

Title: From temporary to permanent

Subtitle: Housing for internally displaced communities in Bangla-

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GL@BAL HOUSING

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Introduction

Internal Displacement

Bangladesh is one of the most climate-vulnerable countries in the world, heavily impacted by rising sea levels.

The country is geomorphologically dominated by the Ganges-Brahmaputra-Meghna River System, which flows into the Bay of Bengal, and due to its low-rising topography, the country faces severe risks from the effects of climate change (Van Lohuizen, 2021). A number of inhabitants have been compelled to leave coastal areas and migrate to urban centers or other regions in search of safety, shelter, and new livelihoods, leading to widespread internal displacement.

As a result of rising sea levels and more frequent natural disasters like floods, cyclones, and river erosion, millions of people and communities have been forced to relocate. In addition to endangering people and their livelihoods, these ecological strains further contribute to socioeconomic problems like unemployment, poverty, and housing shortages worse in both rural and urban areas. (Ministry of Disaster Management and Relief et al., 2021)

More specifically, in the Sylhet region, the displacement is caused by flooding, which has been aggravated by a number of factors. The destruction of traditional wetlands known as haors, which serve as natural flood buffers. has exacerbated the problem. Infrastructure development on these haors has obstructed water flow, limiting the land's ability to absorb excess rainwater. Furthermore, heavy rainfall from neighboring Indian states such as Meghalaya and Assam swells rivers, increasing Sylhet's flood risk. River siltation, caused by deforestation and waste dumping, has reduced rivers' water-carrying capacity, making them more likely to overflow. Climate change has increased rainfall patterns, resulting in extreme weather events such as the unprecedented 1,500mm of rainfall in June 2022, nearly double the average amount, causing rivers to swell and flood vast areas. (Zahid, z.d.) (Rafigul Islam Montu & Rafigul Islam Montu, 2022) (A Difficult Road To Recovery in Sylhet | NRC, z.d.)

Bangladesh adopted the National Strategy on Internal Displacement Management in 2021, with the goal of addressing displacement caused by disasters and climate change by providing prevention, protection, and long-term solutions to displaced people. This strategy aims to achieve a "safe, climate-resilient, and prosperous Delta" by 2100, while also acknowledging the importance of managing migration and displacement in a systematic way. (Ministry of Disaster Management and Relief et al., 2021) Despite these efforts, the scale of displacement is massive, and housing solutions are required.



Image 1: Migration flows in and out of Bangladesh

Literature Review

Climate challenges

The primary sites of displacement in Bangladesh are concentrated in the coastal regions and the river delta areas of the mainland. These regions are particularly vulnerable due to their proximity to rising sea levels and the increased frequency of extreme weather events. Among the country's 64 districts, 24 are already experiencing significant levels of climate displacement (Displacement Solutions, 2012). These areas are home to millions of people whose livelihoods, primarily based on agriculture and fishing, are increasingly threatened by the impacts of climate change.

The rate of sea level rise in Bangladesh is particularly concerning, with the annual rise ranging from 3.1mm to 4.5mm across different coastal regions—exceeding the global average of 3.42mm per year (Molla, 2024). By 2050, sea levels are expected to rise by as much as 0.30 meters, potentially displacing 900,000 people (Emmaüs International, 2023). Additionally, 17.5% of Bangladesh's land area could be submerged by 2100 if sea levels rise by one meter, which would have catastrophic impacts on the nation's economy and population (Sarwar, 2005).

More than 160 million people are working to improve their economic situation in a nation that is less than 15,000 km2 in total land area. Between 2008 and 2014, an estimated 4.7 million people were displaced due to natural disasters in the country. Those displaced are the poorest and most marginalized people in the country. The projected number of climate-induced migrants by 2050 varies from 13 to 18 million, with a staggering 17,000-22,000 km2 of land being submerged (Van Lohuizen, 2021).

In order to gather more precise data on the number of climate-displaced people, the Association for Climate Refugees (ACR) held workshops in each of Bangladesh's seven divisions (Dhaka, Rajshahi, Rangpur, Barisal, Chittagong, Sylhet, and Khulna) between March and May 2010.

In Bangladesh's coastal regions, 236 sub-districts were impacted by tidal floods as a result of sea level rise. Over the past three years, tidal saline water has twice a day flooded many of these villages. According to the ACR, 32% of the affected populations (approximately 2.46 million people) have had their homes and lands destroyed by repeated cyclones and king tides. The majority of these people—64%— are locally displaced on remaining embankments or higher ground. However, 27% (approximately 675,113 people) have been displaced to other parts of Bangladesh, including to the capital, Dhaka, while the remaining 9% (about 218,656 people) have been displaced across international borders.

In contrast, 179 subdistricts on the mainland have experienced river band erosion, and for the past thirty years, flash flood waters have been eroding the majority of the villages. 42% of the inhabitants (1,452,588/3,490,500) have had their houses and lands destroyed by annual river erosion often coupled with floods. Of these, 66% (951,531) have been displaced locally on neighboring

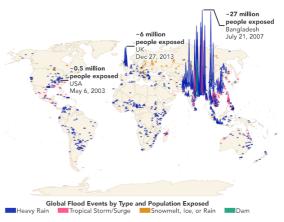


Image 2: 2000 - 2015 research diagram illustrates the amount of people living in Floodplains

embankments or on higher ground, 26% have been displaced to other locations within the country and lastly 8% (125,264) have been displaced internationally. (Displacement Solutions, 2012)

A large percentage of Bangladesh's climate-displaced population will not only be internally displaced and will not cross international borders, but they would prefer to remain in nearby rural areas as long as they have access to housing, land rights, and means of income.

Bangladesh's traditional architecture

Bangladesh's traditional architectural practices are deeply rooted in its cultural heritage and the need to adapt to the country's harsh climate, emphasizing the use of locally available materials. Mud-walled houses and bamboo structures, which are common in rural areas, provide natural insulation, helping to keep homes cool in the summer while remaining affordable and sustainable The raised plinth is an important feature of traditional homes, as it protects against flooding, which is a common occurrence in many parts of Bangladesh. Roof designs, such as the gable-shaped "dochala" and the hipped "chochala," are designed to effectively manage heavy rainfall during the monsoon season. Many homes also have verandahs and courtyards, which improve natural ventilation and create open, communal spaces that encourage social interaction among household members. (Vernacular Architecture of Bangladesh, 2020) (Wind, Water, And Clay: The Architecture Of Bangladesh,

Even though these techniques have enabled communities to construct homes that are both functional and responsive to the environmental and social contexts of Bangladesh, some structures are characterized by poor

quality and therefore are vulnerable to natural disasters. Over 85% of rural dwelling units fall into inadequate or deficient categories, primarily constructed from non-durable materials. Specifically, 41.89% of houses are classified as katcha durable structures, with walls and roofs made of tin or Cl sheets. In contrast, 34.18% consist of katcha non-durable structures built from jute stalks, straw, and wood. Among the most impoverished segments of the population, many reside in jhuprie, which are makeshift shelters constructed from sacks, polythene, and straw. These temporary materials provide little protection against natural hazards, leaving residents highly exposed to the impacts of climate change. (Khare, 2016)

These problems are made worse by the notable difference in land ownership between rural households. Because of the current socioeconomic difficulties, many families only own small plots of land, which limits their capacity to build long-lasting homes or make improvements to their properties. Poverty is made worse by this unequal land distribution, which makes it difficult for many households to improve their standard of living. (Hossain et al., 2023) Another major issue in many rural areas is the absence of adequate sanitary facilities. The number of cases of infectious diseases is greatly increased by the widespread use of kutcha latrines, which frequently lack slabs. This is especially true during the rainy season, when flooding may further exacerbate inadequate sanitation conditions. Additionally, a significant percentage of people living in rural areas rely on tube wells as their main source of drinking water, which can get contaminated during floods and cause illnesses that are spread by water. (Hossain et al., 2023)

These housing conditions contribute as well to the continuous flow of internal migration toward urban areas. Faced with inadequate housing and limited economic opportunities, many rural residents feel compelled to leave their communities in search of better living conditions in cities. However, this rural-to-urban migration places immense pressure on urban infrastructure and housing, leading to the proliferation of informal settlements and slums.



Image 3: Continuous population movement



Image 4: People wade through floodwaters near a temporary shelter in

Current policies for housing

In response to the growing number of climate-displaced individuals, the Bangladeshi government has prioritized creating systematic mechanisms to collect data on displacement, enabling better monitoring of displaced populations' recovery and needs.

A significant effort includes allocating khas land—government-owned fallow land—for resettlement. The government aims to provide this non-agricultural land to those displaced by climate impacts, particularly in flood-prone or cyclone-affected areas. This initiative seeks to offer secure and stable land tenure to displaced families who might otherwise face repeated displacements due to land scarcity or ongoing environmental threats. Additionally, the construction of disaster-resilient housing has become a central policy for resettling displaced communities. These homes are built with features to withstand severe weather, including raised foundations and durable materials suited to Bangladesh's climate.

Following the emergency phase, where Habitat for Humanity Bangladesh and other organizations distribute emergency shelter kits to affected families, transitional housing is provided to disaster-affected families. Furthermore, Bangladesh has invested heavily in constructing multipurpose disaster shelters along the coastal areas. These shelters serve dual purposes, during disasters they provide protection for people and livestock in the vulnerable communities and when there is no need they function as primary schools.

Even though there are some efforts being made, there is a severe shortage of land and overcrowding in major cities, making it difficult to resettle displaced people and the scale of the problem is massive, so the implementation of such plans remains a challenge. There are some pilot projects in areas like the Chittagong district that are worth exploring more and the duration and conditions of the emergency shelters. The time that people can live there, how many of those communities stay together and what happens if the temporary displacement turns into permanent are some of the points that this research is interested to address through government documents and people's experiences.

Problem statement

The phenomenon of internal displacement in Bangladesh is complex, requiring targeted interventions tailored to the various categories of displaced people. Internally displaced people are divided into three categories: temporary, in-between temporary and permanent, and permanent. Based on these categories, we can address displacement through durable solutions of return, local integration and resettlement.

Among these categories, individuals in the transitional group are particularly vulnerable. They find themselves unable to return to their original homes while lacking the means to settle permanently in safer areas. This unstable existence exposes them to the risk of recurrent displacement, emphasizing the critical need for comprehensive and contextually relevant interventions to improve their resilience and security. (Ministry of Disaster Management and Relief et al., 2021)

The Disaster Management Act (DMA) focuses primarily on emergency shelter and resettlement following disasters, but it lacks comprehensive guidance for dealing with the various stages of displacement. To reduce protection risks, effective emergency shelter management has to offer adequate food, refuge, health care, education, and safety for vulnerable groups such as children, women, the elderly, and the disabled. While government relief initially targets affected areas, it remains insufficient since the floods affect people from all socioeconomic backgrounds, necessitating a broader relief approach. (Zahid, nd.)

The displacement of communities in Bangladesh due to recurring natural disasters results in losses that go far beyond housing. Many displaced individuals are primarily dependent on agriculture, so they lose not only their homes but also their livelihoods, livestock, and thus their income sources. Transitional housing should take into account the community and family ties of the Bangladeshi people and even address the possibility that the transitional could eventually become permanent. (Displacement Solutions. 2012)

Additionally, given that many disaster-prone areas face recurrent events, temporary housing solutions must consider the rising numbers of affected communities. Since recovery often spans years, there is a significant risk that new waves of displaced individuals will overlap with previous groups who are still in temporary shelters. This reality calls for a more resilient, potentially semipermanent approach to transitional housing, one that can accommodate extended stays if needed. Without such an approach, the capacity of temporary shelters may be repeatedly overwhelmed, and the displaced communities could struggle to regain stability. Finally, these efforts highlight the need for adaptable, long-term solutions that balance immediate safety with long-term community cohesion and economic recovery, particularly in areas experiencing chronic, climate-induced displacement, which is preciselythe gap in the current sollutions.



Image 5: Family leaving their flooded house

Theoritical framework

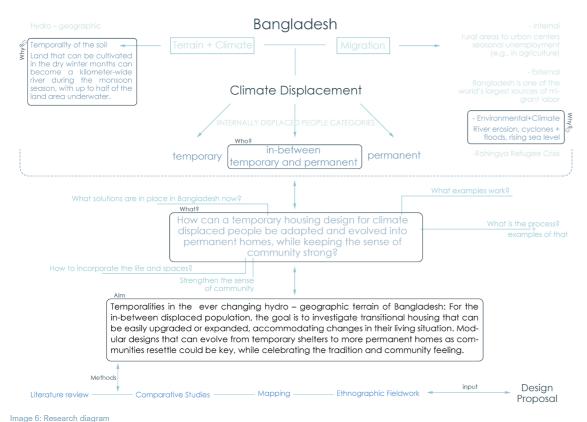
The theoretical framework for this research is based on the concept of climate vulnerability and its implications for displaced communities in Bangladesh. It is critical to recognize the unique challenges presented by Bangladesh's low-lying deltaic geography and socioeconomic conditions, both of which increase the country's vulnerability to climate hazards. As communities face repeated displacement, understanding and addressing their vulnerabilities becomes critical for developing effective response strategies that address all of their needs, from immediate shelter to long-term.

The Ministry of Disaster Management and Relief's categorization of displaced people into three major groups: temporary, transitional, and permanent, will be used throughout the research since each category has unique requirements. Temporary displacement frequently necessitates immediate humanitarian assistance and shelter, whereas transitional displacement necessitates interim solutions that provide stability while families wait to return home or settle elsewhere. However, permanent displacement necessitates resettlement strategies that promote long-term integration into new communities.

Temporality is used as a central factor, addressing the fluid and uncertain nature of displacement as well as the soil itself.

Participatory planning will be an important tool for developing effective solutions for displaced communities. Community participation in planning ensures that Bangladeshi communities' distinct social networks are preserved, even in resettlement settings. Local engagement fosters a sense of ownership and empowers communities to express their specific needs, which is critical for long-term housing solutions and the preservation of cultural and social cohesion.

Given that temporary shelters frequently become long-term homes, this research will emphasize the value of incremental and adaptable design. Transitional housing must be adaptable, both for current residents and future displaced populations. Given that repeated displacement frequently results in overlapping waves of people in need of shelter, housing solutions must be both scalable and sustainable. Modular, expandable housing can evolve over time to meet the needs of a growing population, preventing temporary solutions from degrading into poor living conditions.



Research Question(s)

Even though there are a lot to be said about the displaced people due to climate disasters, there is not enough discussion about what happens to the sense of community when many individuals and families relocate in different areas. Then there is the question of the plain numbers of it all, both for temporality and for moving to completely different places as the ones they originated. The majority of the displaced individuals are originated from rural areas, by the water. The temporary shelters are in embankments close by some times but the relocation areas more often than not are further away, to other villages for example. And in some cases, people need to move into an urban center to be able to find work after their livelihoods are destroyed.

How can a temporary housing design for climate displaced people be adapted and evolved into permanent homes, while keeping the sense of community strong?

- -How to address spatially the privacy and safety challenges faced by people living in temporary shelters?
- -How can these solutions be protected from floods?
- -How to strengthen the sense of community and belonging?
- -How to incorporate the life and spaces the displaced people used to have in the new ecosystem they relocated in?
- -What will the process from temporary to permanent be?

mage of Research diagram

Design Hypothesis

Hypothetically, at the end of this research the design outcome will be a modular, adaptable housing model that utilizes and reinvents traditional architectural features—such as raised foundations for flood protection, open verandas, and communal spaces—and more importantly, can facilitate a seamless transition from temporary to permanent housing for climate-displaced people in Bangladesh. By integrating participatory planning and adaptable layouts, this design approach will support the preservation of social ties, address privacy and safety concerns, and strengthen the resilience and cultural continuity of displaced communities.

Core Aspects of the Hypothesis

- -Adaptability and Modularity
- -Flood-Resilient Foundations
- -Community-Centric Spaces
- -Local Materials and Traditional Forms
- -Participatory and Flexible Planning

The design should be adaptable enough to provide both short-term shelter and a longer-term home, giving individuals a sense of agency in a disruptive situation. This hypothesis proposes that such a design approach will create housing that is more than just a shelter—it will foster stability and community cohesion, ultimately helping displaced families transition more easily from temporary to permanent living arrangements if needed.

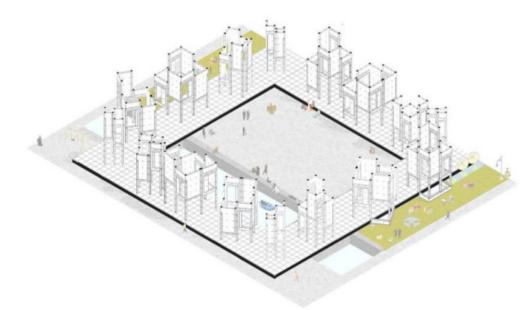


Image 7: Together strong urban design

Goal/Aims

The primary goal of this study is to develop a housing design specifically for people who are neither fully temporarily nor permanently displaced—individuals caught in a "in-between" situation. The goal is to create a structure that can serve as a temporary shelter while also transitioning into a permanent home if necessary. This design seeks to balance the urgent need for temporary housing with the long-term requirements of stability, cultural preservation, and social cohesion.

A key aim is to understand how these transitional housing units can adapt to Bangladesh's unique, dynamic hydrogeographic landscape, where flooding and erosion influence both where and how people live. The design aims to respect cultural norms while providing adaptability and security against climate impacts by analyzing how traditional Bangladeshi homes naturally blend indoor and outdoor spaces, emphasizing thresholds for privacy and communal interaction. This housing model will prioritize privacy, adaptability, and communal cohesion, providing residents with a sense of continuity and belonging even in a displaced environment.

Mehtodology

-How to address spatially the privacy and safety challenges faced by people living in temporary shelters?

Methods: Literature, interviews, case studies focused on thresholds, refugee camps

Outcomes: Diagrams, collages, Catalog of existing strategies (successful vs. unsuccessful)

-How can these solutions be protected from floods?

Methods: Literature, Case studies focuse on flood

resistant strategies, policies in place Outcomes: Diagrams, pictures, plans

-How to strengthen the sense of community and belonging?

Methods: Literature, interviews, site visit, Case studies focused on community and participatory design Outcomes: Diagrams, images, plans, collages

-How to incorporate the life and spaces the displaced people used to have in the new ecosystem they relocated in?

Methods: interviews, site visit, mapping, workshops with locals

Outcomes: Diagrams, pictures, collages, a catalog of existing shelters in the Sylhet region

-What will the process from temporary to permanent be?

Methods: Case studies of temporary projects that became permanent, literature

became permanent, interature

Outcomes: Diagrams, timetable, collages

Research scheme

The design will address the urgent need for adaptable, stable housing that preserves cultural values and supports social ties. Specifically, it will account for Bangladesh's unique, flood-prone landscape by using elements of traditional architecture, such as adaptable indoor-outdoor spaces and privacy-focused layouts, to ensure cultural continuity, security, and resilience. Research Aim The main goal is to create a flexible housing model for people in "in-between" displacement, offering both temporary shelter and a potential long-term home. Sub - Aim enhance comproviding resimunity cohemake the trandents with a sion, helping provide securiadapt to the hysition from rural sense of contiresidents main-

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How to address spatially the privacy and safety challenges faced by people living in temporary	How can these solutions be protected from floods?	How to strengthen the sense of com- munity and be-	How to incorporate the life and spaces the displaced people used to have in the new ecosystem they relocated	What will the process from temporary to permanent be?			
Case studies Refugee camps	Literature Case studies Policies in place	Literature Interviews Site visit Case studies	Interviews Site visit Mapping Workshops	Case studies Literature			
Outcome	Outcome	Outcome	Outcome	Outcome			
Diagrams Collages Catalog of existing strategies	Diagrams Pictures Plans	Diagrams Pictures Plans Collages	Diagrams Pictures Collages Catalog of existing shelters	Diagrams Timetable Collages			

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