



Disaster Management Research in Bangladesh: A Systematic Review of Trends, Gaps, and Challenges

Review Article

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ABSTRACT

Bangladesh is among the most disaster-prone countries in the world. The country faces increasing risks from natural hazards, such as cyclones, floods, and landslides, every year due to its geographical and climatic conditions. Therefore, the present study was an attempt to examine the development of disaster management research in Bangladesh from 2000 to 2024, identifying key trends, research gaps, and future directions in this domain. Based on an analysis of over 50 peer-reviewed articles and policy documents, the present research identifies seven specific thematic areas: community resilience, policy and governance, disaster management cycle, climate change integration, technological advancements, healthcare systems, and gender inclusion. The findings emphasize two distinct aspects: first, ongoing challenges in this area, such as inadequate local governance, limited resources, and a lack of gender inclusion; and second, notable advancements in community-based initiatives and legislative frameworks. This assessment would contribute to scholarly discussions and policy development aimed at enhancing Bangladesh's disaster resilience.

Keywords: *Disaster Management, Bangladesh, Systematic Review, Climate Change Adaptation, Community Resilience, Policy Gaps*

1. Introduction

Bangladesh is identified as one of the most disaster-prone countries in the world due to its unique geographical location, deltaic topography, and humid monsoon climate. Moreover, the funnel-shaped shoreline of the Bay of Bengal further

intensifies the possibility of cyclonic events and storm surges (Karim, 1995). The country recurrently experiences a wide range of natural hazards, including monsoon floods and flash floods, cyclones, storm surges, and landslides. These extreme events have massive adverse impacts each

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year on people, the socioeconomic condition, and the environment, affecting sectors such as human life and livelihoods, agricultural production, basic utilities and services, essential infrastructure, and local ecosystems (Rahman *et al.*, 2017). In 2018, the World Bank reported that more than 80% of the population in Bangladesh is at risk from various natural disasters such as floods, landslides, droughts, and earthquakes, and nearly 70% are vulnerable to cyclones (World Bank, 2018). Moreover, the IPCC (2021) reported that globally, the frequency and severity of natural hazards have intensified due to climate change. Consequently, disaster management in Bangladesh has undergone a major transformation, focusing increasingly on resilience-building and mitigation strategies (Haque & Uddin, 2013). According to Islam and Walkerden (2015), recent studies have addressed diversified disaster risk management issues in Bangladesh, including community-based awareness and preparedness, early warning systems, and post-disaster recovery strategies. The study by Shaw and Krishnamurthy (2009) demonstrates the significance of integrating traditional knowledge with modern technological and scientific approaches to increase community resilience.

Despite significant advancements, several persistent challenges, including inadequate infrastructure, limited technical and financial resources, and weak coordination among stakeholders, continue to hinder effective disaster management (Ahmed, 2013). Nevertheless, the growing number of policy frameworks and initiatives requires a comprehensive understanding of the socio-environmental complexities of disasters, informed by both empirical and theoretical analyses. This study provides an in-depth review of the existing literature on disaster management in Bangladesh by cataloging research studies into specific thematic domains to support evidence-based, innovative, and inclusive disaster risk reduction strategies. The

objectives of the study are to conduct an in-depth review of disaster management research in Bangladesh, trace its development over the past two decades, identify current research gaps, and propose possible avenues for future study.

2. Materials and Methods of the Study

A Systematic Literature Review (SLR) approach was used to evaluate the development of disaster management research discourse in Bangladesh over the last 24-year period from 2000 to 2024. The objectives were to identify emerging research fields, key areas of emphasis, and persistent gaps that characterize the evolving field. The methodological process consisted of five main stages: data collection, screening and selection, thematic categorization, data analysis, and synthesis and interpretation.

2.1 Data Collection

For a comprehensive understanding of Bangladesh's disaster management discourse, data were collected from both academic and institutional sources. Consequently, academic databases such as Google Scholar, Scopus, ScienceDirect, and ResearchGate were searched to retrieve peer-reviewed journal articles, technical reports, and other scholarly publications. In addition, major policy and institutional documents, for example, the Bangladesh Disaster Management Act (2012), Standing Orders on Disaster (2019), National Plan for Disaster Management (NPDM 2016-2020 and 2021-2025), Comprehensive Disaster Management Programme (CDMP-II), reports, and evaluation reports by UNDP and the World Bank — were reviewed to address policy evolution and institutional practices.

A thematically relevant list of keywords and Boolean combinations, such as “disaster management” AND “Bangladesh”, “resilience” OR “community-based disaster risk reduction”, “climate change adaptation”, “flood risk”, “cyclone disaster”,

“vulnerability”, “disaster governance”, “healthcare preparedness”, and “gender and disaster”, were used to retrieve relevant publications as part of extensive search process. This strategy ensured comprehensive coverage of studies focusing on diverse hazards such as floods, cyclones, landslides, droughts, and earthquakes, as well as cross-sectoral issues related to gender, health, technology, and governance.

2.2 Screening and Inclusion Criteria

All retrieved literature underwent a rigorous screening and validation process to ensure relevance, quality, and representativeness. The inclusion criteria used in this study were as follows:

- The study must focus specifically on Bangladesh;
- It must address one or more natural hazards (including floods, cyclones, droughts, landslides, or earthquakes);
- The data must relate to aspects to preparedness, response, recovery, mitigation, adaptation, resilience-building, or disaster risk reduction;
- Both qualitative, quantitative, or mixed-methods research approaches were considered; and
- The period of publication covered was from January 2000–March 2024.

Additional institutional and grey literature were incorporated to obtain critical insights into policy development, community-based implementation, and inter-agency coordination. The final dataset included over 50 peer-reviewed publications and key government and international policy documents to identify the multidimensional evolution of disaster management in Bangladesh. The selected literature was subsequently reviewed, coded, and classified into thematic domains that represent various approaches, actors, and frameworks governing disaster management in the country.

These thematic areas are discussed in the following section (2.3).

2.3. Thematic Categorization

The thematic domains were developed through an inductive synthesis of recurring topics identified in the reviewed literature. These domains were then validated against established disaster management frameworks, including the Sendai Framework for Disaster Risk Reduction (2015-2030), the National Plan for Disaster Management (NPDM) 2016-2020, and the Bangladesh Disaster Management Act (2012). Employing a qualitative content analysis approach, key focus areas were clustered into several thematic groups such as 1) Community Resilience and Capacity Building, 2) Policy and Governance, 3) Disaster Management Cycle, 4) Technological Innovations and Tools, 5) Climate Change and Disaster Risk Integration, 6) Disaster Management and Healthcare, 7) Gender and Disaster Management, 8) Education and Public Awareness, and 9) Institutional Coordination and Livelihood Resilience.

Each thematic group represents a critical dimension of the disaster management system in Bangladesh, linking the social, institutional, and environmental aspects of risk reduction. For instance, community resilience highlights grassroots adaptation and local capacity; policy and governance reveal institutional arrangements and regulatory frameworks; and technological innovations signify the expanding use of geographic information systems (GIS), remote sensing (RS), and early-warning tools.

The thematic structure was further validated by cross-referencing national policy reports, such as the Standing Orders on Disaster 2019, the CDMP-II Evaluation 2015, and UNDP and MoDMR Reports 2017-2021, to ensure that the classification captured both scholarly and institutional dimensions of Bangladesh’s disaster management landscape.

Table 1: Interlinkages between Thematic Areas and Evidence Base

Thematic Area	Key Issues Addressed	References
Community Resilience and Capacity Building	Community-Based Disaster Management (CBDM); resilience theory; local institutions (UDMCs); indigenous knowledge integration	Islam (2013); Azad <i>et al.</i> (2020); Moroto <i>et al.</i> (2018); Sultana, (2020); Ahsan <i>et al.</i> (2024)
Policy and Governance	Evolution of disaster policy frameworks; institutional efficiency; coordination and corruption challenges; decentralization for effective DRR	Ahmed (2019); Uddin <i>et al.</i> (2021); Rahman <i>et al.</i> (2017); Haque & Uddin (2013)
Disaster Management Cycle	Preparedness, mitigation, response, recovery; Cyclone Preparedness Programme (CPP); uneven resource access	Rumpa <i>et al.</i> (2023); Firoz (2010); Hasan <i>et al.</i> (2021)
Technological Innovations and Tools	GIS, RS, open-source mapping (RESCUE, DEM models); digital divide and capacity gaps	Latif <i>et al.</i> (2011); Hoque <i>et al.</i> (2017); Rana <i>et al.</i> (2010); Maniruzzaman <i>et al.</i> (2001)
Healthcare and Disaster Management	Disaster preparedness in health systems; nursing education; psychological rehabilitation; occupational therapy in post-disaster recovery	Hasan <i>et al.</i> (2021). Hasan <i>et al.</i> (2024); Barua & Molla (2019); Choudhury <i>et al.</i> (2019)
Gender and Disaster Vulnerability	Feminist political ecology; gender-sensitive planning; women's exclusion from decision-making; gender-based violence and insecurity	Hasan <i>et al.</i> (2019); Choudhury & Haque (2006)
Education and Public Awareness	Community awareness campaigns; school drills; integration of disaster education in curricula; behavioral change	Hasan <i>et al.</i> (2021); Islam (2013); Khan (2008)
Institutional Coordination and Livelihood Resilience	Multi-level governance; NGO–local government collaboration; livelihood diversification; adaptive capacity	Uddin <i>et al.</i> (2022). Azad <i>et al.</i> (2021); Choudhury & Haque (2024)

2.4 Data Analysis

The literature was subjected to qualitative content analysis and descriptive statistical analysis to identify different trends of publication in terms of

numbers across years and thematic areas. Particular consideration was given to under-researched areas, inconsistencies in policy implementation, and the extent to which grassroots issues were addressed.

2.5 Review and Synthesis

A structured, multi-phase validation process was applied during the review through techniques such as citation tracking and reference chaining, which enabled access to additional relevant literature (Figure 1). The final dataset was synthesized to extract key themes and conceptual frameworks and

to identify empirical evidence that validates or contradicts prevailing disaster management paradigms. These findings contribute to a comprehensive understanding of scholarly discourse on disaster management in Bangladesh and suggest evidence-based actions for future research and policy development.

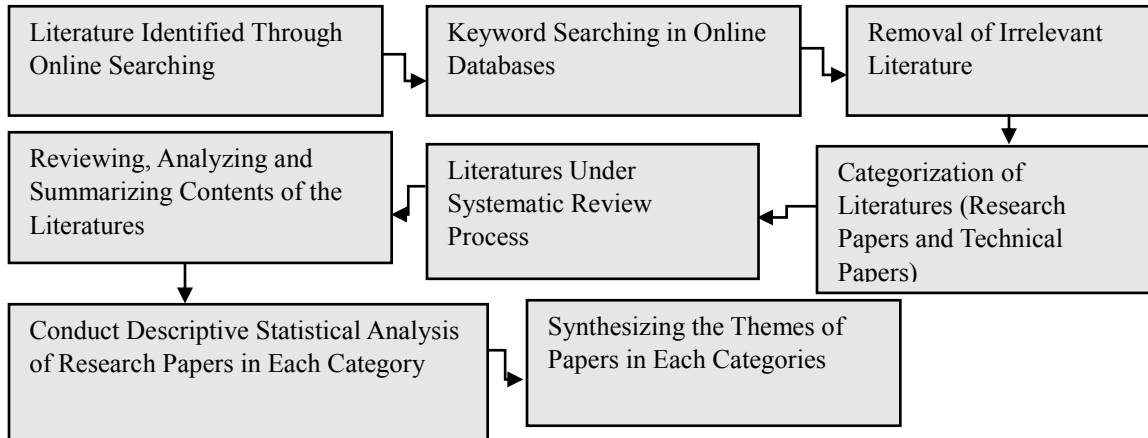


Figure 1: Framework for the Literature Review Process of Disaster Management Studies in Bangladesh

Disaster management research in Bangladesh draws from a multitude of interdisciplinary theoretical frameworks, reflecting the complex nature of environmental hazards and their interactions with institutional responses and social vulnerabilities

(Table 2). This section highlights the key theoretical perspectives through which disaster management approaches in the country are interpreted and evaluated, providing a basis for the thematic analysis that follows.

Table 2: Conceptual Approaches to Disaster Management Analysis

Theory	Significance
Resilience Theory	From an ecological and systems-thinking perspective, Resilience Theory (Folke, 2006) posits that people, communities, and institutions can absorb shocks, adapt to change, and transform in response to long-term stressors. In the Bangladeshi context, it is relevant to understand how the shift from relief-based reactivity to resilience in the face of
Political Economy Approach	disasters has become a guiding principle in national policy and development frameworks. The Cyclone Preparedness Programme (CPP) and a number of community-based adaptation strategies serve as examples of mainstreaming resilience at both local and national scales. Political economy perspectives (Wisner <i>et al.</i> , 2004) examine how power relations, access to resources, and institutional arrangements shape disaster vulnerability and the effectiveness of disaster management

	policies. This approach is particularly relevant in countries such as Bangladesh, where, despite strong national policies and frameworks, including the National Plan for Disaster Management (NPDMD) 2016–2020, there are gaps in effective implementation. Bureaucratic inefficiency, corruption, and elite capture hinder the successful implementation of disaster risk reduction (DRR) interventions, particularly at the local level.	marginalized populations, including inadequate housing, inequality in relief distribution, and gender-based violence during the post disaster period. It also reinforces calls for inclusive and participatory disaster policies that address structural inequalities.
Social Capital Theory	The Social Capital Theory focuses on how trust, social cohesion, and collective action influence preparedness and response efforts during disasters. At the local level, institutions such as Union Disaster Management Committees (UDMCs) and community-based organizations play a significant role in disseminating early warnings and coordinating relief efforts in Bangladesh. This illustrates how dense social ties and mutual support mechanisms contribute to community resilience, particularly in peripheral and underdeveloped regions.	Technological Determinism (Heeks, 2002) explores how technologies influence societal responses to disasters. The disaster monitoring and management process has undergone a significant transformation due to the growing use of Geographic Information Systems (GIS), Remote Sensing (RS), and mobile-based early-warning systems in Bangladesh. This analytical framework provides insight into how technological tools can extend or constrain the effectiveness of disaster response, especially in contexts where access disparities vary both geographically and socially.
Feminist Political Ecology	Feminist Political Ecology (Rocheleau, 1996 <i>et al.</i>) applies a gender lens to explore how disparities in vulnerability and institutional capacity vary during disasters. In the context of Bangladesh, this framework examines the negative impacts faced by women and	

These five theoretical frameworks collectively provide a multidimensional understanding of disaster management in Bangladesh.

3.0 Result and Discussion

3.1.1 Thematic Categorization of Reviewed Literature

This section synthesizes findings from the systematic review, identifying the major trends, research gaps, and conceptual advances in disaster management research in Bangladesh between 2000 and 2024. The review of more than fifty peer-reviewed publications and policy documents reveals that the country's disaster research has gradually

evolved from hazard-centric, reactive approaches to proactive, resilience-oriented frameworks that emphasize governance, participation, and inclusivity. The discussion of the following thematic classification is organized by the categories established earlier and provides a comprehensive, structured understanding of disaster management research in Bangladesh.

3.1.2 Trends in Disaster Management Research in Bangladesh

Trends in annual publications demonstrated sporadic changes in research activity. Notable peaks in publication aligned with critical disaster events or major policy developments (e.g., the Sendai Framework for Disaster Risk Reduction, 2015). Although early research was largely descriptive and focused on reactive methods, recent studies indicate a gradual shift toward technology-driven, proactive, and community-based approaches (Table 3). Despite progress, several gaps remain, particularly in research on healthcare systems and gender inclusivity, underscoring the need for greater multidisciplinary collaboration among researchers and policymakers, as well as more inclusive, participatory, and context-sensitive methods in future research.

Table 3: Overview of Disaster Management Research Patterns in Bangladesh

References	Key Findings
(Sabur, 2012)	Disaster Risk Reduction (DRR) has been gradually integrated into Bangladesh's socio-economic development policies and planning, encompassing both legal frameworks and community-based disaster management (CBDM) initiatives.
(Khan & Rahman, 2007)	Disaster Risk Reduction (DRR) has been increasingly mainstreamed into Bangladesh's socio-economic development
	agenda, and this integration encompasses both legal frameworks and community-based disaster management (CBDM) initiatives. The governance framework is multi-tiered across administrative levels; however, its effectiveness among actors is constrained by weak coordination and inadequate integration mechanisms.
(Izumi and Shaw, 2014)	This study develops six frameworks of private-sector engagement models aimed at strengthening Disaster Risk Reduction (DRR) in Bangladesh, based on safety training, resilience-building, and corporate social responsibility (CSR). The findings reveal that DRR capacity must be strengthened through greater private-sector participation, highlighting the need to enhance both institutional and organizational capacities to achieve effective disaster risk reduction.
(Islam <i>et al.</i> , 2014)	Despite the rising frequency of climate-related disasters affecting Bangladesh, developments in disaster infrastructure and management have reduced losses and enhanced community preparedness. This study further highlights the importance of strengthening these initiatives through sustained investment in institutional capacity, technology, and communication systems.
(Salehin <i>et al.</i> , 2020)	Bangladesh's Constitution serves as the foundation for all disaster and adaptive governance. It

	establishes the overarching legal framework governing all disaster management initiatives and guides national strategies for risk reduction and resilience building.	(Chisty <i>et al.</i> , 2022)	The researchers compare Bangladesh's disaster management policies with the Sendai Framework for Disaster Risk Reduction (2015-2030) and identify key areas of achievement. They suggest adopting a comprehensive "Build Back Better" approach to post-disaster recovery and resilience building through increased investment in risk reduction.
(Ahmed, 2019)	Although the National Plan for Disaster Management (NPDM 2016–2020) stands as an exemplary best-practice document of disaster management in Bangladesh as well as a model for other countries, its implementation remains inconsistent due to various factors, including inadequate funding, limited resources, a shortage of trained personnel, and lack of coordination among institutions working in this area.	(Ahmed <i>et al.</i> , 2016)	This article highlights problems in disaster management programs in Bangladesh, including weaknesses in financial committees, a lack of data integrity, and poor governance. Therefore, this study highlights the need for a comprehensive review and restructuring of these programs by forming effective, efficient committees and establishing an independent Disaster Management Department to ensure greater accountability and operational efficiency.
(Shareef <i>et al.</i> , 2019)	Despite the critical role of the emergency supply chain in Bangladesh, the system remains constrained by weak procurement processes, poor forecasting, and limited coordination. To overcome these constraints, this study recommends a new model to enhance supply chain effectiveness and foster stronger inter-agency collaboration.	(Moroto <i>et al.</i> , 2018)	The researchers state that NGOs' location decisions depend on geographical accessibility and proximity to population centers, which are major determinants. Using logistic regression analysis and the GIS-based mapping of hazard exposure, they find many high-hazard areas remain poorly covered due to these factors, underscoring the need for a more equitable distribution of resources in geographically remote areas.
(Hossain, 2011)	Due to rapid population growth and the increasing number of exposed communities in Bangladesh, disaster risk is further compounded. This paper analyzes the impacts of disaster management approaches and the contributions of legal frameworks and social work practices in reducing vulnerability and promoting resilience.	(Choudhury & Haque, 2024)	The study identifies five key drivers, such as risk-based approaches, cross-scale learning, participatory engagement, research integration, and policy advocacy, as

	essential for need-based action research and its successful implementation in disaster management in Bangladesh.		cycle. They recommend adopting coordinated, localized approaches to strengthen disaster governance at the national level.
(Haque and Uddin, 2013)	This study reveals a shift from a reactive approach to a more holistic model of disaster management in Bangladesh. However, existing challenges in governance and coordination require adopting a collaborative, cross-sectoral framework to promote integrated and sustainable disaster management practices.	(Paul et al., 2022)	This study finds that organizational networks are prioritized over household-and community-level social networks in disaster governance in Bangladesh. Therefore, these findings suggest a careful revision of existing approaches to better leverage local social capital for more effective disaster risk reduction (DRR) across the country.
(Mohibullah et al., 2021)	The study highlights the significance of local social networks for coastal resilience. It also identifies the need for improved coordination across these networks both in post-crisis recovery and disaster mitigation efforts.	(Baten et al., 2018)	This research explores various factors such as corruption and lack of transparency as barriers to the effective implementation of Disaster Risk Reduction (DRR) policies in Bangladesh. It recommends enhancing accountability and strengthening coastal communities' resilience through governance reform and decentralization.
(Alam & Ray-Bennett, 2021)	The researchers identify both a shift in the disaster management approach toward a response-oriented model and persistent governance challenges. To strengthen cross-sectoral cooperation and integrated disaster management practice in Bangladesh, they further suggest a partnership-based model.	Osman et al., 2015	The researchers state that volunteers from the Cyclone Preparedness Program (CPP) and workers from non-governmental organizations (NGOs) contribute effectively and satisfactorily during the pre-disaster stage. However, due to bureaucratic inefficiencies and corruption, post-disaster operations remain weak and constrained, underscoring the need for policy reforms to ensure sustainable and accountable disaster risk reduction (DRR).
(Islam and Walkerden, 2017)	This study identifies local social networks as vital to coastal resilience; however, without coordination, recovery, and strong mitigation efforts, they cannot function effectively.		
(Barua et al., 2021)	Researchers argue that disaster risk governance for landslides in Rangamati is more effective during the response phases than in other stages of the disaster		

(Quader <i>et al.</i> , 2023)	This study finds evidence of a gradual reduction in flood susceptibility due to various actions, especially the construction of flood-control infrastructure and other interventions implemented by the Government of Bangladesh, guided by long-term national strategies such as the Flood Action Plan (FAP) and the Bangladesh Delta Plan 2100. These initiatives are expected to contribute to the country's overall development agenda through integrated structural resilience, sustainable water management, and adaptive flood governance.	risk reduction initiatives need to strengthen and promote more sustainable development activities for all.
(Uddin <i>et al.</i> , 2021)	This research identifies corruption and weak institutional accountability as key factors driving the gap between national disaster risk reduction (DRR) objectives and local implementation. It further suggests that strengthening community resilience through devolution and good governance is an essential pathway.	(Sarker <i>et al.</i> , 2021) The study advocates a broader disaster management approach by strengthening local governance capacity on the riverine islands of Bangladesh.
(Molla <i>et al.</i> , 2019)	The researchers emphasize the active and effective participation of persons with disabilities (PwDs) in the planning and design processes for disaster risk management in the coastal areas of Bangladesh to ensure their dignity, security, and safer livelihoods.	(Choudhury <i>et al.</i> , 2019) This research emphasizes that good governance principles are essential to effectively strengthening local institutions for disaster risk reduction and management.
(Nawaz & Shah, 2011)	Researchers state that, considering the high vulnerability to natural disasters and the disproportionate impacts these events have on the lowest socioeconomic groups, disaster	(Azad <i>et al.</i> , 2021) The study highlights the importance of improving disaster resilience among people affected by flash floods through diversified, flexible approaches implemented by local institutions.
		(Sarker <i>et al.</i> , 2021) Researchers find weak environmental governance on the northern riverine islands of Bangladesh and emphasize the need for an integrated approach to disaster management to enhance resilience at the local level.

3.1.3 Disaster Management Cycle (Preparedness, Response, Recovery, Mitigation)

This theme is used to examine the effectiveness of disaster management, particularly in flood-and cyclone-prone areas in Bangladesh. The Cyclone Preparedness Programme (CPP) and local early warning systems are frequently cited as successful initiatives. Nevertheless, challenges such as insufficient post-disaster recovery assistance, uneven access to resources, and infrastructure shortfalls remain common (Ahsan *et al.*, 2024; Rumpa *et al.*, 2023).

The results of these studies underscore the necessity of incorporating Resilience Theory to strengthen the disaster management cycle across all phases (e.g., preparedness, response, recovery, mitigation) within

local government frameworks. Moreover, the significance of trust and collective actions in risk management and community-based programs highlights the relevance of Social Capital Theory (Table 4).

Concerning these understandings for national policy, this demonstrates that strengthening institutional coordination within existing frameworks, such as Standing Orders on Disaster (SOD, 2019) (MoDRM, 2019) and the National Plan for Disaster Management (NPDM 2021-2025) (MoDRM, 2017), is essential to attaining more effective, inclusive, and adaptive disaster governance in Bangladesh.

Table 4: Theoretical Perspectives and Practical Gaps in Disaster Management

References	Key Findings
(Mallick <i>et al.</i> , 2005)	Researchers analyze the contribution of the Comprehensive Disaster Management Programme (CDMP) of the Bangladesh Disaster Management Bureau (DMB) to enhancing flood preparedness. However, it also identifies persistent challenges related to resource limitations and governance inefficiencies.
(Dwivedi <i>et al.</i> , 2017).	This study explores the paradoxes such as administrative rivalry, political partiality, and inter-organizational relationships embedded in disaster management in Bangladesh, using Cognitive Dissonance Theory. It finds that risk perception does not play a significant role in shaping supply chain attitudes.
(Sony & Roy, 2023)	This research confirms that Disaster Risk Reduction (DRR) interventions in the Khulna Division have strengthened local
	disaster response capacities and highlights the importance of integrating top-down and bottom-up approaches to ensure more effective disaster management.
(Khan, 2008)	Based on findings from an evaluation of community preparedness for both floods and cyclones, this article identifies two major factors e.g., continuity and effectiveness, as central to sustaining a responsive and resilient Cyclone Preparedness Programme (CPP) in Bangladesh. It further emphasizes the need for a comprehensive approach that integrates effective education and awareness campaigns, higher environmental standards, and adaptive local governance to achieve sustainable development.
(Ahsan <i>et al.</i> , 2024)	This paper examines whether the active presence of Union Disaster Management Committees (UDMCs) in southwestern Bangladesh during cyclones contributes to higher levels of household disaster preparedness, resilience, and stability by increasing participation in training sessions and enhancing institutional capacity.
(Hossain & Paul, 2018)	This study examines factors that intensify vulnerability and the measures used to reduce impacts during cyclones in southwest Bangladesh. It reports that early warning

	systems, preparedness, and NGO participation have been highly effective in reducing cyclone impacts and ensuring the overall success of disaster management.	(Islam <i>et al.</i> , 2020)	This study investigates the constraints on Disaster Risk Reduction (DRR) in Bangladesh by examining how institutional priorities act as barriers to investment in flood shelters and by arguing for governance reform to advance DRR.
(Rumpa <i>et al.</i> , 2023)	By comparing the impacts of the major floods in 1988, 2004, and 2022, the scholars analyze Bangladesh's progress in Disaster Risk Reduction (DRR). The findings acknowledge notable developments in building resilience but highlight the need for effective coordination among stakeholders and enhanced community capacity building for sustainable development.		
(Hasan <i>et al.</i> , 2021)	The researchers recommend incorporating disaster education, training, and simulation exercises into academic curricula to improve students' disaster preparedness, as university students currently exhibit low preparedness and moderate risk perception.		
(Hoque <i>et al.</i> , 2017)	The researchers explore how remote sensing is applied in cyclone disaster management. They also identify key limitations in risk mitigation planning, including inadequate access to Synthetic Aperture Radar (SAR) imagery and its limited application. To strengthen preparedness and resilience, they advocate developing advanced modeling techniques, incorporating climate change scenarios, and improving local-scale validation.		
3.1.4 Community Resilience and Capacity Building			
This study demonstrates that Community-Based Disaster Management (CBDM) plays a key role in enhancing preparedness, response, and recovery initiatives at the local level (Table 5). Scholars confirm that indigenous knowledge, community-driven planning, and grassroots initiatives are vital for building resilience (Islam, 2013; Azad <i>et al.</i> , 2020). These findings emphasize the importance of adaptive capacity in disaster risk reduction grounded in the principles of Resilience Theory. Despite various forms of progress, challenges persist in ensuring equity in resource allocation and inclusive community involvement. Both the limited incorporation of Indigenous Knowledge Systems (IKS) into official planning processes (Firoz, 2010) and the continued dependence on NGOs in remote areas highlight the urgent need for capacity building among various stakeholders and the expansion of integrated institutional mechanisms (Moroto <i>et al.</i> , 2018).			
Table 5: Strengths and Gaps in Community-Based Disaster Management in Bangladesh			
References	Key Findings		
(Islam, 2013)	This paper examines how Community-Based Disaster Management (CBDM) in Bangladesh builds local capacity, mitigates risks, and supports disaster management within a systemic Disaster Risk Reduction (DRR) approach.		
(Ali <i>et al.</i> ,	The findings of the study		

2016)	demonstrate the vulnerability of two coastal communities, Morelganj and Sharankhola, in Bagerhat district to natural hazards. It further emphasizes the need for effective interventions and coordinated collaboration among government institutions and NGOs to increase community awareness, provide training, and promote community participation in disaster management.	highlights that sustainable landslide risk reduction requires increased local capacity, improved access to resources, and community-based disaster management techniques.
(Azad et al., 2020)	Scholars identify Bangladesh's shift toward proactive, community-based disaster risk reduction, emphasizing the significance of decentralization, collaboration, local participation, and community-based approaches in fostering resilience. They recommend exploring the contribution of local institutions in strengthening sustainable community resilience through future research.	
(Firoz, 2010)	Local knowledge plays a crucial role in disaster response in Bangladesh; however, decision-making processes are often based on technical or expert consensus rather than on how local communities apply their knowledge in practice. As a result, indigenous knowledge is undervalued, and its potential contribution to enhancing resilience remains insufficiently recognized. (Sultana, 2020) To reduce susceptibility and save lives in high-risk locations, the study	
3.1.5 Disaster Management and Healthcare		
The overlap between disaster preparedness and the health system is examined by a relatively small but growing body of literature (Table 6). Empirical studies identify major weaknesses in disaster response systems, particularly low preparedness among nurses, the lack of mental health services, and inadequate support for persons with disabilities (PwDs) (Hasan et al., 2021; Barua & Molla, 2019). This theme emphasizes several key areas, including improving disaster health response mechanisms, integrating occupational therapy, and institutionalizing disaster well-being planning within national policy frameworks. Nevertheless, developing an effective disaster health infrastructure in Bangladesh requires systemic reform and interdisciplinary alignment across medical and public health education systems.		
The study findings, shown in Table 6, align with national policy frameworks, particularly the Health Emergency Operations Center (HEOC) under the Ministry of Health and Family Welfare (MoHFW), Government of Bangladesh, which coordinates health-sector emergency responses. Such integration of institutional mechanisms for disaster preparedness into the health system is essential for enhancing readiness and resilience against future emergencies.		
Table 6: Healthcare System Readiness in Disaster Contexts		
References	Key Findings	
(Hasan et al., 2022)	This paper demonstrates that most Bangladeshi nursing students have a moderate level of disaster preparedness; however, students from public	

	institutions exhibit comparatively higher levels of readiness. The study advocates organizing workshop-based and practical training sessions to strengthen students' disaster preparedness capacities.		(≤40 years). The study also found that comparatively younger registered nurses were less prepared. Therefore, it is necessary to strengthen disaster education and practical drills within nursing curricula.
(Habib <i>et al.</i> , 2014)	This study emphasizes the marginal role of Occupational Therapy (OT) in disaster preparedness and response in Bangladesh, including both pre- and post-disaster activities. Moreover, it recommends incorporating OT services into national disaster management protocols.	(Galib <i>et al.</i> , 2019)	The study found significant progress in workplace safety in Bangladesh's Ready-Made Garment (RMG) sector after the Rana Plaza tragedy, owing to the strong implementation of the Accord and Alliance initiatives. However, substantial and varying challenges persist in sustaining this progress at the local level.
(Cash <i>et al.</i> , 2014)	Investment in disaster management has enabled Bangladesh to reduce deaths from cyclones and floods. However, global warming, rapid urbanization, and earthquake risks continue to threaten the country's overall resilience.	(Barua & Molla, 2019)	The researchers highlight accessibility difficulties faced by persons with disabilities (PWDs) in the southern coastal region of Bangladesh and emphasize the need for effective implementation of the Disabilities Act (2013) to improve the overall effectiveness of the country's disaster management system.
(Hasan <i>et al.</i> , 2021)	The scholars found that nurses working in Dhaka have a moderate level of knowledge and preparedness in disaster management, largely due to inadequate training and limited prior experience. The study recommends expanding simulation-based drills and incorporating disaster management into nursing education.	(Choudhury & Haque, 2006)	The study emphasizes the importance of incorporating psychological interventions delivered by mental health professionals and multidisciplinary support teams, especially for women in disaster management agendas.
(Hasan <i>et al.</i> , 2024)	In 2024, Hasan <i>et al.</i> found a moderate level of disaster preparedness among registered nurses (RNs) in Bangladesh, influenced by different factors such as education, training, and the experience of senior nurses	(Hossain <i>et al.</i> , 2014)	The research emphasizes the important role of occupational therapists (OTs) in supporting survivors' recovery through physical and psychological rehabilitation and vocational reintegration.
		(Habib <i>et al.</i> ,	The study highlights the

2014)	significance of integrating the occupational therapy profession into national strategies and policies for both pre-disaster planning and post-disaster rehabilitation to enhance Bangladesh's disaster management efforts.	further explains how integrating wind and surge models improves impact visualization, response planning, and long-term risk assessment.
3.1.6 Technological Innovations and Tools		(Rana et al., 2010) This study emphasizes the use of historical cyclone track data and a Digital Elevation Model (DEM) to estimate risks to life and the environment by developing storm-surge hazard maps.
Over the past two decades, the use of information technology, especially GIS, remote sensing, open-source mapping, and decision support systems, has expanded rapidly in disaster management research (Table 7). These technologies are increasingly used for hazard mapping, early warning dissemination, and post-disaster damage assessment (Latif et al., 2011; Hoque et al., 2017). Despite the pivotal role of digital tools in the transformation of society, and despite technological determinism, several studies focus on the threats of overreliance on technology without adequately addressing digital divides. Therefore, disparities in both access and technical capacity, predominantly in rural areas, continue to limit the real-world effectiveness of these innovations.		(Hoque et al., 2017) This review study identifies several methodologies and their key challenges for effective disaster management, such as the use of ≤ 30 m resolution imagery for impact assessment and recovery, the Analytical Hierarchy Process (AHP)-based spatial decision-making for risk assessment, GIS-based storm-surge modeling, and high-precision Digital Elevation Models (DEMs).
Table 7: Applications and Limitations of Technological Tools in Disaster Management		(Kader & Jahan, 2019) The study demonstrates that earthquake prediction remains one of the most difficult challenges in disaster management. However, the advent of remote sensing technologies such as Landsat, LiDAR, and InSAR has revolutionized earthquake research, particularly in damage assessment and monitoring.
References	Key Findings	
(Latif et al., 2011)	The researchers focus on the potential of OpenStreetMap in disaster response in Bangladesh. This study analyzes the existing strengths and major constraints of OpenStreetMap in enhancing its effectiveness in disaster management.	
(Maniruzzaman et al., 2001)	In this study, the researchers discuss the GIS-based RESCUE system for cyclone management in Bangladesh. It	(Islam & Chik, 2011) This article focuses on the key role of Geographic Information Systems (GIS) and Remote Sensing (RS)

information management systems in enhancing efficiency and reducing costs in disaster response and recovery operations, as well as in improving overall disaster management planning in Bangladesh.

3.1.7 Climate Change and Disaster Risk Integration

In disaster management discourse, climate change is a growing concern worldwide. Table 8 shows that, despite significant progress in mainstreaming climate change into policy frameworks in Bangladesh, the implementation of integrated disaster risk reduction (DRR) and climate change adaptation (CCA) initiatives at the local level remains inadequate. Several studies recommend integrating climate change adaptation (CCA) with disaster risk reduction (DRR) to ensure efficient use of resources and foster effective collaboration (Islam, 2020; Hasan *et al.*, 2013). However, the effective implementation of such integration remains constrained by institutional fragmentation and coordination challenges. This underscores the importance of enhancing inter-agency collaboration and adopting more multidisciplinary approaches to policy design.

Table 8: Climate-Disaster Policy Synergy and Institutional Gaps

References	Key Findings
(Islam, 2020)	This study recommends mainstreaming DRR and CCA in Bangladesh to more effectively understand and address challenges related to financing and coordination, thereby ensuring more efficient resource allocation. It further emphasizes the importance of strengthening governance and improving policy coherence to overcome these challenges, guided by the political economy analysis.

(Kais Islam, 2023)

& Scholars have raised questions about the effectiveness of large-scale climate adaptation projects at the macro level. They stated that although the Coastal Embankment Project (CEP) was originally designed to control flooding in southwestern Bangladesh, it is no longer considered feasible and has had various adverse impacts on shrimp aquaculture.

(Hasan *et al.*, 2013)

Through a case study on two ministries, namely the Ministry of Food and Disaster Management (MoFDM) and the Ministry of Environment and Forests (MoEF), this article analyzes the obstacles to integrating disaster management and climate change initiatives in Bangladesh. It highlights the institutional and procedural barriers that hinder effective coordination between the two ministries in implementing integrated responses.

3.1.8 Gender and Disaster Vulnerability

Gender-oriented disaster research remains an underrepresented area in the literature (Table 9). Accordingly, Hasan *et al.* (2019) identify several such areas, including a lack of gender-responsive planning, insufficient safety provisions for women in post-disaster settings, and the silencing of women's voices in decision-making processes. Grounded in feminist political ecology perspectives, this result illustrates gender-biased disaster impacts in Bangladesh, where women are particularly at risk during the recovery phase, experiencing both physical and mental violence, displacement, family burdens, and economic hardships. This underscores the necessity of incorporating gender perspectives across all stages of the disaster risk management (DRM) cycle.

Table 9: Gender Inequalities in Disaster Risk and Recovery

References	Key Findings
(Hasan <i>et al.</i> , 2019)	Researchers demonstrate the need for a more comprehensive integration of gender considerations into disaster risk management policies in Bangladesh. It finds growing attention to gender issues such as early warning and women's empowerment, while concerns such as gender-based violence and security of shelter remain largely overlooked in disaster risk management policies in Bangladesh.

3.1.9 Education and Public Awareness

Education and public awareness are two crucial components of effective disaster risk reduction (DRR) in Bangladesh. Table 10 illustrates that several studies emphasize that incorporating disaster education into both formal and informal learning systems significantly enhances preparedness and resilience. Awareness programs implemented by various organizations, such as schools, NGOs, and local government authorities, have strengthened community understanding of hazards, early warning systems, and sustainable coping strategies (Hasan *et al.*, 2021; Islam, 2013; Khan, 2008). Therefore, continuous community-based training and educational campaigns are essential for promoting adaptive behavior and informed decision-making.

Table 10: Education and Public Awareness

References	Key Findings
(Hasan <i>et al.</i> , 2021)	Researchers highlight the importance of building awareness and preparedness among children living in Bangladesh's coastal areas through disaster education programs integrated into primary school curricula.
(Islam & Chik, 2011)	The research findings emphasize the need for ongoing community-

based awareness campaigns in hazard-prone districts to improve existing early-warning responses, reduce evacuation delays, and strengthen mutual support networks.

(Rana <i>et al.</i> , 2010)	Scholars have identified a positive relationship between public awareness, training participation, and household-level resilience. They also highlight the crucial role of the media, local NGOs, and CBOs in effectively disseminating early warning messages.
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3.1.10 Institutional Coordination and Livelihood Resilience

Institutional coordination and livelihood resilience are considered two interdependent and significant pillars of disaster risk management (DRM) in Bangladesh. Studies show that multi-level collaboration among various agencies such as national institutions, non-government organizations (NGOs), and local government authorities improves both response efficiency and post-disaster recovery (Uddin *et al.*, 2022; Azad *et al.*, 2021; Choudhury & Haque, 2024) (Table 11). Effective institutional networking and livelihood diversification programs are fundamental for building resilience among vulnerable communities. However, gaps in resource allocation, coordination among different organizations, and policy enforcement consistently undermine adaptive capacities at the local level.

Table 11: Institutional Coordination and Livelihood Resilience

References	Key Findings
(Islam and Walkerden, 2017).	Scholars have stated that institutional fragmentation remains a major obstacle to effective disaster governance in Bangladesh. Accordingly, effective and efficient coordination between national and local

	institutions is essential to ensure timely response and recovery.
(Hasan <i>et al.</i> , 2024)	The study highlights the significance of ensuring inter-agency coordination to enhance adaptive capacity and resilience through local livelihood programs aligned with DRR frameworks.
(Galib <i>et al.</i> , 2019)	Research demonstrates that livelihood resilience, especially in flood- and cyclone-prone areas, depends largely on factors such as local institutional support, access to microcredit, and participatory community planning mechanisms.

3.1.11 Community Risk and Vulnerability Assessment

Although community risk assessment (CRA) and vulnerability mapping form the foundation of Bangladesh's disaster risk management policy, this dimension remains underrepresented in academic literature. Community Risk Assessment (CRA) was established as a vital participatory instrument under the Comprehensive Disaster Management Programme (CDMP-II, 2010-2015) to identify local hazards, analyze vulnerabilities, and enhance adaptive capacities of the community. Reports by the Ministry of Disaster Management and Relief (MoDMR, 2015) and the UNDP (2017) indicate that CRA activities have been employed in most coastal and flood-prone districts of the country to strengthen community awareness and local-level planning. However, very few studies evaluate the effectiveness of these community-based assessments in influencing risk-reduction outcomes. It is evident that participatory risk mapping enhances awareness, but its effectiveness remains unsustainable due to insufficient funding and lack of integration into policy frameworks (Haque, 2019; Azad *et al.*, 2021). Additionally, the absence of coherent frameworks for assessing vulnerability indicators results in inconsistent assessments among local government institutions and non-governmental

organizations (NGOs). To address this gap, mixed-methods approaches that combine quantitative hazard modeling and quantitative participatory risk appraisals might be incorporated into future studies. Community-driven assessment is necessary to ensure informed national disaster preparedness, risk zoning, and resource allocation strategies in Bangladesh.

3.2 Discussion

The outcome of this systematic review suggests a paradigm shift in Bangladesh's disaster management from a reactive post-disaster response system to a proactive, resilience-based approach. The following analysis covers all major theoretical perspectives, focusing on how these theories help explain current trends such as community resilience and capacity building; policy and governance; disaster management cycle; technological innovations and tools; Climate change and disaster risk reduction integration; healthcare and disaster management; gender and disaster vulnerability education and public awareness; and institutional coordination and livelihood resilience, as well as ongoing problems and important research gaps.

3.2.1 Community Resilience and Capacity Building

The literature review confirms a strong and increasing focus on community-based disaster management (CBDM) and participatory approaches to resilience-building in Bangladesh. Numerous empirical studies (Islam, 2013; Azad *et al.*, 2021; Azal *et al.*, 2019) demonstrate that integrating local knowledge, collective action, and decentralized decision-making is essential for enhanced adaptive capacity and long-term sustainability. Ahsan *et al.* (2024) identify Union Disaster Management Committees (UDMCs) as effective community institutions for improving household preparedness and institutional efficiency. Guided by Resilience Theory and Social Capital Theory, scholars note that social trust networks, community-based shared assistance, and indigenous coping strategies are powerful components for building disaster resilience. However, obstacles to transformational

resilience persist, and the full implementation of local resilience strategies is constrained by a lack of resources, inconsistent stakeholder support, weak institutional coordination, and inadequate engagement with vulnerable groups (Moroto et al., 2018). Thus, it is essential to shift from programmatic resilience strategies to structural resilience, supported by long-term institutional strengthening, sustained investments, and inclusive policies to address these challenges effectively and efficiently.

3.2.2 Policy and Governance

Policy and governance research on disaster management in Bangladesh demonstrates a progressive shift from reactive emergency response to proactive resilience-building; however, the trajectories and disparities remain uneven. This evidence is primarily drawn from various national sources, such as the Bangladesh Disaster Management Act (2012) (GoB, 2012), the National Plan for Disaster Management (NPDM 2021-2025) (MoDRM, 2017), and the Standing Orders on Disaster (SOD, 2019) (MoDRM, 2019). Furthermore, these policy documents align national strategies with global frameworks such as the Sendai Framework and the Paris Agreement to promote decentralization, ensure multi-stakeholder engagement, and community participation.

Despite these advancements, several studies (Ahmed, 2019; Uddin et al., 2021) and policy reviews reveal persistent implementation gaps, bureaucratic inefficiencies, and elite-driven resource allocation. The concentration of power within disaster management systems often results in elite capture and the marginalization of underprivileged groups. For instance, Moroto et al. (2018) noted that geography is an important determinant of NGO service provision. Because NGO interventions are mostly concentrated in easily accessible areas rather than in remote, underserved, high-risk regions. Therefore, strengthening participatory, transparent, and decentralized governance systems is crucial for ensuring effective policy commitments and the

equitable allocation of resources and services across geographic areas.

The Political Economy Approach is very useful for understanding how institutional hierarchies, limited decentralization, and resource constraints impede effective disaster governance. Several international reports by the UNDP (2017) and World Bank (2020) address challenges such as weak inter-agency coordination and limited local autonomy that contribute to ineffective disaster management units at all administrative tiers. Therefore, to ensure the effective implementation of disaster management policies in Bangladesh, a more coherent governance model is needed, one that bridges institutional and community perspectives by connecting top-down policymaking with bottom-up community-based risk reduction.

3.2.3 Disaster Management Cycle

Understanding and analyzing local disaster responses, Social Capital Theory is considered an important interpretative mechanism. Islam and Walkerden (2017) noted that institutional coordination is central to most national disaster plans, yet often undervalues the critical role of grassroots and informal relational dynamics. However, local networks bear responsibility for disseminating early warnings, mobilizing communities, and distributing information about available resources in areas where formal governance is weak or absent. Therefore, effective and efficient formal mechanisms must be incorporated into planning processes to bridge the gap between centralized policies and community-level responses. As Firoz (2010) argues, the systematic integration of local knowledge and social capital can significantly strengthen disaster preparedness. Such integration requires institutional awareness and local capacity-building initiatives that recognize and utilize community resources within disaster management frameworks to address these policy disconnects.

3.2.4 Technological Innovations and Tools

Over the last two decades, technological advances in Bangladesh, such as remote sensing, Geographic Information Systems (GIS), and open-source mapping tools, have significantly enhanced early warning capacity and disaster risk assessment in the country. Technological determinism confirms that these innovations have the potential to reform disaster management systems in Bangladesh. For instance, systems such as RESCUE and Digital Elevation Model (DEM)-based cyclone modeling have contributed to significant improvements in catastrophe planning and forecasting accuracy (Maniruzzaman *et al.*, 2001; Rana *et al.*, 2010). However, technological progress is not universally beneficial, and unequal access to digital resources, institutional support, infrastructure, and technical capacity-building in urban and rural areas continues to limit the inclusive adoption of technology (Latif *et al.*, 2011). From a Technological Determinism perspective, tools such as GIS and RS can strengthen data-driven decision-making and expand adaptive capacity. Digital inequality raises concerns about the exclusion of people in geographically remote areas. Furthermore, it highlights the importance of integrating digital innovation with community participation, equal access, and strong institutional support to ensure equitable benefits across all regions and social groups. Future research should emphasize equitable access to technology, user-friendly systems for local institutions, and integration of real-time data analytics to support evidence-based decisions.

3.2.5 Climate Change and Disaster Risk Reduction Integration

In Bangladesh, climate change has emerged as a major cross-disciplinary issue in disaster discourse. Thus, integration is central to addressing climate change vulnerability through disaster risk reduction (DRR) strategies. According to researchers (Hasan *et al.*, 2013; Islam, 2020), despite recognition of this need in national policies, institutional fragmentation continues to pose a major obstacle to disaster risk reduction efforts. Ministries responsible for disaster and environmental management in Bangladesh

often work independently, with limited collaboration and overlapping responsibilities. Therefore, the next critical phase should focus on improving coordination among stakeholders to strengthen an adaptive governance system at national and local levels. Future research should emphasize integrating DRR-CCA approaches aligned with global climate resilience goals across scientific and policy domains through joint programming, comprehensive monitoring systems, and shared resource platforms. Furthermore, collaborative research platforms that unite climate scientists, social scientists, and planners are crucial for evidence-based adaptation.

3.2.6 Healthcare and Disaster Management

Growing research identifies key challenges in disaster-health system linkages in Bangladesh. According to Hasan *et al.* (2021, 2024), despite existing awareness measures, significant gaps remain in mental health support. Barua and Molla (2019) found a lack of inclusive shelters and services for individuals with disabilities during emergencies, as well as inadequate occupational health protection. Consequently, scholars emphasize key areas for addressing these challenges, such as incorporating disaster education into medical and nursing curricula, conducting regular emergency drills, and ensuring access to shelters and services for people with disabilities. Moreover, responding to these challenges efficiently and effectively requires a comprehensive disaster preparedness mechanism that includes capacity-building training for future health professionals, strengthening interdisciplinary collaboration across health sectors, and supporting the development of policies that more effectively embed healthcare within national disaster risk reduction (DRR) frameworks. Such initiatives will guide both the physical and mental resilience goals of the health sector in Bangladesh, aligning with the broader national agenda. Theories reviewed in this study confirm that in Bangladesh, disaster management activities are shaped by various factors, including institutional capacity, community perceptions and response behaviors,

technological advancements, and social inequality. For example, Resilience Theory and Social Capital Theory highlight the essential strengths and adaptive capacities within local communities; on the other hand, the Political Economy and Feminist Political Ecology perspectives identify deeper structural and systemic weaknesses. Technological determinism emphasizes technological progress as both an opportunity and an obstacle; however, efforts to ensure inclusive and equitable resilience outcomes for all remain a challenge.

3.2.7 Gender and Disaster Vulnerability

Both research and policy practice on gender and social inclusion represent limited progress in Bangladesh. Several studies reveal the intensified vulnerabilities of women and both geographically and socially marginalized communities during and after disasters. Factors responsible for such vulnerabilities and exclusions include economic conditions, social inequalities, unsafe shelter conditions, and exclusion from decision-making processes (Hasan *et al.*, 2019; Choudhury & Haque, 2006). Drawing on Feminist Political Ecology, scholars argue for effective empowerment and representation of women through gender-responsive policy frameworks, as most existing policies and programs remain insufficiently attentive to the socially differentiated vulnerabilities faced by women and other marginalized groups.

Hasan *et al.* (2019) identify significant weaknesses within policy frameworks addressing gender-based violence, shelter insecurity, and unequal access to relief and recovery assistance both during and after disasters. Moreover, the contributions of women in building resilient communities are often undervalued and excluded from planning and decision-making processes. According to Choudhury and Haque (2006), the psychosocial impacts of disasters on female survivors remain underexplored and inadequately addressed. Therefore, effective and implementable gender-inclusive policies are necessary to address intersectional sensitivities and multiple

interconnecting layers of vulnerability within the affected population.

3.2.8 Education and Public Awareness

Education and awareness are considered major drivers of disaster preparedness and resilience in Bangladesh. Scholars agree that integrating disaster education across academic levels (e.g., primary, secondary, and higher education) improves students' knowledge and preparedness during emergencies (Hasan *et al.*, 2021). Islam (2013) stated that collective community actions towards early warning systems and risk reduction encourage proactive participation and develop students' perceptions through such educational programs. The government and NGOs have undertaken public awareness campaigns to reduce ignorance about hazards and evacuation procedures, emphasizing preventive rather than reactive strategies (Khan, 2008). For effective risk communication, policy documents (MoDMR, 2015; UNDP, 2017) recommend school-based disaster education in curricula, drill training, and awareness campaigns. However, challenges still persist in ensuring long-term sustainability and effectiveness of these initiatives, particularly in rural areas. Therefore, it is essential to increase resilience within social practices across Bangladesh by strengthening curricular education, practical training, and mass awareness campaigns.

3.2.9 Institutional Coordination and Livelihood Resilience

To establish an efficient disaster response strategy, a dynamic mechanism for sustainable recovery, and a resilient community in Bangladesh, effective collaboration and coordination across government ministries, among local, regional, national, and international NGOs, and also international institutions is essential, where exposure of disasters are frequent due to particularly geographic location and socio-economic background of people of the country. Although regulatory frameworks have improved, a lack of coordination among actors often

results in inefficient and ineffective disaster response and recovery activities in the country (Uddin *et al.*, 2022). Choudhury & Haque (2024) state that coordinated efforts among public agencies, NGOs, and local governments contribute to better community adaptation and more effective resource sharing. According to Azad *et al.* (2021), in flood-and cyclone-prone regions, cooperation between national programs and local initiatives significantly contributes to reducing post-disaster vulnerability and ensuring sustainable livelihoods. To achieve these outcomes, it is necessary to expand dialogue among institutions, empower local authorities, and expand livelihood programs that align with disaster management frameworks. Without improved coordination and communication among disaster management organizations, better preparedness and resilience cannot be ensured for future hazards and disasters.

4. Conclusion

Bangladesh is highly exposed to multiple natural hazards due to its geographical location and climatic conditions. Therefore, effective, climate-responsive, and implementable disaster management policies, strategies, and plans are essential for strengthening resilience to the adverse effects of climate change, social vulnerability, and economic fragility. Studies on disaster management in the country identify a transition from exclusively reactive, post-disaster strategies to more integrated, resilience-based approaches over the past two decades. This systematic review examined more than fifty peer-reviewed articles and policy documents and identified nine broad thematic areas: policy and governance, community resilience, disaster management cycles, technological innovation, climate change, health systems, and gender. The findings demonstrate that remarkable progress has been made in policy planning, particularly in early warning systems and disaster risk reduction at both national and community levels. These developments reflect an increasing commitment to international frameworks, such as the Sendai Framework for

Disaster Risk Reduction (2015-2030) and the Sustainable Development Goals (SDGs), with a focus on sustainable cities and communities, as well as climate action.

However, despite this progress, significant implementation challenges remain across various sectors, including weak inter-agency coordination and collaboration, inequitable resource distribution, and lack of participation of marginalized communities. Moreover, rapidly advancing technological innovations worldwide have not adequately addressed access and capacity constraints, especially in rural Bangladesh. Similarly, efforts to integrate climate change adaptation (CCA) with disaster risk reduction (DRR) have often ignored institutional and procedural constraints. Furthermore, the lack of standardized methodologies for vulnerability assessment, the limited use of empirical data in policy design, and insufficient institutional collaboration between academia, government, and NGOs hinder the generation and efficient use of scientific knowledge in policy implementation.

Reviewed theoretical frameworks such as Resilience Theory, Social Capital Theory, Political Economy, Technological Determinism, and Feminist Political Ecology explain both the strengths and weaknesses of disaster management policies in the country. Collectively, these theoretical frameworks identify the need for evidence-based, multi-level, and comprehensive approaches that ensure a balance between structural transformation and community-level empowerment. Indeed, future research and policy design must emphasize inclusivity, cross-disciplinary collaboration, and sustained investment to establish an adaptive and equitable disaster management system in Bangladesh.

This review article identifies several priority directions for future research and major policy interventions. These are: strengthening local governance and decentralization through capacity-building; ensuring equity in resource distribution

through accountable and transparent institutional mechanisms; integrating academic research findings into national disaster management and climate adaptation plans by bridging policy and local-level practice; ensuring equitable representation of women and individuals from marginalized communities in decision making processes through gender and social inclusion frameworks; improving access to resources in post-disaster recovery programs; encouraging technological accessibility at the community level through data-sharing platforms, open-source applications and digital literacy; mainstreaming healthcare preparedness and mental health into DRR and CCA programs; and institutionalizing interdisciplinary collaboration among policymakers, researchers, and practitioners to enhance evidence-based knowledge and resilience-based governance.

Therefore, these findings reaffirm that effective and sustainable disaster management in Bangladesh depends on a holistic approach that integrates policy interventions, community participation and empowerment, technological advancement, and social equity. Sequentially, future progress will depend on how effectively all dimensions are addressed and implemented in a coordinated way across all levels from local communities to national institutions, ensuring that resilience is an ongoing process of learning, adaptation, and inclusive governance rather than an outcome.

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