there is a noticeable gap in addressing the specific needs of climate migrants. These policies focus on disaster response and adaptation but lack detailed measures to support the long-term resettlement and livelihoods of migrants. Government agencies, NGOs, and local communities must collaborate to create more integrated policies that support both climate resilience and migration management. Policies should focus on livelihood diversification, urban resilience, and disaster risk reduction, with specific measures to address migrant needs.

This study underscores the urgent need for sustainable, long-term solutions to mitigate the impacts of climate-induced migration. There is a strong case for policy reforms that integrate migration management with climate adaptation strategies, ensuring that migrants and host communities are both supported in the face of climate challenges. By promoting vocational training, providing microcredit and entrepreneurship opportunities, and improving urban infrastructure, Bangladesh can better equip migrants to rebuild their lives and communities to absorb and integrate these populations.

In conclusion, the findings of this study provide a foundation for evidence-based decision-making and a holistic approach to addressing the challenges of climate-induced migration. The collaboration of local governments, civil society organizations, and communities will be crucial in designing adaptation strategies that support migrants and foster sustainable livelihoods. The insights gained from this study will help shape the future of climate migration management, ensuring that Bangladesh's climate resilience is strengthened in the face of growing environmental challenges.

5 Annexures

5.1 Methodological Framework

The consultant approaches to combine both qualitative and quantitative research methods, rooted in data triangulation to ensure robust findings. We will use Geographic Information Systems (GIS) and remote sensing technologies for spatial analysis, supplemented by field-based socio-economic assessments, meetings, and consultations with affected populations and stakeholders. Constituent framework has been given below-

Component 1: Understanding the Context
Objective: To understand the historical context of climate change impacts and migration patterns in the study area. Methods: - Literature Review: Review of previous studies on climate change, migration dynamics, and socio-economic factors affecting the region. - Document Analysis: Examination of government and NGO reports, policies, and IPCC findings on climate impacts in Bangladesh. Outputs: - Overview of historical climate impacts and migration trends. - Identification of knowledge gaps and baseline information for the study.
Component 2: Mapping of Climate-induced Migration Hotspots
Objective: To identify specific locations within the study area that are most affected by climate-induced migration. Methods: - Spatial Analysis: Using Geographic Information System (GIS) to map migration hotspots based on climate vulnerability data (e.g., salinity levels, flood zones, cyclone pathways). - GIS/RS: Analysing DEM, Cyclone paths, Flood Proxies to detect changes in settlement pattern, vegetation, and water bodies that may indicate environmental degradation. - Participatory Hotspot Mapping: Participatory GIS mapping will be used to identify migration hotspots in the places of origin. The process will begin with a transect walk to explore areas where people commonly gather. During this walk, we will organize small group discussions to identify settlement clusters (paras or mahallas) where migration has frequently occurred, including areas where permanent migration has historically taken place. Once this information is gathered, we will mark the identified hotspots on a GIS map within the ward boundaries of the Union. Afterward, we will visit each of these settlement clusters to collect GPS coordinates of migrant households. This will allow us to map both clusters of houses and individual migrant households. During these visits, we will collect additional information regarding the types of migration, the causes of migration, the names of destinations, and the years of migration. Using this data, we will develop a GIS-based hotspot map that highlights

the locations of migrants in the place of origin. Furthermore, we will explore and map the locations of destinations where climate-induced migrants have settled in the cities Outputs: • Spatial maps highlighting migration hotspots. • Dataset on environmental vulnerability indicators for targeted areas.
Component 3: Driving factors behind migration Objective: To determine the main factors driving migration, with a focus on environmental, economic, and social influences. Methods: • Quantitative Surveys: Conduct household surveys in identified hotspots to gather data on migration motivations and experiences. • Qualitative Surveys: Conducting FGDs and KIs with local residents, community leaders, and government officials to understand localized drivers of migration. • Statistical Analysis: Use quantitative analysis to assess correlations between climate change and migration rates. Outputs: • Comprehensive report on migration drivers. • Quantitative analysis of how environmental stressors impact migration decisions.
Component 4: Impact Assessment Objective: To assess the economic, social, and cultural impacts of migration on both migrants and host communities. Methods: • Case Studies: Conduct case studies of specific communities impacted by migration to capture nuanced social and economic impacts. • FGDs & KIs: Facilitate FGDs with migrants and KIs with both host and destination areas community members, government persons, NGO workers, disaster prevention committee to explore challenges and adaptation strategies. • Economic Impact Assessment: Analyse changes in income, employment, housing, and access to services for migrants and host communities. Outputs: • Report on socio-economic impacts of migration including livelihood changes and community integration. • Comparative analysis of challenges faced by migrants and residents of host communities.
Component 5: Adaptation Mechanism & Livelihood Model Objective: To understand the current support mechanisms and propose an actionable livelihood model that supports sustainable livelihoods opportunity. Methods: • Institutional Analysis: Assess the roles and capacities of government agencies, NGOs, and community organizations in providing support. • HH Survey, FGDs & KIs: Conducting interviews with representatives from government bodies, NGOs, and local organizations and community people to understand existing initiatives and limitations. Also, doing FGDs with migrants to understand their employment perspective too. • Scenario Analysis: Exploring potential future climate scenarios and their impacts on migration to anticipate needed interventions. Outputs: • Evaluation of current support systems and develop a suitable livelihood model for the migrants.

- Set of targeted recommendations for policymakers, including climate resilience and migration management strategies through sustainable entrepreneurship & skill development model.

By following the above-mentioned steps, the consulting firm is committed to deliver the optimum insight of this climate-induced migration project. With the help of **spatial analysis, participatory hotspot mapping, evaluation of economic and non-economic loss/damage, along with the underlying micro, macro, and meso level factors** identified through the adopted foresight model (Rigaud, 2018) a comprehensive understanding will be developed thus, will lead to the development of a sustainable entrepreneurship and skill development model that will satisfy and ensures appropriate employability of the migrants.

5.2 Data Collection Method & Sampling

5.2.1 Quantitative Data Collection

To collect structured data on socio-economic conditions, migration patterns, economic and non-economic impacts of climate events, and demographic information of affected populations a quantitative data collection method has been prepared by the consultant.

5.2.1.1 Hotspot Identification and Mapping

To identify hotspot, we are approaching with both spatial and non-spatial data. By using GIS and remote sensing tools, preliminary migration hotspots will be mapped across the unions. For validating, the consultant has prepared a set of questionnaires which will be carried out in the selected unions. Comprehensive geospatial analysis has been discussed below-

- Flood Proxy Map for the project area:** With the help of DEM, Precipitation, Cyclone surge the Flood Proxy map has been developed. This gives a valuable insight of the project area. According to the model, it can be seen Koyra, Kaulia, Morrelganj Sadar, Nishanbaria, Dhansagar, Baraikhali, and Khontakatar unions are the most flood affected and flood prone areas. These findings will be further validated by our survey team with the prepared questionnaire.
- P-Surge Model:** In the **map 4-2** and **4-3** which are the probabilistic P-Surge storm model of 10 and 25 years from now is highlighting that, the Sharankhola upazila of Bagerhat district will face regular storm surge issues and the surge water level will further rise and affect the unions of Sharankhola and Morrelganj upazila. The model also showcases the storm path which helps us to understand the overall extreme weather event more holistically.
- Participatory Rural Appraisal (PRA) will be used to identify climate-induced migration hotspots. The process will start with a transect walk to explore key gathering areas, followed by small group discussions to identify settlement clusters (paras or mahallas) with significant migration, including areas with historical patterns of permanent migration. Based on this input, we will map these hotspots within the Union's ward boundaries using GIS. We will then visit these settlement clusters to collect GPS coordinates of migrant households and gather information on migration types, causes, destinations, and years of migration. This will allow us to create a GIS-based map of migration hotspots in the origin areas. Additionally, we will identify and map the destinations where climate migrants have settled in urban areas.

The hotspot map will identify the Unions where migration hotspots exist, focusing on 25 Unions. Using the data from these 25 Unions, we will also map the locations of migrant households in the destinations. Three cities will be selected for further exploration of household locations, where climate-induced

migrants have settled. This comprehensive mapping will provide a clear picture of both the origin and destination hotspots, offering insights into migration patterns and settlement trends.

5.2.1.2 Household Questionnaire Survey

This study will adopt a comprehensive approach by including households from both the place of origin and the place of destination in its household survey. The sample frame for the study consists of all households in 25 Unions across the Upazilas of Assasuni, Koyra, Morrelganj, Paikgacha, Sarankhola, and Tala, as well as major cities such as Khulna, Bagerhat, and Satkhira. The sample size for the survey was determined using Yamane's simplified formula for proportions (Yamane, 1967), chosen to ensure that the sample is representative of the entire population. This approach allows for meaningful insights into the impact of climate change, migration trends, migration drivers, and adaptation strategies among the surveyed households. A total of 434 households will be surveyed, with a 5% margin of error. Cluster sampling will be employed, with the number of clusters to be determined after the GIS hotspot mapping of climate-induced migrants. Based on the hotspot map, the Unions and settlement clusters for household data collection will be identified. All necessary questionnaires for the household survey have been prepared and incorporated using KoBo Toolbox.

$$n = \frac{N}{1 + N(e^2)}$$

Where, n = sample size, N = population size (here number of households in the sample frame) and e = level of precision/error margin.

The household survey questionnaire seeks to track various types of migration (Seasonal, Permanent, Forced, Voluntary) issues encompassing households in both the place of origin and the place of destination. A total of **434 households** were selected for this study where **234 households** were chosen based on their **place of origin**, while the **remaining 200** households were selected as the **destination place** across the urban areas like- Khulna City Corporation (KCC), Bagerhat Paurashava, Satkhira Paurashava, Upazila Headquarters, Other urban areas (if, found during hotspot survey). Within these urban areas higher focus will be given to the major urban settlements like- Khulna city area as it is having higher employment attraction rate compare to the others district in south-western region. So, out of the 200 destination-focused household survey; 50% sample will be collected from Tier-1 cities (major urban areas) only and the remaining 50% will be collected from Tier-2,3 cities like- Bagerhat, Satkhira Paurashava, and other upazila headquarters. In this way, 95% statistical sample accuracy can be achieved. ***Still as the hotspots are not identified yet so, the actual sample distribution and concerned urban areas will be finalized once the migration hotspots are identified.*** The questionnaire responses were aimed to be derived from direct interactions, including responses of the household heads and their family members. The detailed process of household questionnaire survey is added in **Annex**.

5.2.2 Qualitative Data Collection

The qualitative survey data agenda is to assess the economic and non-economic impacts, including loss of income, psychological well-being, and disruptions to social structures. The questionnaire for qualitative survey is attached in the **Annex** for client's reference.

5.2.2.1 Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs)

Multiple qualitative data collection techniques including Focus Group Discussions (FGDs), and Key Informant Interviews (KIIs) will be used for exploring the contextual and behavioural pattern of respondents to climate-induced migrations. This will also be the skeleton for the loss and damage calculation. Respondents are purposefully chosen from selected Unions within the Upazilas, using non-probability selection method, purposive sampling strategy. This selection method ensured that,

participants were chosen with precision, considering their ability to address the project objectives and align with the project's overarching purpose. This strategic selection process of study participants was instrumental in providing valuable insight of climate vulnerability, loss and damage, adaptation, and employment structure in relation to climate-induced migration process. The qualitative interviews were linked and emphasized the following aspects:

- a) Key material changes, including livelihoods, and incomes, working capacity of families and individuals, civic engagement, community-based activities.
- b) Assess capacity to withstand climatic events and coping and adaptation strategies.
- c) Migration history of the families and factor deriving migration.
- d) Changes in their coping and adapting behaviour to withstand negative effects of climate change and climate variability.
- e) Influencing factor of migration decision, employability, and sustainable and suitable entrepreneurship model and skill development.

For conducting **FGDs** the maximum participants will be **10 person/group**. As, the consulting firm finalized to conduct **FGDs** with each categorized migrants so the specific types of migrants will be searched within the geographic locations but it doesn't guarantee to address all the categorized migrants; as it depends on the availability of such group. Additionally, if any categorized migrant group is not found then the survey sample size of available migrants' category will be increased. So, the actual number or type of migrants might be decreased and if, that happens then extra focus will be given to the **FGDs** to bring out any underlying insights.

The data collection process for the study on climate-induced migration in southwestern Bangladesh involves extensive surveys, key informant interviews (KII), focus group discussions (FGD), and in-depth interviews (IDI) across multiple unions in Khulna, Satkhira, and Bagerhat districts. This approach is designed to capture insights from both origin and destination areas, ensuring a holistic understanding of migration dynamics, challenges, and adaptation strategies.

Household Surveys – Origin Areas:

A total of 240 household surveys will be conducted in the origin areas across eight unions in three districts:

- **Khulna District:**
 - Koyra Upazila: Koyra Union (30 surveys), Maharajpur Union (30 surveys)
 - Paikgacha Upazila: Gadaipur Union (30 surveys)
- **Satkhira District:**
 - Assasuni Upazila: Pratapnagar Union (30 surveys)
 - Tala Upazila: Dhandia Union (30 surveys)
- **Bagerhat District:**
 - Sharonkhola Upazila: Rayenda Union (30 surveys)
 - Morrelganj Upazila: Baharbunia Union (30 surveys), Putikhali Union (30 surveys)

Household Surveys – Destination Areas (Urban Hotspots):

To capture the perspectives of migrants at their destinations, **200 household surveys** will be conducted in urban areas, targeting key migration hotspots:

- **Khulna City Corporation** – 80 surveys across 4 major hotspots (20 surveys per hotspot):
 - Green Land (5 No. Ghat)
 - Khora Bosti (Middle of Sonadanga and 250 Bed)

- Notun Bazar (Rupsha Slum)
- Khal Par (Jorakol Bazar, Tutpara)
- **Bagerhat Paurashava** – 60 surveys across 3 hotspots (20 surveys per hotspot):
 - Nager Bazar
 - Rail Road
 - Alia Madrasah (Additional areas: Zatrappur & Radha Bollob)
- **Satkhira Paurashava** – 60 surveys across 3 hotspots (20 surveys per hotspot):
 - Jarinar Ber (Laskarpur)
 - Rajar Bagan (Lichu Tola)
 - Katia Mathpara (Juti Tola, Rishipara, Kazipara, Bager Bosti)

Key Informant Interviews (KII):

KIIs will be distributed across different districts and unions to gather insights from diverse stakeholders. A total of **60 KIIs** will be conducted:

- **Khulna District** – 22 KIIs:
 - Paikgacha Upazila: UNO (1), PIO (1), Religious Leader (Hindu, 1), Local Community Leaders (1), Civil Society Representatives (1)
 - Koyra Upazila: Disaster Management Committee (1), Union Shacib (1), Union Members (2), NGO Representative (1), Teacher (1), CPP Volunteer (1), Civil Society Representative (1)
 - Khulna Sadar: Local Student Association (1), Relevant Academicians from Khulna University (Md. Mustafizur Rahman, 1) and KUET (Dr. Tusar Kanti Roy, 1), Police (1), Department of Social Welfare (1)
- **Bagerhat District** – 21 KIIs:
 - Sharonkhola Upazila: UNO (1), Disaster Management Committee (1), Union Shacib (1), Union Members (2), PIO (1), NGO Representative (1), Civil Society Representative (1)
 - Morrelganj Upazila: Disaster Management Committee (1), Union Shacib (1), Union Members (3), Religious Leader (Muslim, 1), Local Community Leader (1), Teacher (1), CPP Volunteer (1)
 - Bagerhat Sadar: Local Student Association (1), Police (1), Department of Social Welfare (1)
- **Satkhira District** – 17 KIIs:
 - Tala Upazila: UNO (1), Disaster Management Committee (1), Union Shacib (1), Union Members (1), Teacher (1), Civil Society Representative (1), Local Community Leader (1)
 - Assasuni Upazila: Disaster Management Committee (1), Union Shacib (1), Union Members (2), PIO (1), Civil Society Representative (1), CPP Volunteer (1)
 - Satkhira Sadar: Local Student Association (1), Police (1), Department of Social Welfare (1)

5.2.3 Focus Group Discussions (FGD):

FGDs will engage migrants across different migration types, offering a qualitative perspective on migration trends, employment challenges, and adaptation strategies. A total of **8 FGDs** will be conducted:

- **Khulna District** – 3 FGDs:
 - Voluntary Migrants (Koyra Union, 1)
 - Temporary Migrants (Maharajpur Union, 1)
 - Permanent Migrants (Khulna Sadar, 1)
- **Bagerhat District** – 3 FGDs:
 - Temporary Migrants (Baharbania, 1)
 - Non-Migrants (Putikhali, 1)
 - Forced Migrants (Rayenda, 1)
- **Satkhira District** – 2 FGDs:
 - Seasonal Migrants (Pratapnagar, 1)

- Non-Migrants (Dhandia, 1)

In-depth Interviews (IDI) – Case Stories:

A total of **5 in-depth interviews** will be conducted to develop detailed case stories that highlight the experiences of different types of migrants:

- **Bagerhat District** – 2 IDIs:
 - Potential Migrants (Morrelganj, 1)
 - Permanent Migrants (Bagerhat Sadar, 1)
- **Khulna District** – 2 IDIs:
 - Seasonal Migrants (Paikgacha, 1)
 - Permanent Migrants (Khulna Sadar, 1)
- **Satkhira District** – 1 IDI:
 - Seasonal Migrants (Tala, 1)

This comprehensive data collection plan will provide a nuanced understanding of the migration experience, livelihood challenges, and coping strategies adopted by climate-affected communities in coastal Bangladesh. The inclusion of diverse respondents—migrants, non-migrants, government officials, and civil society members—ensures a multi-dimensional analysis of climate-induced migration and its socio-economic implications.

5.3 Contact detail of KII respondents:

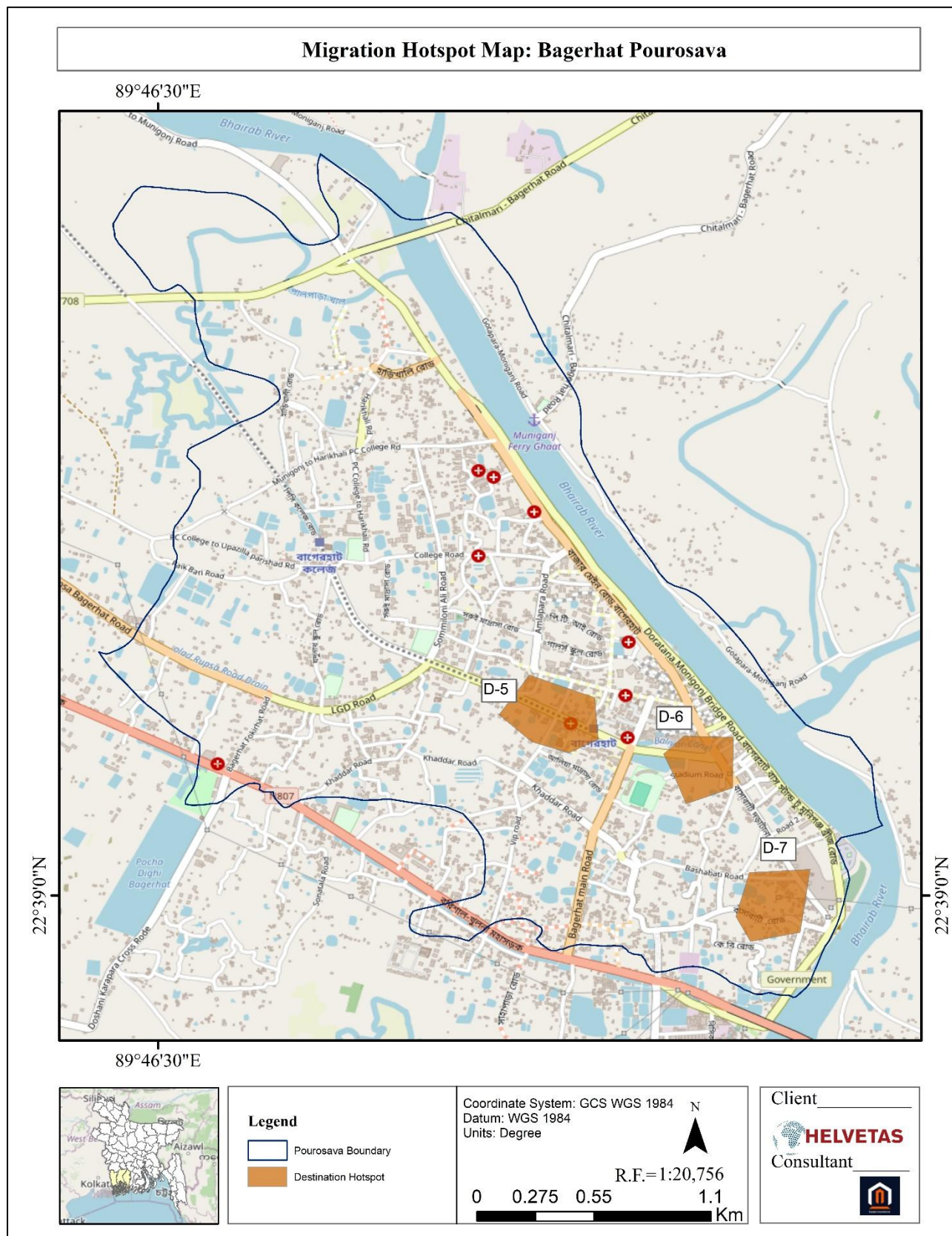
Serial No.	District	Survey Type	Respondent Type	Name	Contact Details
1	Khulna	IDI	Case Study, Gadaipur, Paikgacha	Chandiram Biswas	1971001035
2		IDI	Case Study, Khulna Sadar	Rowshon Ara	1918114655
3		KII	Social Welfare Representative	Md. Iqbal Hossen	1718113752
4		KII	Police	Tanvir Ahmed	1320140102
5		KII	Academician	Dr. Tushar Kanti Roy	1716717443
6		KII	Civil Society Representative	Prashanto Kumar Sarkar	1727013031
7		KII	Civil Society Representative	Md. Sadar Uddin	1712815269
8		KII	CPP Volunteer	Ashikuzzaman	1928280489
9		KII	Local Community Leader, Gadaipur, Paikgacha	S. M. Aminul Islam	1912120025
10		KII	NGO Representative	Md. Zahidul Hasan	1777773862
11		KII	PIO	Imrul Kayes	1717916798
12		KII	Religious Leader (Hindu), Gadaipur, Paikgacha	Milon Chowdhury Roy	1735345863
13		KII	Teacher, Koyra	Shuchitra Kumar Mondal	1710240341

14		KII	UDMC Representative, Gadaipur, Paikgacha	Sheikh Khorsheduzzaman	1609602499
15		KII	UDMC Representative, Koyra	Shudhangshu Kumar Mondal	1710902435
16		KII	UNO, Paikgacha	Mahera Naznin	1322875537
17		KII	UP Sachib Gadaipur, Paikgacha	Md. Belal Hossain	1712320737
18		KII	UP Sachib, Maharajpur, Koyra	Shantonu Adhikari	1915097299
19		KII	UP Member (Ward-2), Koyra	Md. Masum Billah	1954625301
20		KII	UP Member (Ward-6), Koyra	Md. Mizanur Rahman	1915433095
21		KII	UP Member (Ward-7), Maharajpur, Koyra	Bivuti Bhushan Roy	1918566066
22		KII	UP Member (Ward-6), Gadaipur, Paikgacha	Abdul Aziz Gazi	1922694093
23		KII	Local Student Association	Mahbub Alam Jobaer	1580855993
24		IDI	Case Study, Jatrapur, Bagerhat Sadar	Karima Begum	1865867156
25		IDI	Case Study, Morrelganj, Bagerhat	Honufa	-
26		KII	Social Welfare Representative	A.T.M Masud Hosen	-
27		KII	UDMC Representative, Baharbunia Union, Morrelganj	Arifuzzaman Shawon	1884339031
28		KII	Civil Society Representative, Rayenda Union, Sharonkhola	Ashraful Alom	-
29		KII	Union Sachib, Putikhali, Morrelganj, Bagerhat	<u>Babul Molla</u>	1880339334
30		KII	Civil Society Representative, Putikhali Union, Morrelganj	Ganesh Paul	-
31		KII	UDMC Representitative, Rayenda, Sarankhola, Bagerhat	Halim Gazi	1518941809

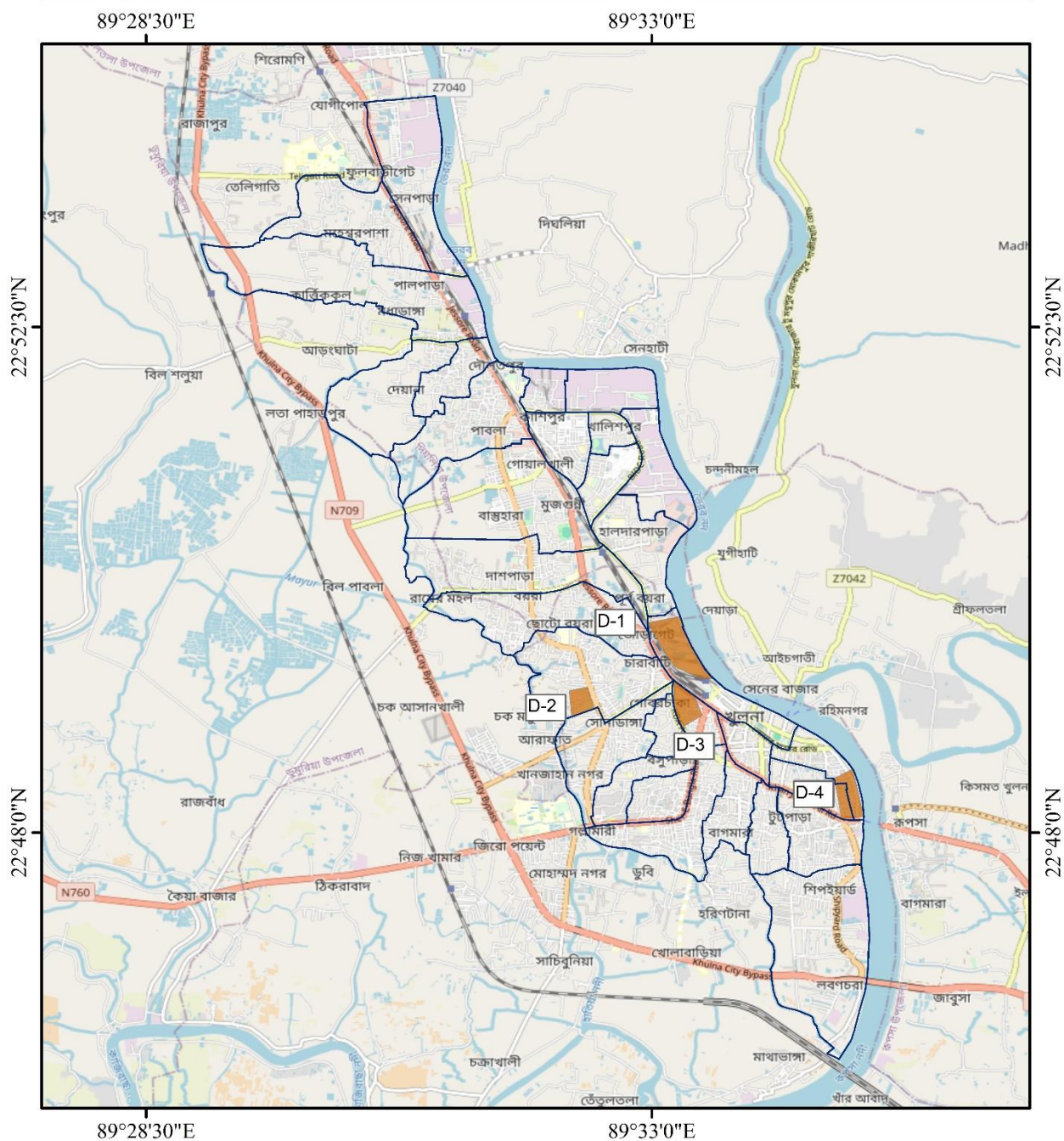
32		KII	Local Community Leader, Putikhali Union, Morrelganj	Abdul Jalil Hawladar	1955764144
33		KII	PIO	Masudur Rahman	-
34		KII	Union Member (Ward-9) Baharbunia, Morrelganj	Md Alamin Fakir	1313968959
35		KII	NGO Representative, Rayenda, Sharonkhola	Md Masud Rana	-
36		KII	Teacher Morrelganj Sadar	Md Shafiqul Islam	-
37		KII	Religious Leader (Muslim)	Md Shah Ali	1937741516
38		KII	Union Member (Ward-3) Baharbunia, Morrelganj	Md. Esken Khan	1744269566
39		KII	Union Member (Ward-3), Rayenda, Sharonkhola	Md. Kawasar Hossen Akond	1717961532
40		KII	Union Member (Ward-7), Putikhali, Morrelganj	Md. Kaykobad Sheikh	1729531375
41		KII	UNO, Morrelganj	Md. Nazmul Islam	1322884187
42		KII	Police, Bagerhat Sadar Thana	Md. Saidur Rahman	1320141179
43		KII	Local Student Association	Md. Samsur Rahman	1521541217
44		KII	Union Member (Ward-8), Rayenda, Sharonkhola	Md. Shahjahan Badal	1718321315
45		KII	Union Sachib, Rayenda, Sharankhola	Nurul Alom	1711207156
46		KII	CPP Volunteer, Morrelganj Sadar	Sonia Akhter	1718002295
47		IDI	Case Study	Abul Kalam	-
48		KII	Assistant Commissioner (Land), Tala Upazila	Abdullah Al Amin	1980332514
49		KII	UDMC Representative, Dhandia, Tala	Abdur Razzak	1716294111
50		KII	UP Member (Ward-3), Dhandia, Tala	Aktaruzzaman	1854519556
51	Satkhira	KII	Union Parishad Member (Ward-7), Pratapnagar, Assasuni	Md, Ujjol Hosen	1714647997

52	KII	Teacher, Tala, Satkhira	Ariful Islam	-
53	KII	Civil Society Representative, Dhandia, Tala	Enamul Haque	-
54	KII	CPP Representative, Assasuni	Joynal Sardar	1914091146
55	KII	Union Sachib, Pratapnagar, Assasuni	Khairul Alam	1722546044
56	KII	UDMC Member, Praptapnagar, Assasuni	Mainoddin Seikh	-
57	KII	Local Community Leader, Dhandia, Tala	Md. Asaduzzaman	1978918188
58	KII	Union Parishad Member (Ward-4), Pratapnagar, Assasuni	Md. Moksedur Rahman	1716803048
59	KII	Social Welfare Representative	Md. Rokonuzzaman	1708414204
60	KII	Police, Satkhira District	Md. Sojib Khan	1320-142102
61	KII	Local Student Association	Mirajul Islam	1718174877
62	KII	Civil Society Representative, Pratapnagar, Assasuni	Mohammad Ali	-
63	KII	Union Sachib, Dhandia, Tala	Md. Faruk Hosen	1733-073899
64	KII	PIO	Md. Obaidul Haque	17498709600

5.4 Hotspot Maps



Migration Hotspot Map: Khulna City Corporation



Legend

- City Corporation Boundary
- Destination Hotspot

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

N



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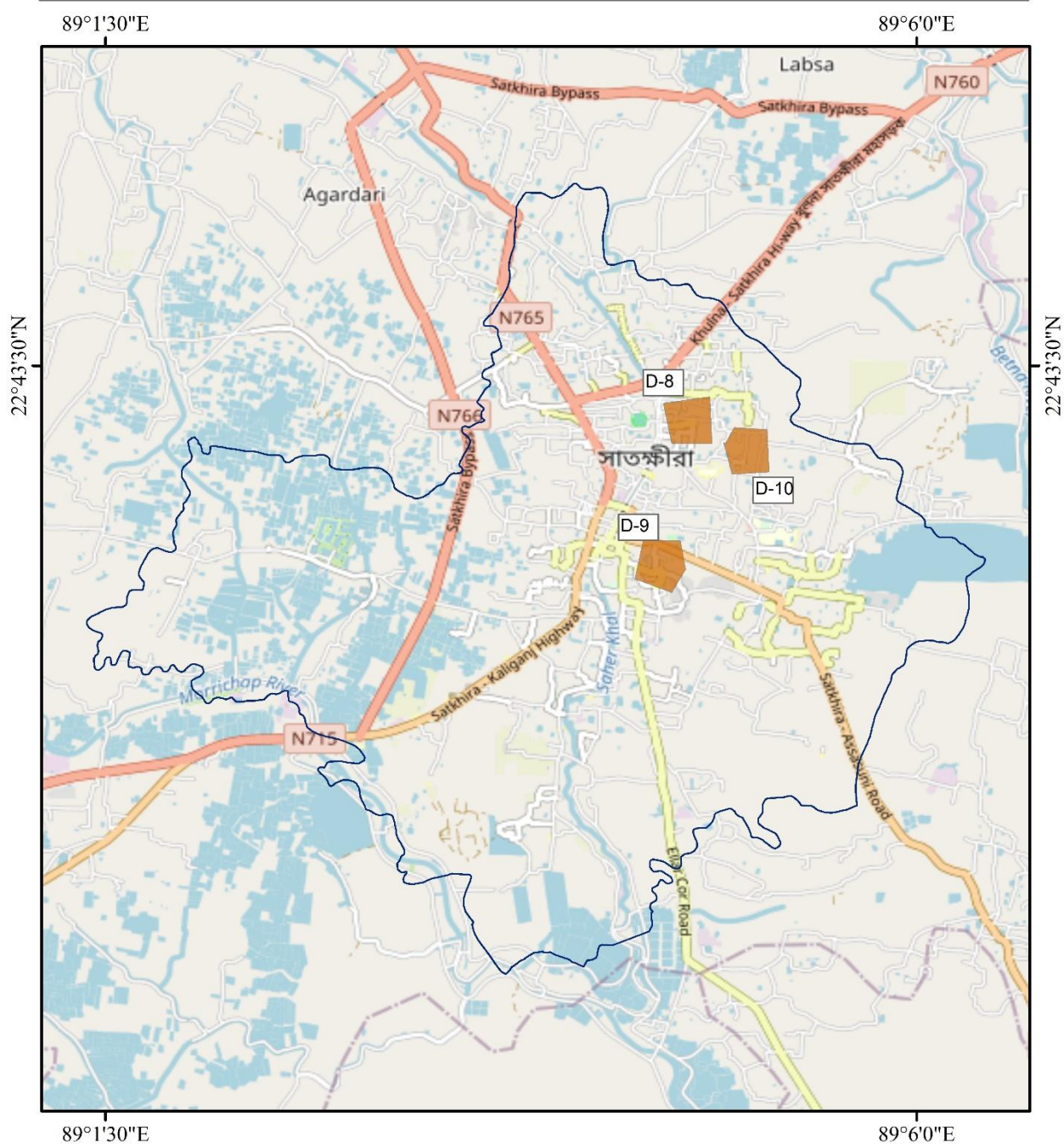
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Client

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Migration Hotspot Map: Satkhira Pourosoava



Legend

- Pourosoava Boundary
- Destination Hotspot

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree



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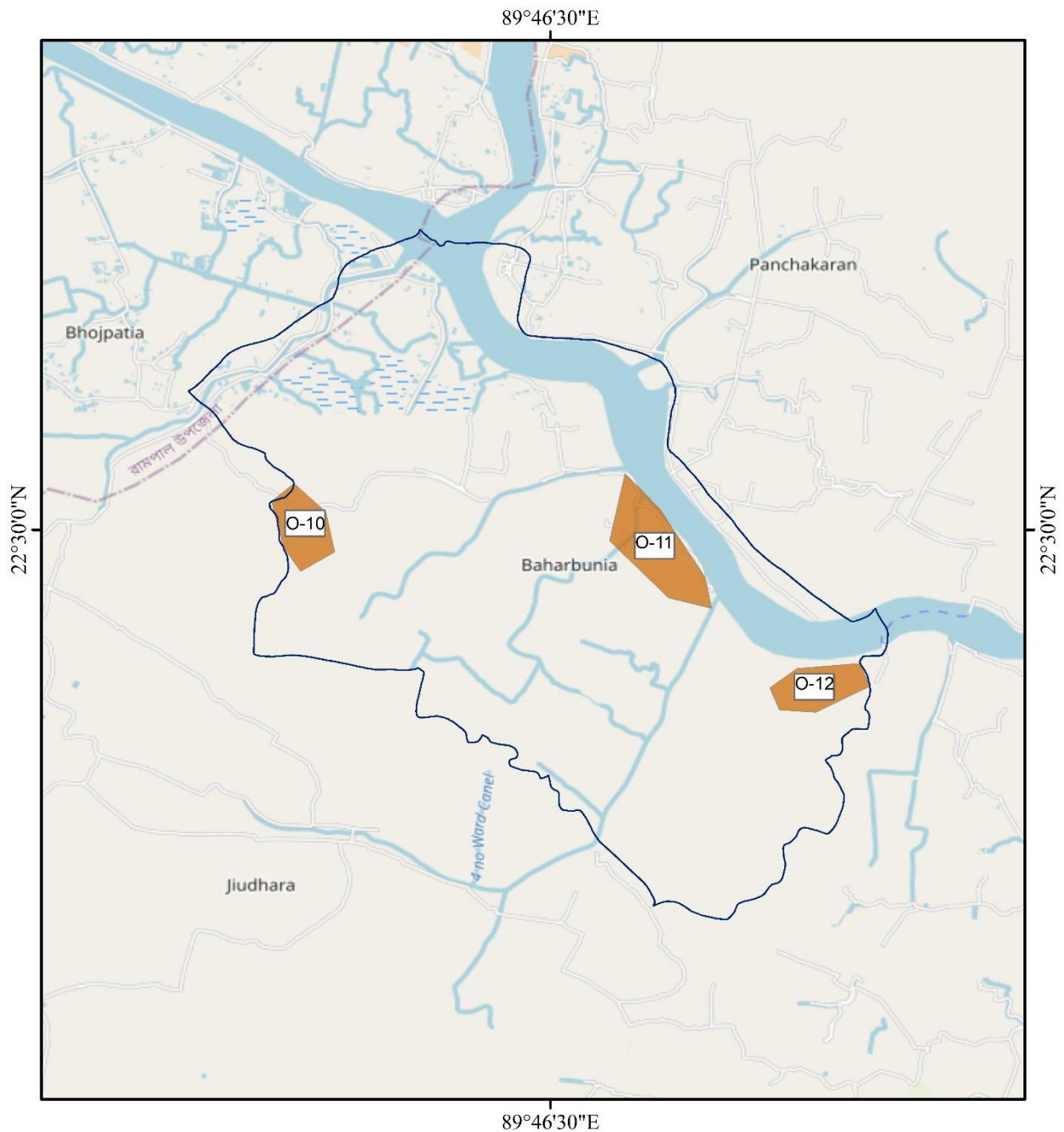
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Migration Hotspot Map: Baharbunia Union



Legend

- Union Boundary
- Origin Hotspot

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Datum: WGS 1984
Units: Degree



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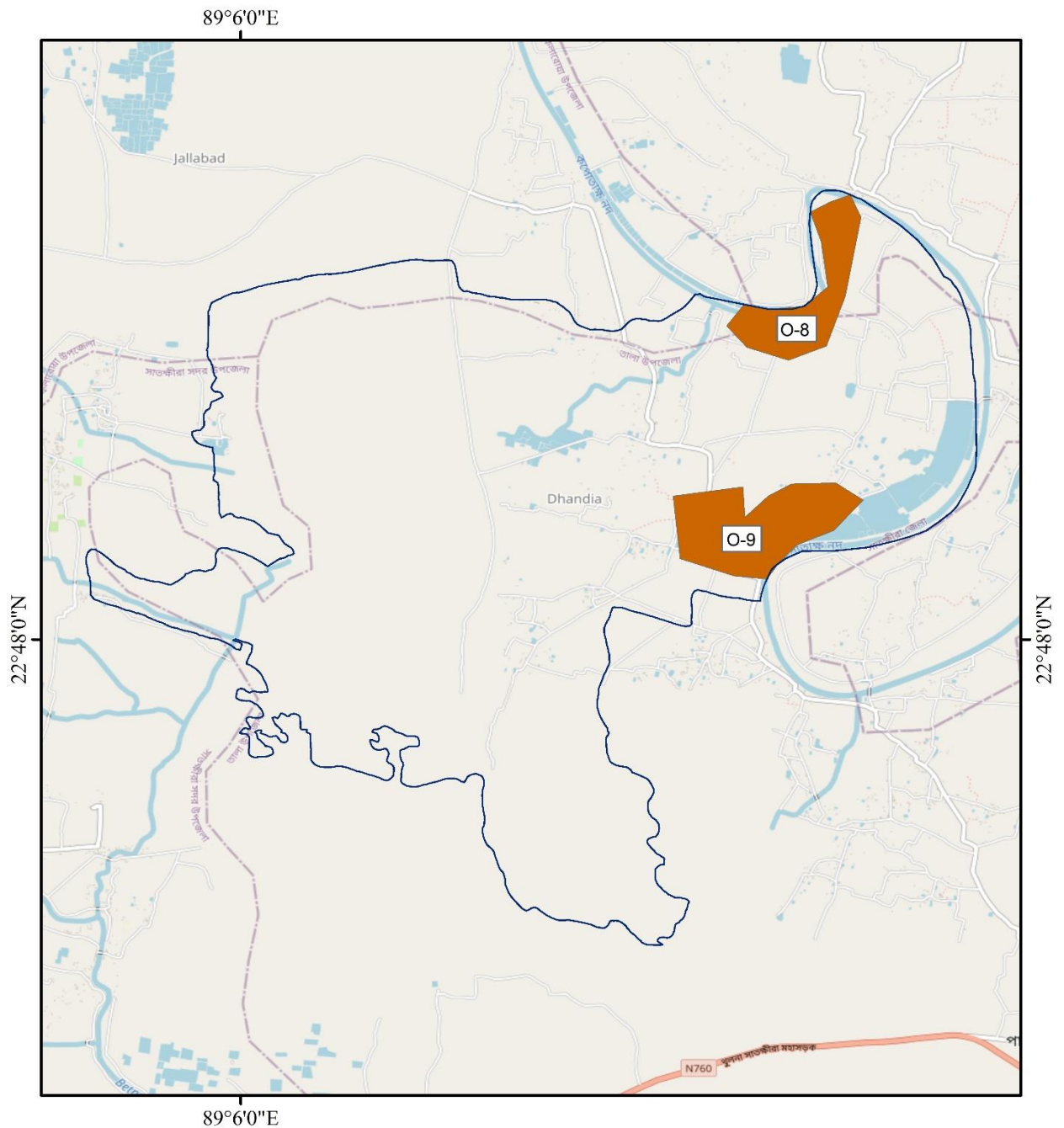
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Migration Hotspot Map: Dhandia Union



Legend

- Union Boundary
- Origin Hotspot

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Units: Degree



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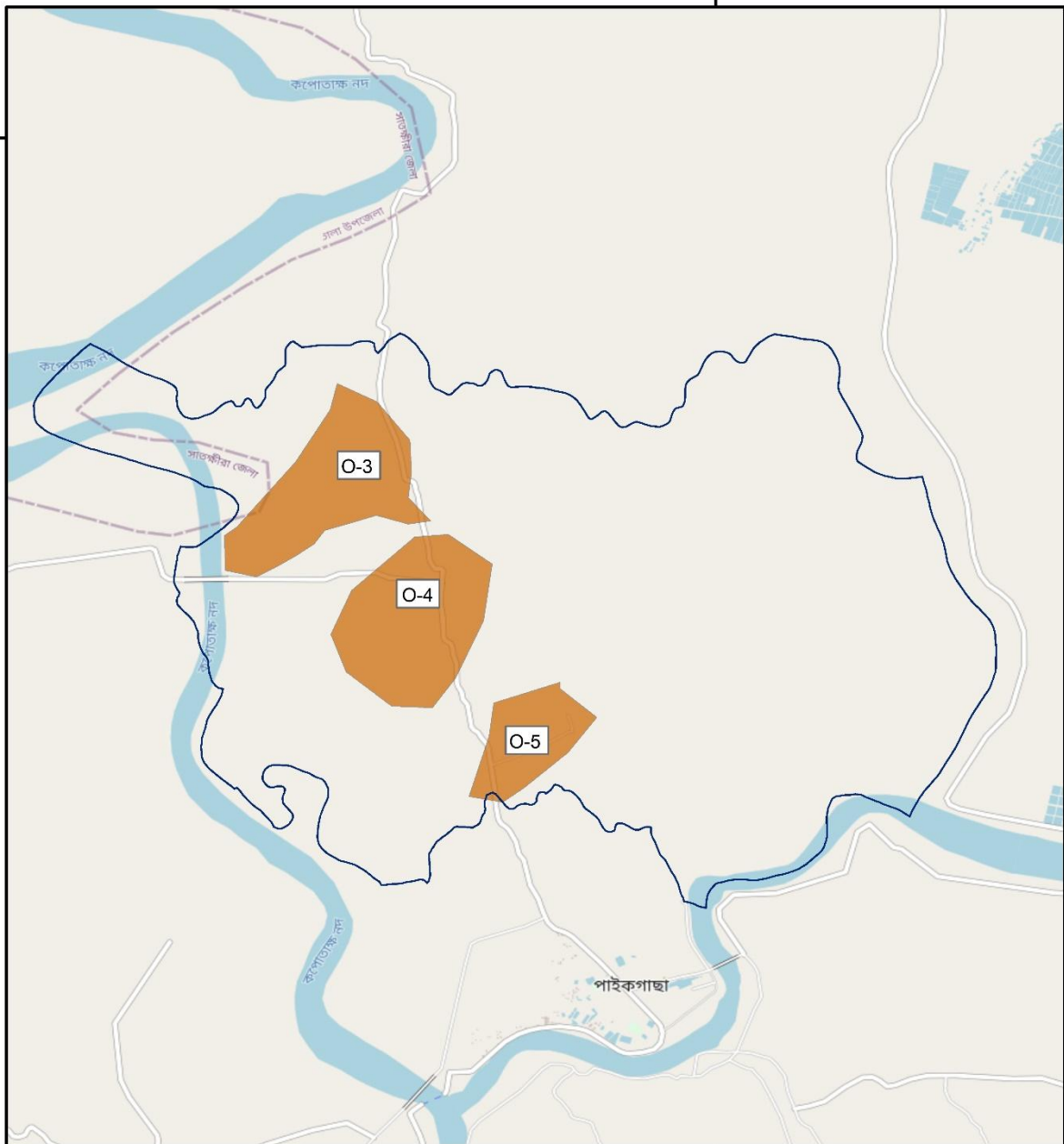


Migration Hotspot Map: Gadaipur Union

89°19'30"E

22°39'0"N

22°39'0"N



89°19'30"E



Legend

- Union Boundary
- Origin Hotspot

Coordinate System: GCS WGS 1984
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Units: Degree



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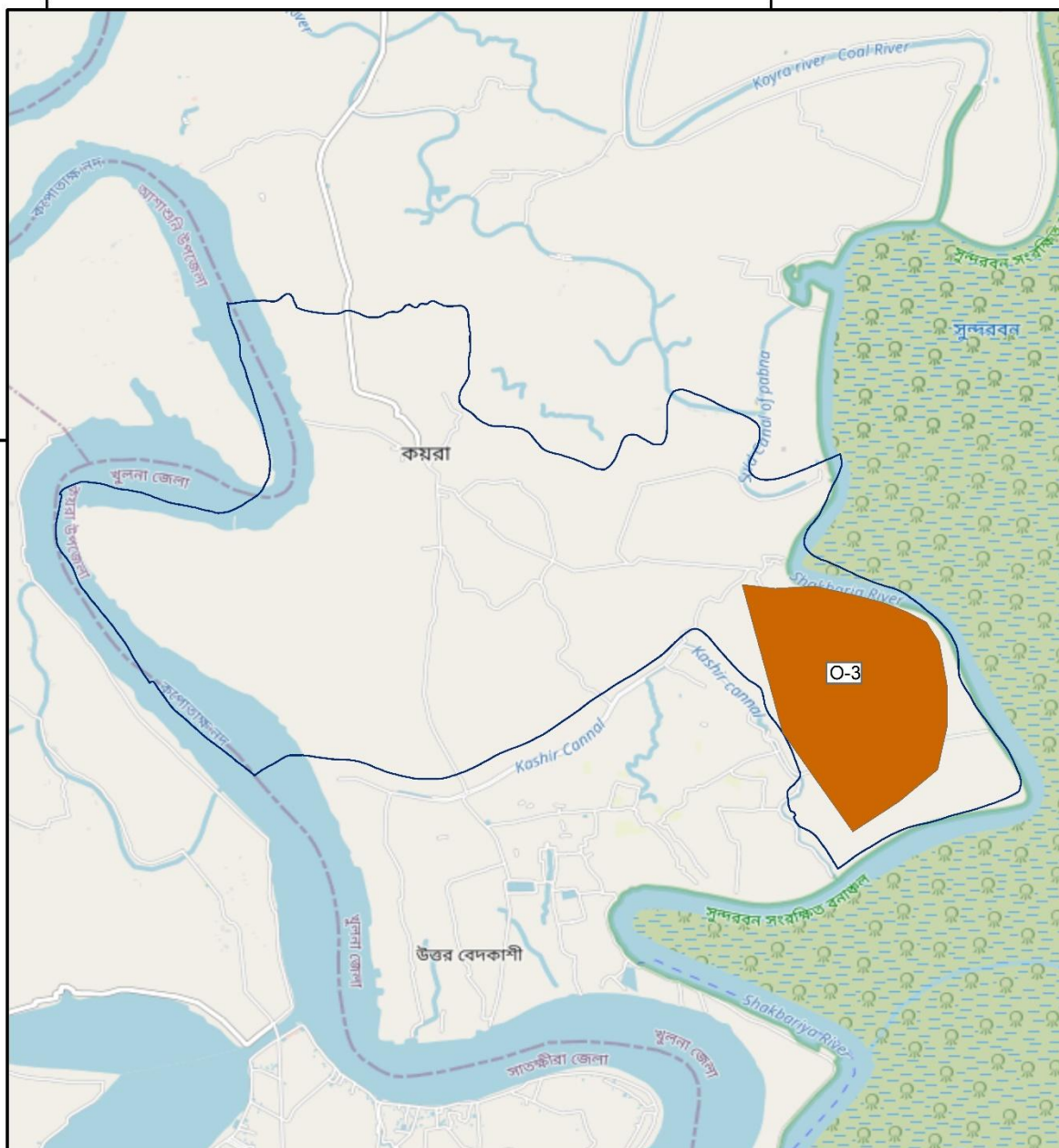
Migration Hotspot Map: Koyra Union

89°15'0"E

89°19'30"E

22°21'0"N

22°21'0"N



89°15'0"E

89°19'30"E



Legend

- Origin Hotspot
- Union Boundary

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

N

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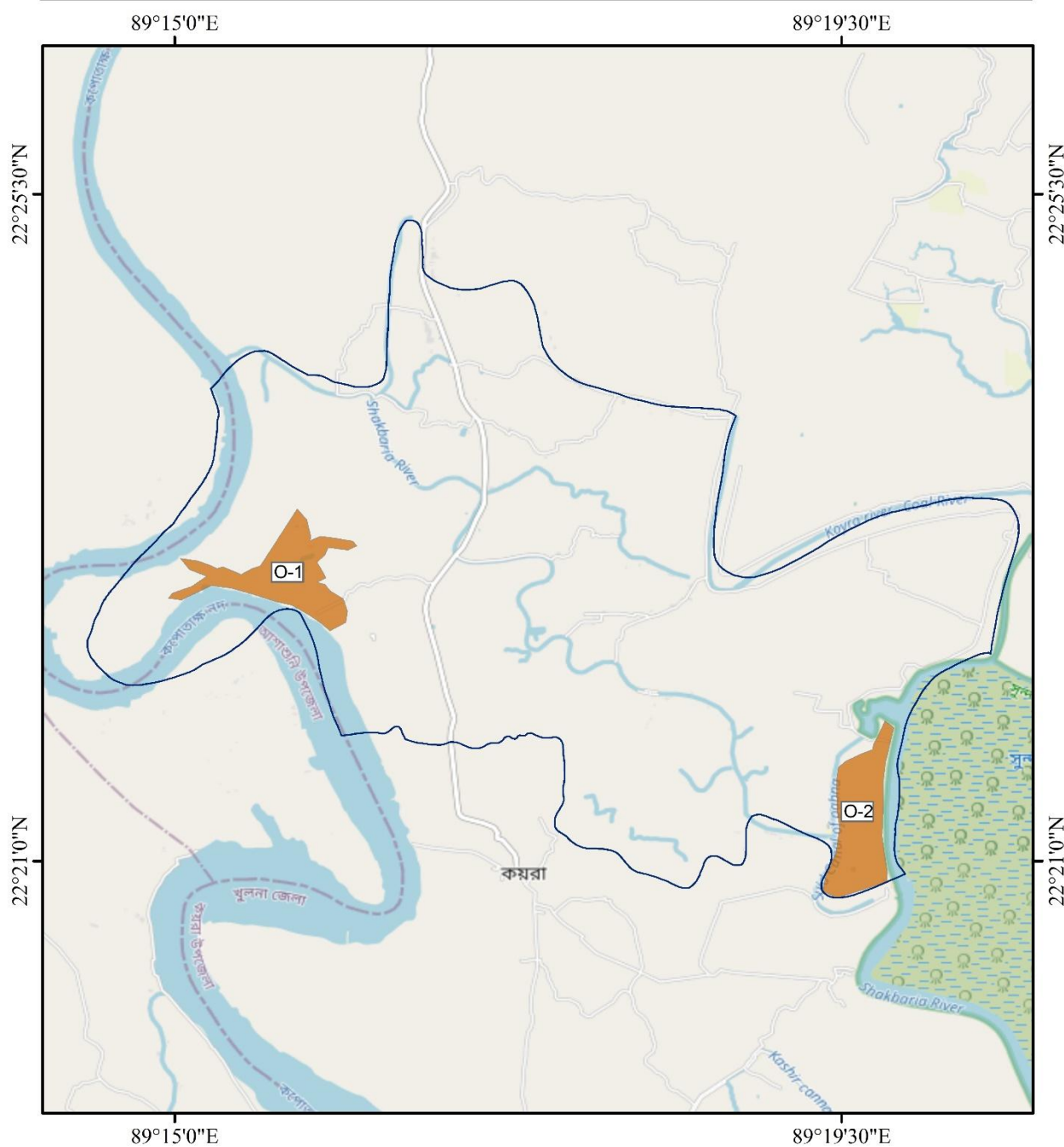
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Migration Hotspot Map: Maharajpur Union



Legend

- Union Boundary
- Origin Hotspot

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree



R.F. = 1:63,401

0 0.75 1.5 3 Km

Client

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Migration Hotspot Map: Pratapnagar Union

89°10'30"E

89°15'0"E

22°25'30"N

22°25'30"N

22°21'0"N

22°21'0"N

89°10'30"E

89°15'0"E



Legend

- Union Boundary
- Origin Hotspot

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

N

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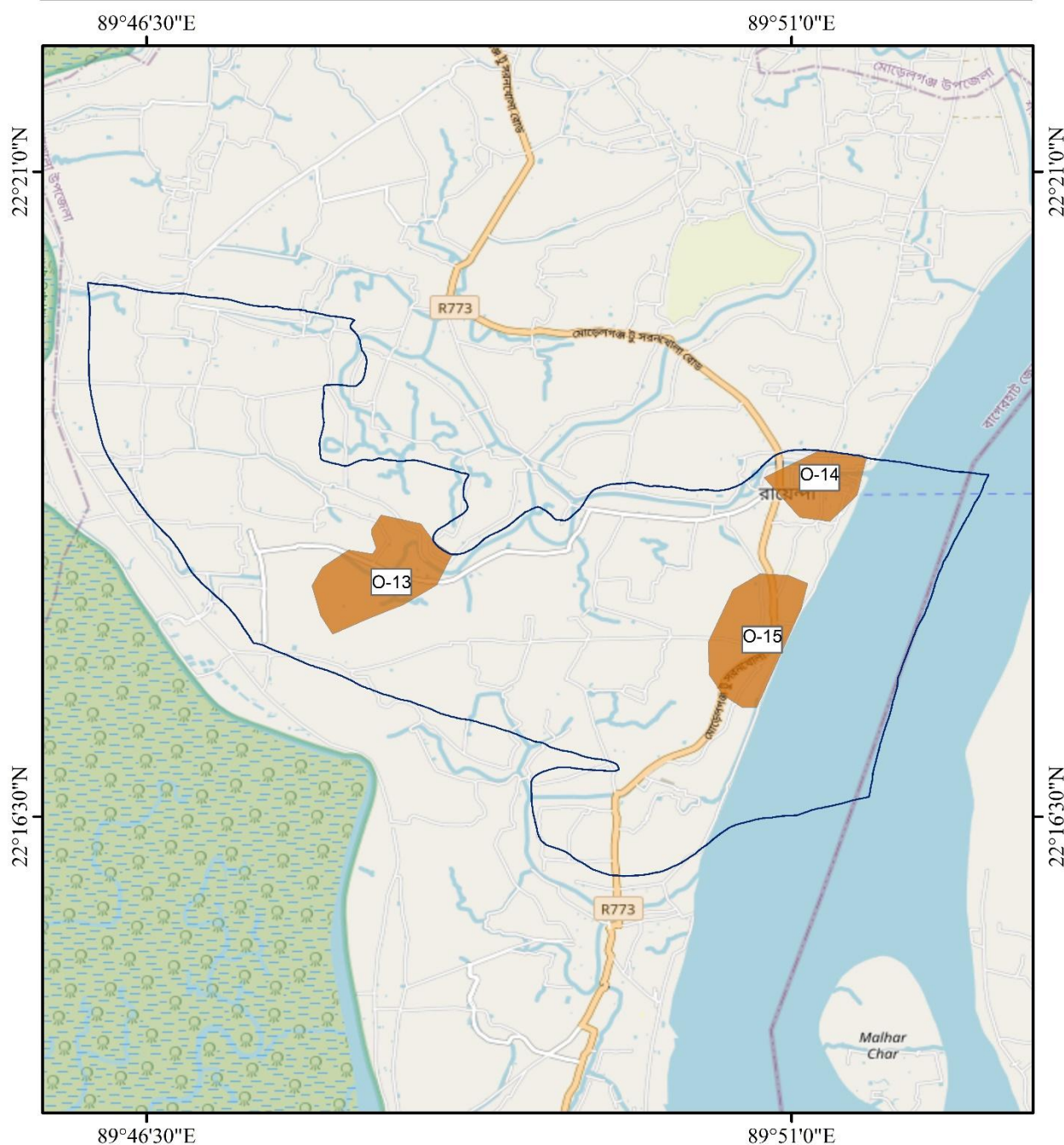
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Client

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Migration Hotspot Map: Rayenda Union



Legend

- Union Boundary
- Origin Hotspot

Coordinate System: GCS WGS 1984
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Units: Degree

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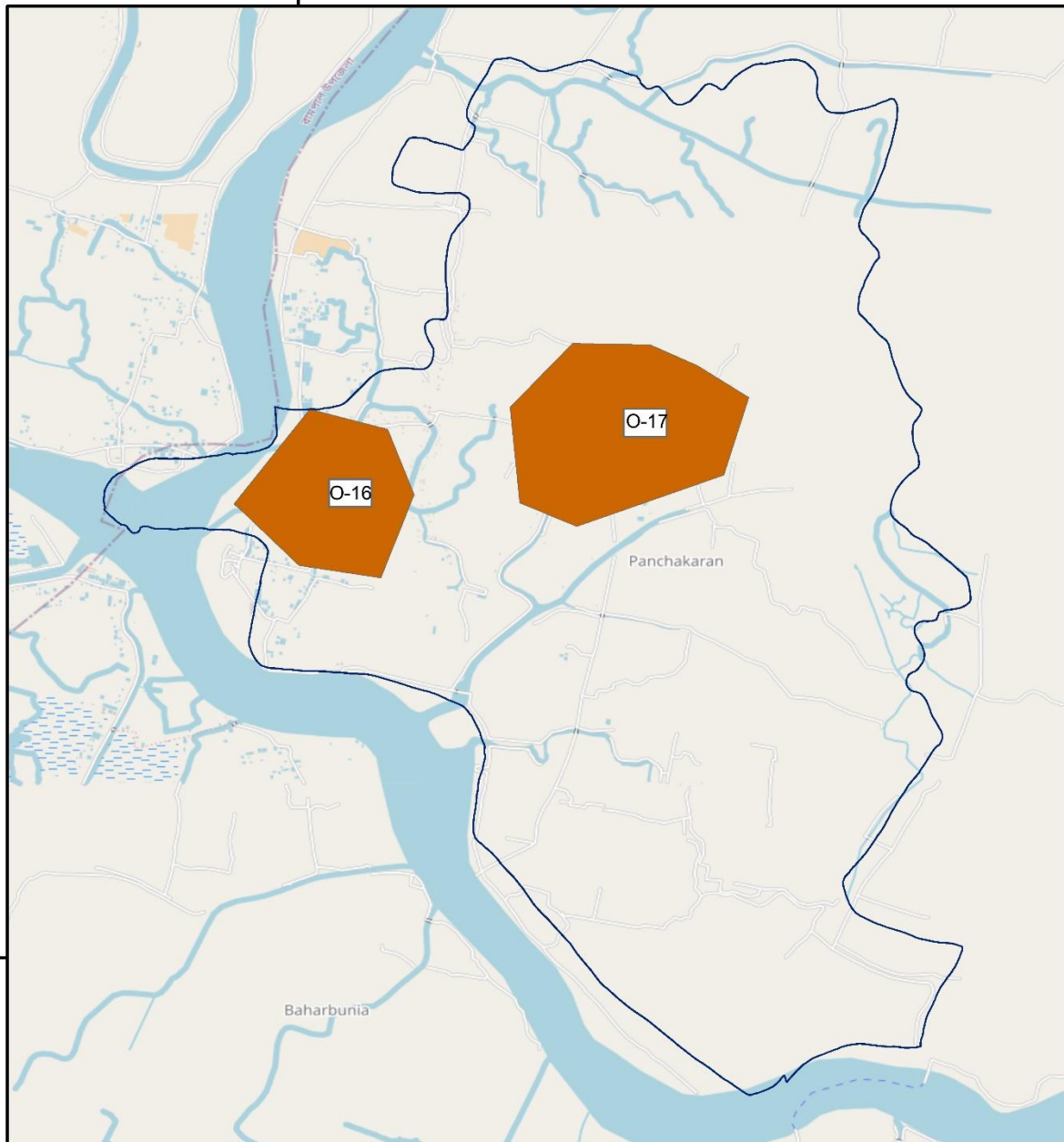
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Migration Hotspot Map: Panchakaran Union

89°46'30"E



89°46'30"E



Legend

- Union Boundary
- Origin Hotspot

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree



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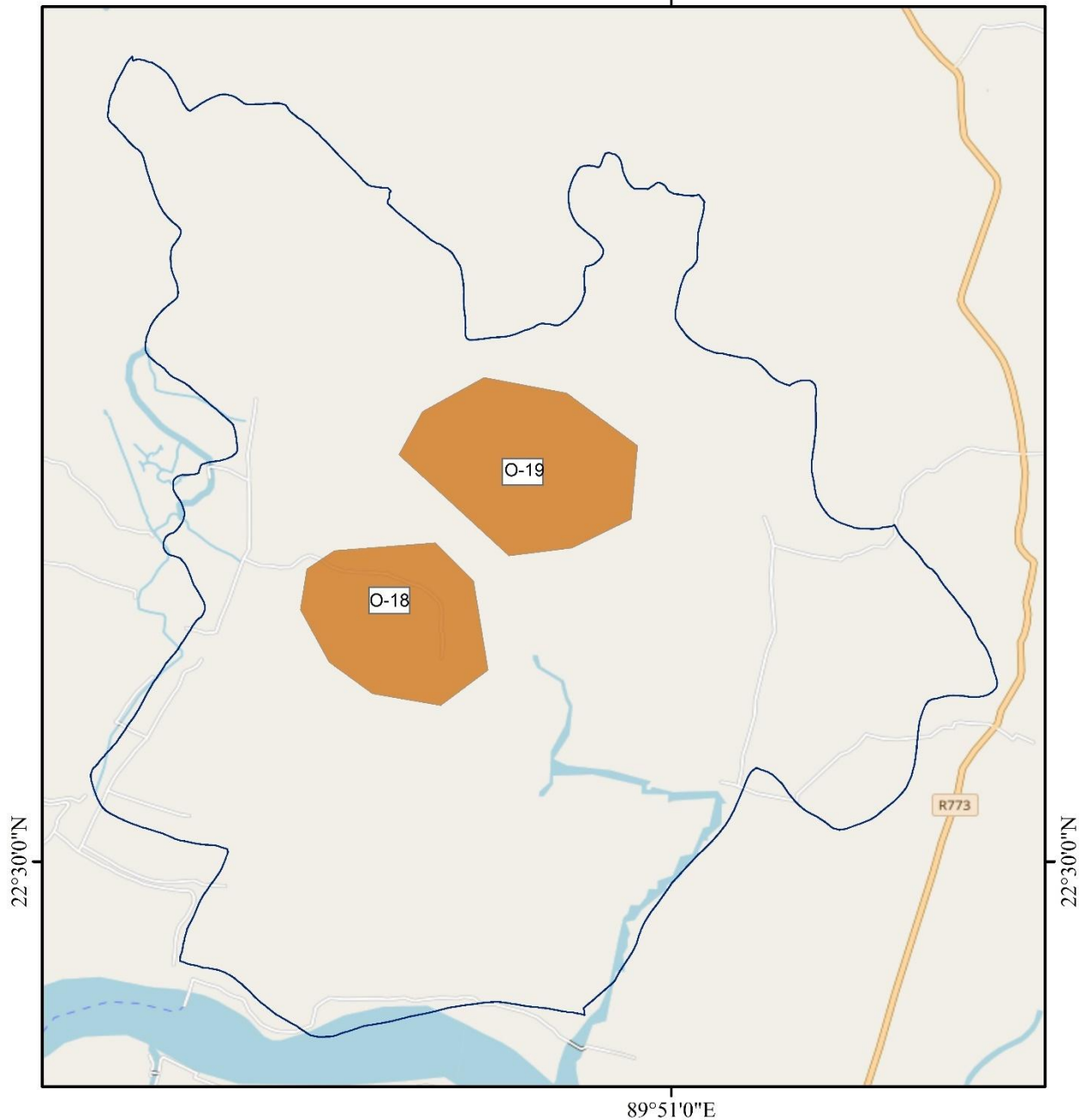
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Migration Hotspot Map: Putikhali Union

89°51'0"E



Legend

- Union Boundary
- Origin Hotspot

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree



R.F.= 1:35,458

0 0.475 0.95 1.9 Km

Client

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