

Reframing Cyclone Shelters Through Human Security in Community-Based Disaster Response: Protection, Participation, and Governance Dynamics in Humanitarian and Climate-Induced Disasters

Afifa Aduri^{1*}, Sheikh Sakib Rahman²

¹PPDM, School of Architecture and Design, BRAC University, Dhaka, Bangladesh

²Department of Architecture, BUET, Dhaka, Bangladesh

*Corresponding Author: afifaaduri29@gmail.com

DOI: <https://doi.org/10.47772/IJRISS.2026.10200162>

Received: 08 February 2026; Accepted: 14 February 2026; Published: 27 February 2026

ABSTRACT

Bangladesh has achieved substantial reductions in cyclone mortality through investments in early warning, the Cyclone Preparedness Programme (CPP), and multipurpose cyclone shelters. Yet governance failures erode trust and prevent equitable access for distinct groups of women, older persons, persons with disabilities, and others. Evidence from coastal communities reveals that sheltering systems can still reproduce insecurity as a result of overcrowding, poor water and sanitation facilities, limited privacy, uneven accessibility, and governance failures that undermine trust, older persons, persons with disabilities, and other groups. This paper re-examined cyclone shelters in the coastal regions of Bangladesh as socio-spatial institutions of community-based disaster response. Also, it applied a human security lens- protection, participation, and governance to compare two models of cyclone shelters in the region. These two models were government-managed multipurpose shelters and community design-led shelters with Friendship NGO support. Using a qualitative, secondary-data comparative case study approach, the paper synthesizes peer-reviewed literature, policy documents, and humanitarian/NGO reports and triangulates findings with secondary empirical evidence on shelter accessibility, use, and management. The analysis finds that government shelters are highly effective in mitigating or preventing damage to human lives from natural and human-induced disasters but often deliver uneven human security due to standardized designs and centralized management. Shelters that are driven by the community or design show how participatory planning in combination with everyday use and locally legible accountability mechanisms can improve dignity and utilization, although Sustainability and scaling remain challenges. To make shelter systems inclusive, accountable, and people-centered, this paper concludes with governance recommendations and policy.

Keywords: Cyclone shelters; Human security; Community-based Disaster response; Governance; Climate-Induced Disasters

INTRODUCTION

Bangladesh is one of the most cyclone-prone and climate-vulnerable countries in the world (Huq, 2001) and it is internationally recognized that climate-induced disasters pose serious threats to human well-being, particularly in low-lying coastal regions. In the last three decades, extreme weather events intersect with poverty, weak infrastructure, and social inequality to produce humanitarian crises by cyclones such as Sidr (2007), Aila (2009), Amphan (2020), and Sitrang (2022). (Annual Report 2019 | UNDP, n.d.) . Although cyclone shelters have developed as an important pillar of disaster risk reduction and emergency response in coastal areas and early warning systems and evacuation mechanisms have significantly reduced cyclone-related mortality over the past decades. (Paul, 2009). A growing body of research reveals cyclone shelters are effective in saving lives, an amount of research reveals that, they often fail to ensure broader dimensions of human security, dignity, inclusion, participation, and equitable access (Chowdhury, 2021). Human security reframes the way we respond to disaster

and shifts the focus from infrastructure-centered protection to people, emphasizing freedom from fear, freedom from want, and the right to live in dignity (*HUMAN DEVELOPMENT REPORT 1994*, 1994) From the perspective of Human security, cyclone shelters are not only infrastructure but also social and institutional spaces where power relations, participation, and vulnerability are negotiated. Experiences often raise critical questions about who is protected, who is excluded, and why, often shelter environments. By comparing government-managed cyclone shelters with community- and design-led shelters supported by non-governmental organizations, this study adopts an inclusive human security lens to analyze cyclone shelters as community-based disaster response mechanisms and seeks to contribute to understanding these challenges, it is first necessary to examine Bangladesh's cyclone context and the evolution of its shelter system.

Background

Bangladesh, the largest deltaic plain in the world, is a South Asian country is situated between the Indo-Himalayan and the Indo-Chinese sub-regions (Bangladesh - Emergency 2007 Cyclone Recovery and Restoration Project, n.d.). Due to its geographical location with the Himalayan Mountain range to the North, coastline to the South, the country is exposed to a number of natural hazards, including tropical cyclones, floods, tornadoes, droughts, earthquakes and river erosion (Wahiduzzaman, 2021) . More than 50% of the Bangladesh's coastal population is considered highly vulnerable and lives below the poverty line. For the citizens of Bangladesh, the situation is even worse as almost 50 million people live in the coastal zone, comprising nearly one-third of the country's total population. (Ahsan et al., 2011) . It is recognized by (Bangladesh, 2010) that 12 districts- Barguna, Bhola, Patuakhali, Pirojpur, Bagerhat, Khulna, Satkhira, Chattogram, Cox's Bazar, Feni, Lakshmipur, Noakhali, and extremely vulnerable to cyclones, as they directly face the coast and expose a large household to disaster risks. Over the last three decades, Bangladesh has faced more than 100 cyclones and about 85% of the total damage globally from cyclones occurs adjacent to the Bay of Bengal (Ahsan et al., 2011). Historically, Bhola Cyclone of 1970 demonstrated the devastating consequences of inadequate preparedness and shelter infrastructure, leading to hundreds of thousands of deaths. Since then, Bangladesh has made significant progress in disaster risk reduction by cyclone shelters, the development of embankments and the establishment of the Cyclone Preparedness Programme (CPP). These interventions have dramatically reduced cyclone mortality (Annual Report 2019 | UNDP, n.d.; Paul, 2009). However, evidence from post-disaster assessments and studies indicates that cyclone shelters often reproduce social inequalities, through overcrowding, insufficient water and sanitation facilities, lack of privacy, and limited accessibility for elderly people and persons with disabilities (Chowdhury, 2021). Women and girls are often afraid of harassment, insecurity, and lack of privacy during cyclones (Ahmed et al., 2016) . While cyclone shelters reduce cyclone-related mortality, their effectiveness is often constrained by governance challenges because of top-down approaches such as decision-making regarding shelter design, location, and management. Difficulties including elite capture, political influence and weak accountability mechanisms in shelter access and relief distribution undermine trust and equitable human security (Rehman, 2004) Therefore, Cyclone shelters need to be viewed not only as a technical solution but also as socio political spaces and analyzing how these different shelter models shape human security outcomes is critical for developing inclusive and resilient disaster response and in governance strategies.

Problem statement

Although cyclone shelters have significantly reduced cyclone-related mortality in Bangladesh, they continue to face challenges related to participation, equitable access, and governance, limiting broader human security outcomes for vulnerable populations. While human security is commonly understood through the principles of freedom from fear, freedom from want, and freedom to live in dignity, this study operationalizes these concepts through three analytical dimensions- protection, participation, and governance. Together, these dimensions provide a framework for comparing government-managed and community- or design-led cyclone shelter models and assessing their impacts on safety, dignity, inclusion, and institutional effectiveness.

Aim:

To examine cyclone shelters in coastal Bangladesh through a human security framework by comparatively analyzing government-managed and community- or design-led shelter models.

Objectives:

- To analyze cyclone shelters in coastal Bangladesh through the dimensions of protection, participation, and governance.
- To compare government-managed and community- or design-led cyclone shelter models.
- To identify their respective strengths, limitations, and impacts on human security outcomes

Research question

- How do cyclone shelters contribute to human security within community-based disaster response?
- How do governance and participation shape human security outcomes in cyclone shelters?

LITERATURE REVIEW

This chapter will provide a comprehensive theoretical foundation that inform the study of Human Security in Community-Based Disaster Response.

Human security and Disaster

The concept of “human security” has changed significantly over the last two decades since it was introduced by the United Nations development program in their human development report. (HDR) in 1994 (*HUMAN DEVELOPMENT REPORT 1994, 1994*). Human security is concerned more with human development and well-being than just military and economic security. There are four key attributes of human security: universality, centrality to individuals, interdependence, and proactive prevention and seven interrelated dimensions of security were: economic, food, health, environmental, personal, community, and political (*HUMAN DEVELOPMENT REPORT 1994, 1994*) (Ogata & Sen, 2003) defined five fundamental principles of human security. Firstly, Emphasizing a people-centered approach. Secondly, advocating for seamless integration with human development and human rights frameworks, recognizing the interdependent nature of these aspects. Thirdly, multiple natural challenges make compound threats for individuals. Fourthly, active community can ensure human security. Lastly, putting forward a bi-modal strategy that amalgamates protection from higher authorities with empowerment initiatives from grassroots levels, thereby fostering a holistic and inclusive approach to human security. In 2003, the Human Security Commission identified two fundamental dimensions of human Security. The first concept “freedom from fear”, protection from violence and the denial of civil liberties, the second-dimension concerns “freedom from want” addressing the fulfillment of basic needs such as a balanced diet, adequate housing, and decent jobs, in 2005, the UN Secretary-General, introduced a third element to the conceptualization of human security, “freedom to live in dignity” on addressing insecurity arising from experiences of humiliation. And in 2005 by Brauch and associated with the GECHS (Global Environmental Change and Human Security) and the Institute for Human Security at the United Nations University (UNU-IHS) Subsequently, a fourth pillar of human security, referred to as “freedom from hazard impact” to enhancing community resilience in the face of environmental challenges. In disaster contexts this framework is particularly relevant, where threats are not only physical but also social, psychological, and institutional.(O’Brien & Barnett, 2013)

In the context of cyclone shelters, human security encompasses:

- Physical security: protection from injury, death, and structural collapse;
- Health security: access to sanitation, clean water, and medical care;
- Personal and psychological security: freedom from harassment, violence, and fear;
- Dignity and social security: privacy, respect, and culturally appropriate space.

Together, these dimensions demonstrate that human security extends beyond survival to encompass dignity, inclusion, and equitable access, making the framework particularly relevant for evaluating disaster response systems such as cyclone shelters.

Disaster

Disaster is a serious threat to human security (Neil Adger et al., 2014). From a human security perspective, disasters increase vulnerability and instability by interfering with access to livelihoods, food, clean water, shelter, healthcare, education, and property (Natural Disasters and Human Security - Fukushima). Disaster is a serious disruption of the functioning of a community or society, resulting in extensive human, material, economic, or environmental losses that affect community resilience, breakdown of social systems and institutional capacity. Although natural hazards may trigger disasters, the scale, impacts and consequences are largely shaped by social conditions, governance structure, power relations and institutional capacity. Weak decision-making and preparation processes often transform hazards into humanitarian crises. 'Through a human security lens, it is essential to recognize that disaster response requires not only physical protection but also community participation and attention to governance dynamics, particularly in the context of climate-induced and humanitarian emergencies.

Building on the human security literature, this study operationalizes human security through three analytical dimensions: protection, participation, and governance. Protection refers to physical safety and dignity; participation emphasizes community agency and empowerment; and governance concerns the institutional arrangements that ensure equitable access, accountability, and decision-making. Together, these mutually reinforcing dimensions provide the analytical framework for examining human security in disaster response.

Human Security and Community Resilience

A critical framework highlighted by (Chandler, 2012) he mentioned a bottom-up approach, communities maintain agency and autonomy and the control over their own security in order to achieve lasting freedom from fear and what they want can emphasize human security. From his framework, here stand a perspective, resilience has an empowerment to integrated in regional social and political systems not only to adapting. Community resilience is a summation of freedom from fear, freedom from want and dignity is inseparable, that its id augured by (Atienza et al., 2018). Community resilience buildup an ability of communities absorbs, adapt to and recover from unexpected events but human security work on human sensitivity both physical and mental. Resilience buildup an ability of communities absorbs, adapt to and recover from stresses. On the (Gianna et al., n.d.) A workshop arranged with community participants, the highlighted the relation between human security and community resilience. They mentioned that both are reinforcement of each other. There are two branch of community resilience in to develop and to systemic oriented focus, one institutional/systemic-oriented, another one people centered emphasized agency social capital and self-development. Institutional and institutional are reflected global framework, their capacity and recovery mechanism whether, people centered resilience built collective approach with trust. This can call network of "adaptive capacities" which is presented by (Norris et al., 2007). Though human security and community resilience interconnected and dependent to each other. This relation essential and effective for post crisis recovery and also for sustainable developments.

Community-Based Disaster Response (CBDR)

Community-based disaster response is that where local people knowledge is acknowledged with building a social networks and collective action for reducing risk of disaster and use their experience to enhance resilience. Community people are not only passive agents just only for recipients of aid or relief but they can enhance resilience with their contextual experience about coping strategies, and social capital (Maskrey, 2011). In Bangladesh, there are some mechanisms through CBDR is institutionalized such as:

- The Cyclone Preparedness Programme (CPP): which mobilizes local volunteers for early warning and evacuation.
- Union and Upazila Disaster Management Committees (UDMCs)
- Informal community networks that provide support before, during, and after disasters.

It is known that community participation enhances trust, compliance with evacuation orders, and recovery outcomes (World Disasters Report 2018 | IFRC, n.d.) However, participation is often increase complexity in emergency situations like decision-making and management remaining centrally controlled. In disaster period,

local elite group, NGO and political influence dominance marginal community people and this phenomenon happens even when they participate. (Chowdhury, 2021) From this perspective, community-based disaster response extends beyond emergency participation to a governance approach that promotes protection through community empowerment, shared decision-making, and locally grounded practices. Thus, CBDR operationalizes human security in disaster response.

Cyclone shelter

Cyclone shelter in coastal Bangladesh is recognized as backbone of disaster management. Recent decades, Large-scale investments in shelters have contributed significantly to reducing cyclone mortality (Annual Report 2019 | UNDP, n.d.; Paul, 2009). However, studies reveal gaps in protection that undermine human security. Many shelters poorly constructed, being overcrowded in emergency, inadequate water, sanitation, and hygiene (WASH) facilities, and unsafe entry and exit routes (Chowdhury, 2021). This condition not only reduce safety but also create mental stress and loss of dignity. Women and girls frequently reported that they feel unsafe, fear of sexual harassment, lack of privacy and absence of gender segregated spaces (Ahmed et al., 2016) Not only women but also age-related suffering is similarly pronounced. They face mobility barriers, lack of ramps or handrails, and discrimination within shelters. (Annual Report and Financial Statements 2018/2019 - HelpAge International, n.d.) . The literature acknowledges that cyclone shelters have helped save lives. The challenge, therefore, is not the lack of infrastructure, but the quality and inclusiveness of protection provided.

Historical Evolution of Cyclone Shelters

The devastating 1970 Bhola Cyclone exposed the inadequacy of Bangladesh's early warning and shelter systems, leading to the development of cyclone shelters as a key disaster response measure. Since then, expanded shelter networks, improved early warning, and the Cyclone Preparedness Programme (CPP) have significantly reduced cyclone-related mortality. (Paul, 2009)

Typology and Design of Cyclone Shelters

Cyclone shelter in coastal Bangladesh, normally designed for multipurpose like function as school or community center in normal period and served as emergency shelter in disaster period. From government typically constructed by LGED or similar type authorities and some NGO also constructed with international donor's support. Structures typically elevated above flood level and mostly designed to accommodate hundred to thousand people. Standard designs often prioritize structural durability over social and cultural considerations even though this multipurpose model enhances cost effective. Also reported about inadequate privacy, lack of gender-segregated spaces, absence of ramp and insufficient WASH facilities persist across many shelters (Paul, 2009)

Institutional and Governance Framework

Cyclone shelters operate within a multi-layered governance system involving:

- The Ministry of Disaster Management and Relief (MoDMR);
- Local Government Engineering Department (LGED);
- Cyclone Preparedness Programme (CPP);
- Union and Upazila Disaster Management Committees;
- NGOs and donor agencies.

Volunteers of CPP serve as trusted intermediaries, they also playing crucial role between community and the authority institutions. As it is easier central management during emergency or disaster, so they get few opportunities for community-led decision-making or accountability.

Emerging role of community and design-led shelters

Some organizations try to experiment with how can reduce persistent inclusion and dignity gaps with community participation and design innovation in cyclone shelters. They try to make a participatory plan with the local

people. Try to make gender sensitive spatial space organization. Also, try to buildup strong community hub by daily use of cyclone shelter. It can buildup ownership, trust, which also help for maintenance. Such models offer valuable lessons for rethinking cyclone shelters as spaces of inclusive human security rather than emergency-only infrastructure.

Governance Dynamics: Institutions, Power, and Inclusion

In disaster period, how resources are distributed, and whose needs are prioritized, is shaped by governance therefore governance dynamics strongly influence outcomes of disaster. To influence positively need to make Transparent decision-making process, give opportunity to represent women, elderly, and marginalized groups and also restructure existing social institutions and norms.

Synthesis and Research Gap

Although cyclone shelters have significantly reduced cyclone-related mortality in Bangladesh, questions remain regarding their ability to ensure broader human security, particularly dignity, participation, and equitable governance. Existing studies have largely focused on engineering, evacuation, or disaster management, with limited attention to how governance and participation jointly shape human security. This study addresses this gap by comparatively examining government-managed and community- or design-led cyclone shelters through an integrated human security framework.

METHODOLOGY

The analytical framework is deductively derived from the human security literature and operationalized through three analytical dimensions: protection, participation, and governance- to compare different cyclone shelter models. This study employs a qualitative, desk-based comparative case study to examine how cyclone shelters shape human security through community-based disaster response. According to Yin (2016), case studies provide an in-depth understanding of complex social and institutional phenomena. Accordingly, this study examines shelter models by analyzing their design, governance arrangements, and lived experiences during disasters.

A most-different systems logic guides the case selection. Government-managed multipurpose cyclone shelters in Koyra, Khulna, are compared with community- and design-led shelters supported by Friendship NGO. Although the governance arrangements differ, both cases operate within cyclone-prone coastal Bangladesh, enabling comparison under similar hazard conditions. To improve transparency and replicability, sources were identified through keyword searches ("cyclone shelter," "evacuation," "governance," "gender," "disability," and "Bangladesh") and backward snowballing of reference lists. Evidence was selected based on: (a) shelter access and use; (b) design and service conditions, including WASH, privacy, and accessibility; and (c) governance and management practices affecting equity, accountability, and participation.

Triangulation drew on three data sources: peer-reviewed literature, government policies and technical documents, and NGO and humanitarian reports. Data were coded deductively using the analytical framework of protection, participation, and governance, followed by inductive coding to identify recurring themes such as accessibility, privacy, WASH, key management, and elite influence. Cross-source triangulation reduced single-source bias; however, the study remains limited by its reliance on secondary data, the absence of primary fieldwork, and uneven data availability across locations.

Analytical framework

Using a human security framework structured around three key analytical dimensions, the data are analyzed through thematic content analysis.

Protection (safety and dignity):

- Structural safety and location of shelters.
- Overcrowding and capacity constraints.
- Water, sanitation and hygiene (WASH) and health facilities provisions.

- Concern about old, special and gender concerns.
- Ensuring security and Dignity.

Participation (agency and everyday use):

- Local knowledge and experience used in planning and management.
- Give a chance in decision making, everyone including women, the elderly and marginalized groups.
- Shelter should be multipurpose so that they can use it daily.

Governance Dynamics (institutions, accountability, power):

- Have control with coordination also transparency in management.
- Maintain a power relation with NGO, government agencies and coordination.

Case study selection rationale

The two cases were intentionally selected using a most-different systems logic because they represent contrasting governance arrangements while operating within comparable cyclone-prone coastal contexts in Bangladesh. This comparison enables the study to examine how differences in governance and participation shape human security outcomes beyond structural shelter performance. The selection was based on three considerations:

- High cyclone exposure and compound risks, including storm surge, salinity intrusion, and embankment failure.
- Contrasting governance arrangements, comparing centralized government management with NGO–community hybrid management.
- Availability of reliable secondary evidence, including peer-reviewed literature, government documents, NGO reports, and program materials.

Limitations

- The analysis relies exclusively on secondary data and does not include field observations or primary interviews.
- NGO and donor reports may reflect program-specific perspectives and reporting bias.
- Informal governance practices and recent post-disaster changes may not be fully captured in publicly available sources.

Empirical indicators from secondary evidence

Table 1 Summarizes selected Quantitative and practice-based indicators that are reported in the secondary literature and used in this analysis to contextualize protection, participation, and governance.

Table 1 Empirical Indicators

Indicator	Secondary evidence (examples)	Relevance to human security	Source
Shelter coverage standard	A maximum shelter service distance of 1.5 km (≈30 minutes walking time) to support timely evacuation.	Protection (accessibility); Participation (willingness to evacuate)	(Government of the People's Republic of Bangladesh Ministry of Disaster Management and Relief National Plan for Disaster Management (2016-2020) Building Resilience for Sustainable Human Development, 2017)
Shelter stock and adequacy	The number of cyclone shelters increased from 44 (1970) to ~2,500 (2018), but remains	Protection (capacity and coverage);	(Alam, 2023)

	insufficient for ~35 million coastal residents.	Governance (planning and investment)	
Evacuation to shelters	Evacuation to formal shelters can remain low in some events (often not >20%); distance and privacy concerns are common barriers.	Participation (response); Protection (safe refuge)	(Alam, 2024)
Shelter management practices	School-based shelters may have locked staff/storage (Tong et al., 2024) rooms during emergencies and limited repair/maintenance, constraining dignified use.	Governance (accountability); Protection (dignity and services)	(Tong et al., 2024)
Large-scale evacuation operations	For Cyclone Amphan (2020), authorities prepared 12,078 shelters and reported evacuating more than 2.4 million people.	Governance (coordination); Protection (life-saving capacity)	(Bangladesh Cyclone Amphan Joint Needs Assessment (31 May 2020) - Bangladesh ReliefWeb, n.d.)

Case study 1

Government-Managed Cyclone Shelters

This coastal upazila in Khulna is among the most cyclone-exposed areas in Bangladesh, having faced extensive loss of life, livelihoods, and infrastructure from cyclones such as Aila (2009) and Amphan (2020). Compound risks, including salinity intrusion, embankment failure, waterlogging, and chronic poverty, further heighten the community's vulnerability during disasters. Cyclone shelters in the area are constructed and maintained by the Local Government Engineering Department (LGED) and activated during emergencies through MoDMR/DDM coordination with CPP volunteers and local administrations. Functioning as schools in normal times and evacuation centers during cyclones, these shelters follow a standardized, multipurpose design.

Protection: Safety, Infrastructure, and Dignity

There is no doubt that, from a protection perspective, government cyclone shelters in this area have played a crucial role in reducing cyclone-related mortality. Standard design strategies elevated plinths, reinforced concrete structures, and adequate distance from embankments have enabled shelters to withstand storm surges and high winds, providing lifesaving refuge during extreme disasters. (Paul, 2009). However, secondary studies consistently document major shortcomings that undermine broader human security, particularly overcrowding. During emergencies such as Amphan, shelters often failed to manage population density, causing not only physical discomfort but also increased health risks. (Chowdhury, 2021) . Limited toilets raise concerns about water, sanitation, and hygiene (WASH) facilities, while the lack of gender segregation compromises dignity, especially for women and adolescent girls. Fear of sexual harassment, absence of private spaces, and restrictive cultural norms lead many women to avoid shelters altogether, choosing unsafe homes or embankments instead. (Ahmed et al., 2016) .Shelters also frequently lack ramps and handrails essential for older adults and persons with disabilities, compounding their physical risk and psychological stress. Together, these gaps reveal how standardized engineering solutions fail to account for differential vulnerability.

Participation: Limited Community Agency

In government-managed cyclone shelters, community participation—primarily facilitated by CPP volunteers

remains largely confined to evacuation and emergency response. CPP's presence has strengthened early warning dissemination and evacuation compliance, aided by high community trust in volunteers. However, participation rarely extends to planning, design, or decision-making, as shelter location, layout, and operational rules are typically determined through centralized processes. Women, elderly people, and marginalized groups have minimal representation in shelter management committees, limiting their influence over decisions that affect their dignity and safety ultimately weakening long-term trust and utilization.

Governance Dynamics: Power, Control, and Accountability

Government cyclone shelter reflect governance structural power dynamics in disaster management where decision making authority is concentrated among government agencies and political elites, while accountability mechanisms remain weak. Several studies document that shelters use, associated with elite capture, preferential access, and politicization of relief distribution. (Chowdhury, 2021) Even during emergency periods, coordination challenges arise among government agencies, NGOs, and local committees. Due to limited decision-making authority at the local level, shortage of resources, support and weak enforcement of guidelines, their effectiveness remain constrained. From a human security perspective, the limitation of governance in uneven protection and marginalization particularly for the socially excluded.

Case study 2

Community- and Design-Led Cyclone Shelters

Friendship is an NGO working in Bangladesh, focused on climate-vulnerable and remote areas, has developed community-oriented, design-informed cyclone shelters across coastal and flood-affected regions. Not all of its centers are exclusively cyclone shelters; many function as multipurpose disaster-resilient facilities that serve as evacuation centers during extreme events. The organization emphasizes participatory planning and long-term community engagement, integrating shelters into everyday life through their use as schools, health centers, and community spaces

Protection: Safety with Dignity

Friendship cyclone shelter adopt an understanding of protection that goes beyond structural safety. (HUMAN DEVELOPMENT REPORT 1994, 1994; Stronger against Disasters - Friendship NGO, n.d.). Friendship cyclone shelter adhere to disaster resilient construction standards and demonstrate a more holistic approach to protection. Structurally, including elevated plinths, durable materials, and climate-responsive design elements such as cross-ventilation and shaded spaces properly maintained. This approach recognizes that protection is not only a matter of survival but also dignity and physical security; therefore, their design layouts often include:

- Proper sanitation with gender segregation.
- Flexible internal zone for women privacy
- Safe entry and exit for all.

Friendship cyclone shelters reduce fear and discomfort among women through features that directly address concerns discouraging shelter use. They also work with both physical and psychological security, which is aligns with human security principles.

Participation: Community Ownership and Everyday Use

Community participation is a defining feature of Friendship cyclone shelters and reflects their philosophical approach. They involve communities in site selection, functional programming, day-to-day use and maintenance decision-making. Through this participation community members develop a sense of ownership and belongingness. Which helps to grow high trust and willingness to evacuate during disaster. People place attachment and coordination approach create community resilience and improve evacuation behavior and

collective response during disasters. (Ashraf & Shaha, 2016)

Governance Dynamics: Shared Responsibility and Accountability

Friendship cyclone shelter governance is, moreover, hybrid and participatory, combining NGO with community management committees. Although funding and technical expertise remain important, decision-making authority is shared and accountability mechanisms are more accessible at the local level and the governance model enhances transparency in shelter access and use also reducing opportunities for elite capture. However, dependence on donor funding remains a limitation of this model. NGO facilitation raises questions about long-term sustainability in disaster management.

Comparative analysis: human security outcomes

This comparative analysis of two type of cyclone shelters with the dimensions: protection, Participation and governance reveals significant differences between them:

Protection:

Table 2 Human Security Outcomes: Protection

Government cyclone shelters	Community- and Design-Led Cyclone Shelters
Prioritize structural safety	Integrate safety with social and psychological protection
Often neglect dignity, privacy, and differential vulnerability	More inclusive human security outcomes
Gender inclusion limited	Gender inclusion strong
Human security Partial	Human security more inclusive

Participation:

Table 3 Human Security Outcomes: Participation

Government cyclone shelters	Community- and Design-Led Cyclone Shelters
Largely operational	Emphasize community involvement
Shapes trust moderately	Shapes trust positively
Shelter utilization moderately	Shelter utilization willingly

Governance:

Table 4 Human Security Outcomes: Governance

Government cyclone shelters	Community- and Design-Led Cyclone Shelters
Centralized governance	Hybrid governance
Limits accountability	Responsive and equitable management

DISCUSSION

The findings reinforce a central argument of the human security literature: disaster resilience cannot be achieved through physical protection alone, but emerges from the interaction of protective infrastructure, inclusive participation, and accountable governance. While government-managed cyclone shelters in the study area have significantly reduced mortality, they continue to face limitations around dignity, participation, and equitable access, revealing a key distinction between disaster survival and human security, as overcrowding, gender-based insecurity, inadequate privacy, and the exclusion of elderly people and persons with disabilities expose the limits of technocratic approaches that prioritize operational efficiency over lived experience. The Friendship shelter model, by contrast, demonstrates how community participation and design-led approaches can produce more inclusive outcomes: whereas government shelters confine participation largely to evacuation compliance through the Cyclone Preparedness Programme (CPP), the Friendship model engages communities throughout planning, construction, and management, incorporating local knowledge and giving women space to voice specific needs, thereby strengthening trust and long-term resilience. Governance further distinguishes the two models: government shelters rely on centralized arrangements shaped by bureaucratic procedure and elite influence, limiting accountability and access for vulnerable groups, while the Friendship model's hybrid governance combines NGO support with community participation to enhance transparency and responsiveness, though its dependence on external funding raises questions about long-term scalability. Overall, cyclone shelters should be understood not merely as physical infrastructure but as social, political, and spatial institutions where human security is continuously negotiated, requiring inclusive governance, meaningful participation, and people-centred design alongside structural safety to achieve equitable human security outcomes.

POLICY AND DESIGN RECOMMENDATIONS

- To strengthen inclusive human security in cyclone shelter planning and management, this analysis proposes the following recommendations:
- **Design:** Provide gender-separated, secure sanitation facilities and flexible internal partitions for privacy and dignity; ensure universal accessibility through ramps, handrails, non-slip surfaces, and clear circulation paths; adopt multipurpose designs that support everyday usability and a maintenance culture; and incorporate livelihood-sensitive features, such as space for small livestock and storage, to reduce reluctance to evacuate.
- **Governance:** Establish inclusive shelter management committees with formal representation for women and the elderly; enhance transparency and accountability through clear access guidelines, community-based monitoring, and grievance mechanisms; and integrate public-private/NGO partnerships and participatory planning into LGED shelter guidelines.
- **Participation & Capacity Building:** Expand leadership roles for women and youth within CPP; provide training on age- and disability-inclusive disaster response; and encourage knowledge sharing among communities, architects, planners, and policymakers..

CONCLUSION

This study examined cyclone shelters in coastal Bangladesh through a human security framework, comparing government-managed and community- and design-led shelter models. The findings show that while shelters have played a vital role in reducing mortality, physical protection alone is insufficient for comprehensive human security dimensions such as dignity, participation, inclusion, and equitable governance remain critical to their overall effectiveness. Government-managed shelters are generally effective for emergency protection but face challenges of centralized governance, limited community participation, and unequal access for vulnerable groups, whereas the Friendship model shows how participation, context-sensitive design, and hybrid governance can strengthen trust, ownership, and human security outcomes, positioning governance and participation as essential components of disaster response rather than mere complements to infrastructure. By understanding cyclone shelters not just as emergency infrastructure but as social, political, and institutional spaces where human security is continuously negotiated, this study offers an integrated framework linking physical safety with dignity, inclusion, and community empowerment, and suggests that future shelter planning should move beyond infrastructure provision to promote inclusive governance, participatory planning, and context-responsive design that strengthens community engagement and long-term trust. This study is limited by its reliance on secondary data and comparative document analysis, and future research should incorporate primary field investigations,

stakeholder interviews, and comparisons across additional coastal regions to build a stronger empirical basis for inclusive and resilient cyclone shelter policies in Bangladesh and other climate-vulnerable regions..

REFERENCES

1. Ahmed, B., Kelman, I., Fehr, H. K., & Saha, M. (2016). Community Resilience to Cyclone Disasters in Coastal Bangladesh. *Sustainability* 2016, Vol. 8, Page 805, 8(8), 805. <https://doi.org/10.3390/SU8080805>
2. Ahsan, R., Karuppannan, S., & Kellett, J. (2011). Climate migration and urban planning system: A study of Bangladesh. *Environmental Justice*, 4(3), 163–170. <https://doi.org/10.1089/ENV.2011.0005>
3. *Annual Report 2019 | UNDP*. (n.d.). Retrieved January 5, 2026, from <https://annualreport.undp.org/2019/>
4. *Annual report and financial statements 2018/2019 - HelpAge International*. (n.d.). Retrieved January 5, 2026, from <https://www.helpage.org/resource/annual-report-and-financial-statements-20182019/>
5. Ashraf, M. A., & Shaha, S. B. (2016). Achieving Community Resilience: Case Study of Cyclone Aila Affected Coastal Bangladesh. *International Journal of Social Work and Human Services Practice*, 4(2), 33–41. <https://doi.org/10.13189/IJRH.2016.040201>
6. Atienza, M. E., Eadie, P., & Tan-Mullins, M. (2018). *Human Security and Community Resilience in the Wake of Typhoon Yolanda (Working Paper VI)*. <http://www.projectyolanda.org>.
7. Bangladesh. (2010). *National Plan for Disaster Management Government of the People's Republic of*.
8. *Bangladesh - Emergency 2007 Cyclone Recovery and Restoration Project*. (n.d.). Retrieved January 5, 2026, from <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/763581468013246012/bangladesh-emergency-2007-cyclone-recovery-and-restoration-project>
9. Chandler, D. (2012). Resilience and human security: The post-interventionist paradigm. *Security Dialogue*, 43(3), 213–229. <https://doi.org/10.1177/0967010612444151>
10. Chowdhury, T. J. (2021). *Pain into Power, Wounds into Wisdom: Exploring women's experiences of wellbeing in the cyclone shelters of Bangladesh*.
11. Gianna, R. :, Amul, G., Chua, C., Jamil, S., Sembiring, M., Carmencita, M., Morales, S., & Trajano, J. (n.d.). *Event Report WORKSHOP ON COMMUNITY RESILIENCE AND HUMAN SECURITY: FROM COMPLEX HUMANITARIAN EMERGENCIES TO SUSTAINABLE PEACE AND DEVELOPMENT ORGANISED BY THE RSIS CENTRE FOR NON-TRADITIONAL SECURITY (NTS) STUDIES SUPPORTED BY SUSTAINABLE EARTH OFFICE NAN...*
12. *HUMAN DEVELOPMENT REPORT 1994*. (1994).
13. Huq, S. (2001). Climate change and Bangladesh. *Science*, 294(5547), 1617. <https://doi.org/10.1126/SCIENCE.294.5547.1617>
14. Maskrey, A. (2011). Revisiting community-based disaster risk management. *Environmental Hazards*, 10(1), 42–52. <https://doi.org/10.3763/EHAZ.2011.0005>;WEBSITE:WEBSITE:TFOPB;PAGEGROUP:STRING:PUBLICATION
15. *Natural Disasters and Human Security - Fukushima Global Communication Programme*. (n.d.). Retrieved January 5, 2026, from https://fgc.unu.edu/en/publications/articles/natural-disasters-and-human-security.html?utm_source=chatgpt.com
16. Neil Adger, W., Pulhin, J. M., Barnett, J., Dabelko, G. D., Hovelsrud, G. K., Levy, M., Oswald Spring, Ú., Vogel, C. H., Adams, H., Hodbod, J., Kent, S., Tarazona, M., Aldunce, P., Leichenko, R., Pulhin, J., Barnett, J., Dabelko, G., Hovelsrud, G., Levy, M., ... Mastrandrea, P. (2014). 12 — *Human Security*.
17. Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2007). Community Resilience as a Metaphor, Theory, Set of Capacities, and Strategy for Disaster Readiness. *American Journal of Community Psychology* 2007 41:1, 41(1), 127–150. <https://doi.org/10.1007/S10464-007-9156-6>
18. O'Brien, K., & Barnett, J. (2013). Global environmental change and human security. *Annual Review of Environment and Resources*, 38, 373–391. <https://doi.org/10.1146/ANNUREV-ENVIRON-032112-100655>
19. Ogata, S., & Sen, A. (2003). Human security now :: protecting and empowering people /: Commission on Human Security. *Refugee Survey Quarterly*, 23(1), 168. <https://digitalibrary.un.org/record/503749>
20. Oswald-Spring, Ú. (n.d.). *Climate Change 2014 Impacts, Adaptation, and Vulnerability*. Retrieved January 5, 2026, from http://www.afes-press.de/html/download_oswald.html

21. Paton, Douglas., & Johnston, D. M. . (2006). *Disaster resilience : an integrated approach*. 321. https://books.google.com/books/about/Disaster_Resilience.html?id=eO6OzgEACAAJ
22. Paul, B. K. (2009). Why relatively fewer people died? The case of Bangladesh's cyclone sidr. *Natural Hazards*, 50(2), 289–304. <https://doi.org/10.1007/S11069-008-9340-5>
23. *Stronger against disasters - Friendship NGO*. (n.d.). Retrieved January 5, 2026, from <https://friendship.ngo/cyclone-resilient-housing/>
24. *Structural Dimensions of Malgovernance in Bangladesh*. (n.d.). Retrieved January 5, 2026, from https://www.researchgate.net/publication/262124591_Structural_Dimensions_of_Malgovernance_in_Bangladesh
25. Wahiduzzaman, M. (2021). Major Floods and Tropical Cyclones over Bangladesh: Clustering from ENSO Timescales. *Atmosphere* 2021, Vol. 12, Page 692, 12(6), 692. <https://doi.org/10.3390/ATMOS12060692>
26. *World Disasters Report 2018 | IFRC*. (n.d.). Retrieved January 5, 2026, from <https://www.ifrc.org/document/world-disasters-report-2018>
27. Yin, R. (2016). Case Study and Applications: Design and Methods (6th ed.). *Theory and Methods of Metallurgical Process Integration*, 11(1), 179–272. <https://uk.sagepub.com/en-gb/eur/case-study-research-and-applications/book250150>

ETHICAL APPROVAL

This study does not involve experiments on animals, and it is based on secondary data analysis and publicly available information. Where community-related information was referenced, ethical research principles including confidentiality, respect, and responsible data use were maintained. Therefore, formal institutional ethical approval was not required.

CONFLICT OF INTEREST

The author(s) declare that there are no conflicts of interest regarding the publication of this paper.

DATA AVAILABILITY STATEMENT

The data supporting the findings of this study are derived from publicly available reports, published literature, and secondary sources cited within the article. No restricted or confidential datasets were used.

REVISIONS / RESPONSE TO REVIEWERS

All reviewers' comments have been carefully addressed. The manuscript has been revised accordingly to improve clarity, methodological explanation, and theoretical integration.