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

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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 and equity of access for women, 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 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 that cyclone shelters often fail to be 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 ongoing debates on governance dynamics in Humanitarian and Climate-Induced Disasters.

Background

Bangladesh, the largest deltaic plain in the world, is a South Asian country is that 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 world's coastal 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, chattagram, Cox's Bazar, Feni, Lakhimpur, 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, privacy during cyclones (Ahmed et al., 2016) . While cyclone shelters reduce cyclone-related mortality, their effectiveness is often constrained by governance challenges because of a top-down approaches such 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

Cyclone shelters, although reduce death, often fail in address human security, participation and governance.

Aim and objective

Through an inclusive human security framework, with particular emphasis on protection, community participation, and governance dynamics in within the context of humanitarian and climate-induced disasters, need to analyze cyclone shelters in coastal Bangladesh.

- Identifying the impact, the role of community participation in the planning, design, and management of cyclone shelters with attention to the inclusion of women, older adults, and marginalized populations.

- Analyzing governance structures and power dynamics influencing cyclone shelter access, management, and accountability in coastal Bangladesh.

- Comparing government-managed and community- or design-led cyclone shelter models, identifying their respective strengths, limitations, and impacts on human security outcomes.

Research question

- Do cyclone shelters ensure human security in Community-Based Disaster Response?

- How do governance and participation shape shelter outcomes of human security in disaster response?

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) By the (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.

The aim of creating a system and society that are resilient, able to effectively tackle contemporary challenges, this approach advocates for a synergistic combination of top-down protection efforts by the state and bottom-up empowerment initiatives by civil society and individuals.

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. With human security lens, its is essential to give a thought about disaster. only physical protection is not sufficient but also need came sure community participation and governance dynamics, particularly in the context of climate-induced and humanitarian emergencies.

Human Security and Community Resilience

A critical framework highlighted by(Chandler, 2012). he mentioned a bottom-up approach, community maintain agency autonomy and the control over their own security in order to lasting freedom from fair 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 fare, 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 and institutional, 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 et al., 2021).

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

From a traumatic disaster history developed cyclone shelters in Bangladesh. Due to inadequate early warning and shelter infrastructure, in 1970 Bhola cyclone, caused an estimated 300,000 deaths. After this incident cyclone shelters gradually emerged as a critical disaster response mechanism. Initially supported by international donors and humanitarian agencies. With improved early waring and community mobilization through the CPP, have notable significantly reduced cyclone mortality over time (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. Stander 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 media, 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, whose will be periodize every think 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

Though cyclone shelter safe human life but still arise a question for human security. As few studies integrate these dimensions within a unified analytical framework. This paper addresses the gap by applying a human security lens to a comparative analysis of cyclone shelters. government-managed and community-oriented cyclone shelters in coastal Bangladesh, highlighting how design, participation, and governance interact to shape Human security and lived experiences during disasters.

METHODOLOGY

This study examines how cyclone shelters, through community-based disaster response, shape human security outcomes using a qualitative, desk-based comparative case study design. According to (Yin, 2016) The shelter model analysis provides a greater body of evidence than only looking at a particular building. The case will analyze a shelter model's design logic, day-to-day function, governance arrangements, and the experience of living through an emergency. A 'most-different systems' logic underpins case selection to draw out how governance differences affect protection and inclusion. Shelters managed and maintained by the government that serve multiple purposes in Koyra in Khulna are compared with multiple shelters that are community and design-led with the support of Friendship NGO. In an effort to improve transparency and replicability, sources were compiled using keyword searching ('cyclone shelter', 'evacuation', 'governance', 'gender', 'disability', 'Bangladesh') and backward snowballing from reference lists. Evidence was chosen if it indicated

(a) The use or access to shelters (distance to shelters, travel time, use and occupancy, evacuation rates)

(b) The design and service conditions (WASH, privacy, accessibility features) and

(c) Governance and management practices that processes and practices that influence equity and accountability.

Triangulation was be achieved using three main data sources: research papers, which are reviewed by the relevant field experts provide evidence on cyclone shelter use, evacuation behavior, gender and inclusion, and human security. Shelter standards, disaster management arrangements, and the overall documents outlining institutional responsibilities. Reports of NGO and humanitarian agency on shelter innovations, program models and implementation constraints. All extracted material was coded using a deductive codebook based on the three human security dimensions (protection, participation, and governance) and an inductive pass to capture recurring themes (distance, privacy, WASH, key management, elite influence). Cross-source triangulation was used to reduce single-source bias; however, the study remains limited by the absence of primary fieldwork and by 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

Behind the selection of Koyra and NGO base cyclone shelter there are three responses.

- High cyclone exposure and compound risks (storm surge, salinity intrusion, embankment failure).

- Contrasting governance arrangements (centralized state management versus NGO–community hybrid management).

- Availability of secondary documentation (peer-reviewed studies, reports, and program materials).

Limitations:

- The analysis relies on secondary sources and does not include direct site visits or primary interviews.

- Available NGO and donor reports may reflect programmatic framing and reporting bias.

- Recent post-event dynamics and informal governance practices may be under-documented 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 insufficient for ~35 million coastal residents.	Pr otection (capacity and coverage); Governance (planning and investment)	(Alam, 2023)
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 r(Tong et al., 2024)ooms 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 in Koyra

Koyra in Khulna are among the most cyclone exposed costal Upazila in Bangladesh. This area faced extensive loss of life, live hoods and infrastructure due to extreme impact of cyclones including Aila (2009) and Amphan (2020). Not only cyclones, but also salinity intrusion, embankment failure, waterlogging, choric poverty make compound and cascading risks for this communities, which is more vulnerable during disasters. Government authority Local Government Engineering Department (LGED) construct and maintain cyclone shelter in this area and are activated during emergencies through MoDMR/DDM coordination with CPP volunteers and local administrations. The shelters are functioning as schools during normal times and evacuation center during cyclones, that's how it is standardized with multipurpose design.

Protection: Safety, Infrastructure, and Dignity

There is no doubt that, from a protection perspective, government cyclone shelters in Koyra have served a crucial role in reducing cyclone-related mortality. By maintaining Stander design strategies: elevated plinths, reinforced

concrete structures and adequate distances to embankments have enabled shelters to stand against storm surges and high wind speeds, providing lifesaving refuge during extreme disaster periods. (Paul, 2009). However, major shortcomings that undermine border human security have been consistently documented in secondary studies, particularly overcrowding. During the emergency period, cyclone shelters often fail to handle population density. Such as Amphan, shelters failed to manage occupancy. This problem not only as physical discomfort but also increases health risks within shelters. (Chowdhury, 2021) . Limited Toilets raise questions about concerns regarding Water, Sanitation and hygiene (WASH) facilities. The Lack of gender segregation compromises dignity, especially for women adolescent girls. Many women refuse to go to cyclone shelters and instead unsafe homes or embankments because of fear of sexual harassment, absence of private spaces and cultural norms that restrict mobility discourage using shelters use. (Ahmed et al., 2016) .Cyclone shelters often failed to maintain standard design and missed ramp which is essential for disable person as well as old citizen. These protection gaps like lack of ramp, handrails make suffering for older adults and persons with disabilities. These issues revel how standardized engineering solutions fail to account for differential vulnerability in terms of physical risk and psychological stress.

Participation: Limited Community Agency

In government– managed cyclone shelters primarily facilitated by CPP volunteers, community participation in managed shelters is mainly confined to evacuation and emergency response. In Koyra CPP'S presence has improved about early warning dissemination and compliance with evacuation, especially due to high trust in CPP volunteers. Though community participation rarely extends to planning, design or even decision making. Typically, cyclone shelter location, layouts and operational rules are typically determined through centralized processes. Even woman, elderly people and marginal groups have minimal participation in shelter management committees and this reducing impacted their ability to influence in decisions that directly make question about dignity also affect their safety. This limited participation ultimately weakens 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 Supported by Friendship NGO

Friendship is an NGO working in Bangladesh, specifically focused on climate-vulnerable and remote area to develop community and marginalized groups. Friendship has developed community-oriented, design-informed cyclone shelter in coastal areas and flood-affected regions in Bangladesh. Though not all friendship centers are exclusively cyclone shelters. They are used as multipurpose disaster-resilient facilities function as evacuation centers during extreme events. Friendship NGO emphasizes participatory planning as well as long-term community engagement. They have tried to integrate cyclone 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 more over 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:

Table 2 Human Security Outcomes: Protection

Protection:

Government cyclone shelters	Friendship 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

Table 3 Human Security Outcomes: Participation

Participation:

Government cyclone shelters	Friendship cyclone shelters
Largely operational	Emphasize community involvement
Shapes trust moderately	Shapes trust positively
Shelter utilization moderately	Shelter utilization willingly

Table 4 Human Security Outcomes: Governance

Governance:

Government cyclone shelters	Friendship cyclone shelters
Centralized governance	Hybrid governance
Limits accountability	Responsive and equitable management

DISCUSSION

This comparative analysis reveals that while government-managed cyclone shelters in Koyra have significantly reduced and effectively reduced cyclone-related mortality, they also often fall short in addressing broader dimensions of human security with dignity, participation and equity. On the other hand, Friendship NGO follows an alternative governance approach where community and design-led shelters demonstrate how design approaches can enhance inclusive human security outcomes, as shown in Friendship cyclone shelters.

There exists a disconnection between survival and human security which reveals a crucial insight by this analysis. Overcrowding, gendered insecurity, lack of privacy, and exclusion of elderly and disabled individuals highlight persistent vulnerabilities experienced within cyclone shelters, though in disaster management, success in Bangladesh is frequently measured through declining death. This report reveals how standardized shelter models privilege efficiency over lived experience and also critiques technocratic approaches to disaster response for overlooking the social and psychological aspects of risk. (*HUMAN DEVELOPMENT REPORT 1994*, 1994) A critical differentiator is Participation between the two cyclone shelter models. Participation in Government-managed shelters is mainly conceptualized as evacuation compliance, mediated through CPP volunteers. Although they help build trust about early warning systems about the danger of disaster but they cannot play a vital role in decision making or not even give suggestion from their experience about cyclone shelter design, management during disaster or preparation face and everyday use. This creates a major difference with NGO's models. Friendship attempts to address this gap by engaging communities in decision-making, assisting in construction, and learning from local experiences. . They engaged community to response in decision making, helping in construction and try to learn from their experience. Particularly, women are given space to express their needs. This aligns with existing literature emphasizing co-production, trust, ownership, and resilience(Paton & Johnston, 2006) Furthermore, human security is shaped by governance. A clear distinction can be seen in centralized & hybrid governance. Centralized governance often reduces community or local power asymmetries, influenced by local elite capture and exclusion. In a hybrid governance community or local people play a vital role, though they depend on NOG facilities and donor funding. Here can give critical thought about scalability and institutional integration. Finally, findings highlighted that cyclone shelters cannot be understood solely as physical infrastructures but also social, political, and spatial institutions where human security is negotiated. Therefore, cyclone shelters remain as inclusive community spaces within complex systems of governance.

POLICY AND DESIGN RECOMMENDATIONS

To enhance planning and management with inclusive human security properly in cyclone shelter, this comprehensive analysis suggested proposes the following recommendations:

Design Level recommendation:

- Provide separated space and secure sanitation facilities for women, Flexible partition for internal zoning to ensure privacy and dignity which is essential for gender sensitive spatial planning.

- Ensure universal accessibility by providing Ramps, handrails, and non-slip surfaces and Clear circulation paths for the elderly and persons with disabilities.

- Everyday usability makes trust, and a maintenance culture so a multipurpose design is advised.

- Provide Space for small livestock and Storage areas to reduce reluctance to evacuate which may Livelihood-sensitive design

Governance Level recommendations:

- Establish inclusive shelter management committees, should take women and elderly representative and make a formal recognition of community roles.

- Enhance transparency and accountability with Clear guidelines for shelter access and relief distribution also should have a community-based monitoring and grievance mechanisms.

- Integrate public–private/NGO partnerships as well as participatory planning in LGED shelter guidelines.

Participation & Capacity Building:

- Build capacity by expanding leadership roles for women and youth within CPP.

- Provide training on age- and disability-inclusive disaster response and also encourage knowledge sharing between communities, architects, planners, and policymakers.

CONCLUSION

This paper focuses on protection, participation, and governance dynamics within community-based disaster response to examine cyclone shelter in coastal Bangladesh through human security framework. Then synthesize data from secondary data source for example government database, UNDP, IFRC, Friendship. Driven a comparative analysis with two type governance of cyclone shelters, one koyra represent government managed cyclone shelters. And another one was friendship cyclone shelter, community and design led shelter model. This study identified that cyclone shelters is a complex social and institutional public space where human security is negotiated by situational crisis priority but this is not merely technical institutional for survival. With through study and review of literature this study reveals that then cyclone shelters reducing morality, at the same time their effectiveness in human security remain uneven.

First attention given to physical condition, construction, safety of the structure and often expense of dignity, privacy, and inclusion, leading to persistent gendered, age-based, and disability-related vulnerabilities within cyclone shelters. Disaster survival and disaster security make a critical gap by cyclone shelter. Highlighting the main limitations of this infrastructure is centralizing and top-down approach disaster management approaches.

Findings reveals hybrid governance arrangements can enhance this inclusive outcome. This arrangement intricated dignity, embedding participation across the disaster cycle, and fostering more accountable governance and building community strength with trust, ownership, and shelter utilization. This study gives an opportunity

to rethinking cyclone shelter policy and practice in Bangladesh. Besides of emergency facilities, cyclone shelter needs to reconsider with people centric space, rights-based and governance sensitive space to enhance human security.

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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.