

RESEARCH ARTICLE

Disaster management strategies and relation of good governance for the coastal Bangladesh

Prabal Barua^{1*} Abhijit Mitra² Saeid Eslamian³¹ Department of Environmental Sciences, Jahangirnagar University, Dhaka, Bangladesh² Department of Marine Sciences, University of Calcutta, West Bengal, India³ Center of Excellence in Risk Management and Natural Hazards, Isfahan University of Technology, Isfahan, Iran

Correspondence to: Prabal Barua, Department of Environmental Sciences, Jahangirnagar University, Dhaka, Bangladesh; E-mail: prabalims@gmail.com

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Abstract: Although Bangladesh's immense steps in preparing the disaster management policies following the values of good governance issue, the quantity to which these policies have productively been executing at the local level remnants mostly unknown. The objectives of this study was dual: firstly, to inspect the roles and efficiency of the local-level governance and disaster management organization, and lastly, to recognize the obstacles to the execution of national the policies and Disaster-Risk-Reduction guidelines at the local community level. The authors applied qualitative research and case Study approach, using techniques from the Participatory Rural Appraisal toolbox to collect data from local community members as well as government and NGO officials. From the finding of the study, it was revealed that interactive disaster governance, decentralization of disaster management, and compliance by local-level institutions with good governance principles and national policy guidelines can be extremely effective in reducing disaster-loss and damages. This study contributes to these research gaps, with identification of further research agenda in these areas. Thus, it contributes to numerous policy and practice areas relating to good disaster governance. The study identified the specific manifestations of these failures in coastal communities in Bangladesh. These results underscore the vital need to address the wide gap between national DRR goals and the on-the-ground realities of policy implementation to successfully enhance the country's resilience to climate change-induced disasters.

Keywords: local-level governance, climate change, natural disaster, disaster risk reduction

1 Introduction

Bangladesh is considered one of the most disaster-prone countries in the world because of the country's geographical location and climate make it the most vulnerable to natural and manmade disasters. Frequent natural calamities such as floods, tropical cyclones, storm surges, flash floods, droughts, riverbank erosion, and landslide frequently hit the country. As a result, it negatively affected the entire ecosystem, including humans, their shelters, or the resources necessary for their livelihood [1–4]. The country is located in the Ganga-Brahmaputra river delta, one of the most fertile plains in the world. Together, they are more vulnerable to river erosion, floods and cyclones. The tropical cyclones cause most devastating natural disasters, causing casualties and damage to housing, agriculture and the economy. The sustainable development needs to mitigate the adverse effects of these natural hazards that affect socioeconomic conditions. Realizing this, the Government of Bangladesh has launched a series of disaster reduction plans and programs through Comprehensive Disaster Management. Currently, the main documents dealing with disasters in Bangladesh are the Disaster Management Act 2012, the National Disaster Management Policy 2015, the Standing Order on Disasters 1997 (revised on 2010), the Division of Disaster Management and Disasters (DM & RD) and the National Plan for Disaster Management 2010-2015. Bangladesh also has a disaster management mechanism at national and sub-national level. Bangladesh National Plan for Disaster Management is a key strategic document. It is a holistic plan that provides comprehensive guidance to relevant departments and disaster management committees for the implementation of specific plans at their functional level and their role for different levels of administrative structure [4].

Disaster management is a budding thought that covers both the disaster risk approach through strategies and decision creation by mobilizing multi-level organizations and disaster risk reduction (DRR) [5–8]. Disaster management, as a perception and practice sphere, mainly highlighted

the effective preparation and interference against severe weather events, the evaluation of risk and vulnerability at the local level and the augmentation of the public consciousness of the disaster risk and vulnerability [8, 9]. Disaster management frameworks be familiar with the partly covering the legal, institutional and social globes engaged in the effective disaster risk reduction management [7, 10–12].

Understanding local governance from the perspective of local community members, is important because of their roles as “place-shapers” and their significance “in meeting the needs that most drive people’s attachment to, and satisfaction with, the areas in which they live” [13]. Numerous studies have highlighted that measuring citizens’ trust and satisfaction as indicators of good governance is a crucial step towards improving performance of the governing institutions [14, 15]. However, Bouckaert and de Walle (2003) and Stipak (1979) [14, 16] cautioned that because the data and results of such “citizen surveys” closely reflect the characteristics of respondents rather than actual governance quality, study designs need to incorporate not only governance performance per se, but also alternative measurements. It is therefore important to analyse governance performance per se, along with the contested perspectives on it for a comprehensive understanding of these phenomena.

However, empirical studies have revealed that in many countries local institutions often fail to uphold good governance principles [6, 12, 17, 18]. For example, comparing the progress of several African countries against the Hyogo Framework, van Niekerk (2015) [19] found that widespread deficiencies in accountability, transparency, efficiency and trust have severely impeded the successful local implementation of national disaster-management initiatives.

As one of the countries most vulnerable to extreme weather events, Bangladesh is a case of particular interest to the study of disaster governance [9, 20, 21]. To address the country’s vulnerability to natural hazards, the Government of Bangladesh has attempted to decentralize its post-disaster management strategy, delegating greater responsibility and autonomy to local-level institutions [21, 22]. Little is currently known as to the extent to which these policies have succeeded in achieving their key objectives.

The terms “governance” and “good governance” have been widely used in public policy and development literature since their original adoption by United Nations (UN) in the late 1980s due to serious concerns about corruption and lack of public participation in the state-driven bureaucratic approach to disaster and resource management [23–25]. The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) identifies eight principal criteria for good governance: (1) adherence to the rule of law; (2) participatory decision making; (3) equity and inclusiveness; (4) transparency; (5) accountability; (6) responsiveness; (7) effectiveness and efficiency and (8) consensus-oriented processes [26]. These criteria can be applied to all aspects of disaster management and DRR. Achieving good governance, however does not require the adoption of all of the above criteria simultaneously; different institutions may adopt only those criteria suitable to a particular context.

Contextualizing DRR approaches in disaster management and governance involves multi-faceted efforts in decision-making, and risk identification including several DRR-related global initiatives [27, 28]. Despite the widespread adoption of DRR initiatives, there remain a variety of challenges to effective management of disaster risks, including insufficient resources, mismanagement [9], lack of coordination, and governance failure [8, 11, 29]. In Bangladesh, additional barriers to DRR include a distorted perception of risk among inhabitants [30], lack of resources and intervention capacity among local institutions [31], lack of institutional collaboration [29], poor gender inclusivity in decision-making [32], governance failures [33], mismanagement of funds [9] and marginalization of local institutions [12].

Considering these critical aspects as well as Forino’s et al. (2015) [34] work, we adopted a conceptual framework for good disaster governance and DRR integration (Figure 1) that identifies three primary actors who shape local-level disaster governance: (1) state actors such as Members of Parliament, Upazila administration and Union Parishad; (2) social actors, such as civil society, NGOs and community-based organizations and (3) policy actors such as national DRR acts and policies, advocacy groups and international treaties. This framework allows the analysis of the characteristics and performance of key actors in disaster governance and DRR at the local level in coastal communities of Bangladesh.

Bangladesh’s vulnerability to natural hazards, especially along the coastal regions [12, 35], is well-known, the country having experienced a large number of catastrophic cyclones and floods in recent decades [30, 35]. Since the 1990s, there have been significant shifts in the policy and institutional domains emphasizing decentralization of disaster management to local-level institutions [32]. The Government of Bangladesh (GoB) developed elaborate frameworks and disaster response mechanisms that reduced loss of human lives and property due to disasters [36]. Recent disaster policy announcements reveal that the focus is shifting from a post-disaster relief-oriented approach towards risk reduction, decentralization of authorities and enhancement of

resilience [32, 36].

The continuous progress made in disaster management policies can be seen in the introduction of the National Plan for Disaster Management (NPDM) (2010–2015; 2016–2021), Standing Orders on Disaster (SOD) in 2010, Disaster Management Act (DMA) in 2012, National Disaster Management Policy (NDMP) in 2015 and associated policy documents [32, 36]. The GoB formulated the NPDM, SOD, NDMP and DMA to ensure effective participation of local communities [32, 36]. The NDMP and SOD primarily offer guidelines and outline the roles and responsibilities of every organizational level involved in DRR and emergency management. Under these provisions, a committee operates at each administrative level to manage the response to impending disasters and post-disaster impacts [12].

The goal of the study was to explore the disaster management scenario of Bangladesh and identify the implementing gap according to the existing disaster management laws and strategies of the country. The study will explore the status of distribution of different social security schemes for disaster-affected communities in relation to good governance perspectives in Bangladesh.

2 Materials and methods

In this study, the authors focus on the roles of local institutions – particularly the Union Parishad (UP) and the Union Disaster Management Committee (UDMC) – in disaster governance and national disaster management policy implementation, in the coastal communities of Bangladesh. The author applied a qualitative research methodology following an Exploratory Case Study (ECS) approach with multiple case designs, as advocated by Yin (2014) [37]. The author collected data from primary sources, applying techniques of the Participatory Rural Appraisal (PRA) method, as well as from secondary sources such as policy documents, guidelines and reports.

2.1 Profile of the study area

The author conducted our field investigation in two cyclone-prone Unions, Baharchara and Khankahanabad of Banskhali Upazila in Chattogram District in the southern coastal region of Bangladesh. This area has experienced seven major cyclones over the past 40 years, two within the last 1 [22]: Cyclone Ruano in 2018 and Cyclone Mora in 2019 (Figure 1).

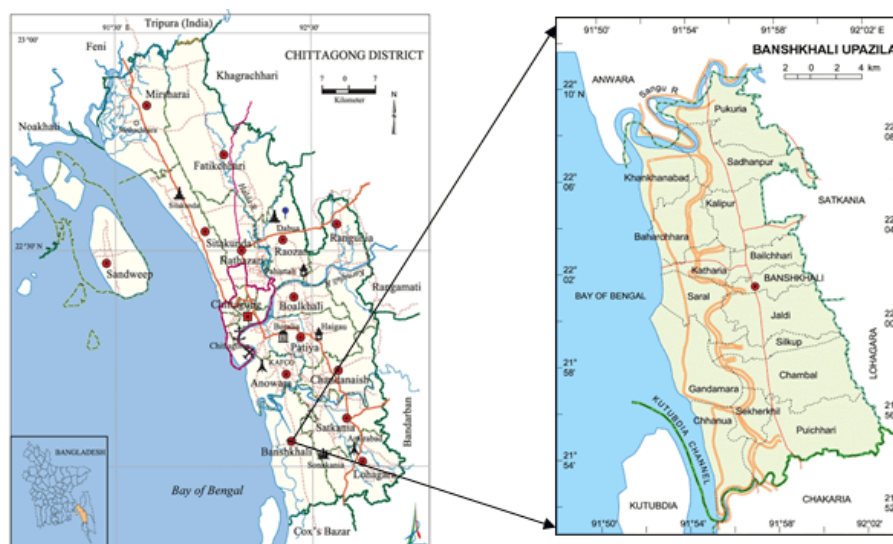


Figure 1 Geographical location of the study area

2.2 Methods

Field data were collected during January 2018–July 2018 and July–September 2019 periods using a questionnaire and various other Participatory Rural Appraisal tools. Secondary information was collected through reviews of reports related to loss and damage caused by cyclones, and disaster policy implementation by local-level institutions.

Banskhali Upazila was selected for the empirical investigation as it was among the areas most severely affected by Cyclone Ruano (2018) and Mora (2019). Three primary criteria were used to select these communities: (1) the degree of physical exposure to cyclone hazards, (2) economic base and occupational diversity and (3) past loss and damages due to cyclones. Out of a total of 14 Unions in the Upazila, the Unions of Khakhanabad and Baharchara were selected.

Four main data collection methods were used: (1) Focus Group Discussions (FGD); (2) Key Informant Interviews (KII); (3) Case Studies and (4) Document Review. To collect in-depth information from the local community, we employed semi-structured questionnaires. The author organized eight FGDs (four FGDs per Union), with participants of diverse social class, each session lasting around three hours. Rules observed during each session included: Group size was kept between 6 and 12 participants. Subsequently, a total of 20 KIIs were conducted using a semi-structured questionnaire with local government and NGO officers, knowledgeable local residents and social workers. Participants were selected by applying the random sampling procedure to a comprehensive list including a broad range of sub-groups.

2.3 Data analysis

Data analysis was conducted throughout the information-gathering period, with qualitative data being indexed under emerging themes. Consistent triangulation of the results highlighted any contradictions and similarities between the different data sources. Where contradictions were found, further iterative reflection took place in the form of FGDs or KIIs to resolve conflicts in the data and to authenticate data sources. Finally, the author debriefed our findings to the participants through organized workshops in order to validate our conclusions.

3 Results

The results of empirical investigation are presented in two sections examining (1) the effectiveness of local-level disaster management institutions with respect to good governance criteria; (2) the extent to which national-level disaster management policies have been implemented by local institutions (e.g. Union Parishad and local NGOs).

Present study detected three major actors who shape the local-level disaster governance in Bangladesh: (1) Government—Members of Parliament (MP), Upazila administration, and Union Parishad; (2) political parties and local elites and (3) non-government organizations and community-based organizations.

A total of five criteria of good governance were identified by the participants as most relevant for assessing the decision-making process and disaster management effectiveness of local institutions: (1) rule of law; (2) participatory decision making; (3) gender equity and inclusivity; (4) transparency and (5) accountability. Participants in the FGDs identified participatory decision making (87.5%), transparency (87.5%), rule of law (75%) and gender equity and inclusivity (75%) as the most critical criteria for good governance, while Key Informants identified gender equity and inclusivity (90%), participatory decision making (75%) and transparency (70%).

Similarly, in both Unions Case Study participants identified the rule of law (80%), transparency (80%), gender equity and inclusivity (60%), participatory decision making (60%) and accountability (60%) as the most relevant criteria. Counterfactual data were consistently triangulated with multiple methodological tools and with the document review outputs. By contrast, responsiveness, consensus-oriented decision making and effectiveness and efficiency received low preference (< 50%).

According to the Standing Order on Disasters (SOD), the Union Parishad (UP)-led UDMC is required to work as a single entity to serve local communities, as it is the first responding government authority during disasters. With the help of local NGOs, they organized training workshops on DRR, prepared risk-reduction action plans and vulnerability indices and carried out risk analyses at the Union–Ward level. The UDMCs mobilized and trained Red Crescent Cyclone Preparedness Program (CPP) volunteers and community members to implement an early warning system prior to the onset of cyclones. During Cyclones Ruano in 2018 and Mora in 2019, more than 40 volunteers contributed to local early warning and evacuation programs in Baharchara and Khankhanabad Unions.

The results of the KIIs indicated the presence of significant corruption in relief work and project implementation. In Khankhanabad union, UDMC, members have less confidence in the chairman as he was alleged to be biased towards his relatives, and less transparent in regards to financial transactions. In addition, political affiliation and corruption of the UDMC members hindered supervision by senior-level administration. Local politics play a significant role in

disaster governance, especially in determining victims to receive relief. The Upazila party leader and local MP directly control the local-level decision making and allocation of project funding.

Community members at large reported that the UDMC meetings were irregular despite being required by the SOD. During FGDs, one UP member of Baharchara Union provided counterfactual information, claiming that UP held regular monthly meetings in line with SOD, but a review of UP documents of the UDMC meeting minutes revealed that the UDMC meetings were held in every 3–4 months in Baharchara Union and every 5–6 months in Khankhanabad during non-disaster periods. In addition, while SOD guidelines dictate a quorum of at least 12 (one-third of the 36-member committee), actual meeting attendance was nominal at best (Figure 1)

According to the 2015 Disaster Management Policy, citizens' active participation and informed decision-making are prerequisites for any disaster management effort at all administrative levels. Our study revealed that these prerequisites for both studied Unions were prepared by the local NGOs with the help of the UDMC. For example, the Baharchara Union disaster management plan was prepared by Save the Children USA under their "Life and Livelihood Program" (Table 1).

Table 1 The disaster management system at the local government level

Disaster Management Committee	Activities
District Disaster Management Committee	Headed by the Deputy Commissioner (DC) to co-ordinate and review the disaster management activities at the District level.
<i>Upazila</i> Disaster Management Committee	Headed by the <i>Upazila Nirbahi</i> Officer (UNO) to co-ordinate and review the disaster management activities at the <i>Upazila</i> level.
Union Disaster Management Committee	Headed by the Chairman of the <i>Union Parishad</i> to co-ordinate, review and implement the disaster management activities of the concerned Union.
Municipality Disaster Management Committee	Headed by the Mayor of municipality to co-ordinate, review and implement the disaster management activities within its area of jurisdiction.
City Corporation Disaster Management Committee	Headed by the Mayor of City Corporations to co-ordinate, review and implement the disaster management activities within its area of jurisdiction.

A document review revealed that most reports prepared by local government institutions, and NGOs claim that the disaster management decision making processes is participatory and inclusive in terms of community representation. However, the triangulated data have revealed that there was limited or no public consultation involved in the development of the Plan, and that even if there had been, NGOs tend to select their beneficiaries or persons nominated by UP chairman.

Gender inclusivity is a crucial factor in emergency evacuation due to the prevailing culture of Bangladesh. For example, during the early warning phase of Cyclone Ruano (2018), a physically challenged woman of 75 from the Baharchara Union refused to go with male volunteers to the cyclone shelters due to religious restrictions and social values. She only agreed to leave her house when the volunteer leader brought four female volunteers to help her. In rural Bangladesh, women cannot make household decisions such as going to cyclone shelters, and taking important belongings with them during evacuation without their husband's consent.

Decisions regarding financial transactions, selection of beneficiaries, and sites for local government projects were undertaken only by the UP despite the SOD requires the community keep informed. The majority of respondents reported that they only knew the total funds allocated to a particular project but not how and by whom funding decisions were made, how money was spent and what criteria were used to select beneficiaries. The Khankhanabad UP secretary reported that presently, UP maintains project documentation only for higher authorities and not for local people.

Bangladesh has adopted a number of laws, policies, strategies and institutional frameworks relevant to climate displacement. This chapter assesses the following 25 Policies, Plans, Projects, Acts, Standing Orders, Strategies and Programmes of Action relevant to climate change and disaster management in Bangladesh:

- (1) The National Adaptation Programme of Action (2005)
- (2) The Bangladesh Climate Change Strategy and Action Plan (2009)
- (3) The National Plan for Disaster Management
- (4) The *Ashrayan* Project
- (5) The Disaster Management Act (2012)
- (6) The Standing Orders on Disaster (2010)
- (7) The Perspective Plan of Bangladesh
- (8) The National Strategy for Accelerated Poverty Reduction (2005)

- (9) Bangladesh Sixth Five Year Plan
- (10) The Bangladesh Country Investment Plan
- (11) National Agriculture Policy (2013)
- (12) The National Forestry Policy (1994)
- (13) The National Water Policy (1999)
- (14) The National Food Policy (2006)
- (15) The Coastal Zone Policy (2005)
- (16) The Coastal Development Strategy (2006)
- (17) The Environment Policy (1992)
- (18) The Bangladesh Environment Conservation Act (1995)
- (19) The National Housing Policy (2008)
- (20) The National Urban Sector Policy (2010)
- (21) The National Land Use Policy (2001)
- (22) The National Rural Development Policy (2001)
- (23) Bangladesh National Environmental Plan (2015-2020)
- (24) Bangladesh Delta Plan-2100
- (25) Bangladesh Water Policy 2018

Local-level implementation of national disaster management policies is critical for effective overall disaster risk reduction. To determine the extent of policy implementation at the Upazila and Union Parishad levels, we examined the following documents: (1) National Disaster Management Policy (NDMP); (2) Standing Order on Disasters (SOD); (3) Disaster Management Act (DMA) and (4) National Plan for Disaster Management (NPDM). Implementation of many policy activities under the SOD, NDMP, NPDM and DMA were carried out by the local government administration. Examples of these practices included the formation of the UDMC, organizing various awareness and capacity-building workshops, facilitation of NGO activities to ensure coordination between different disaster-management programs and preparation of local disaster-management plans and risk maps (Figure 2).

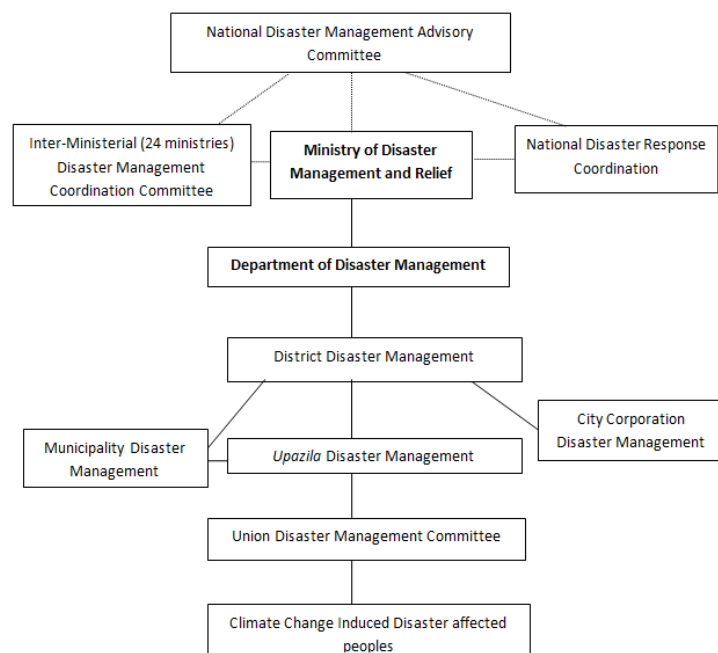


Figure 2 The Disaster Management Framework of Bangladesh

The disaster management cycle is a continuous process of reducing risks and exposure to hazards (i.e., mitigation), of planning and preparing for forthcoming hazards, and of responding to prevent natural disasters (i.e., preparedness). It includes phases of reducing impacts of a disaster through response efforts to search and rescue (i.e., response) and restoration through clean up and reconstruction (i.e., recovery) [38]. A complete disaster management cycle includes the development of public policies and plans that either address the causes of disasters or mitigate the effects on people, property and infrastructure [38] (Figure 3).

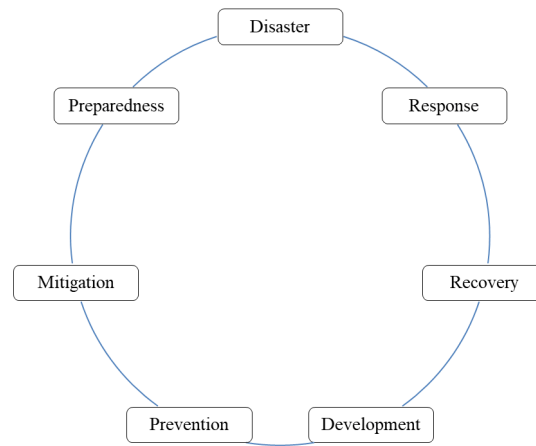


Figure 3 Layout of the Disaster management cycle [38]

Table 2 Influence matrix of government ministries and departments relevant to climate displacement in Bangladesh

Ministry	Department/ Agency	Influence Matrix
Ministry of Environment and Forest	Department of Environment Department of Forest	High
Ministry of Disaster Management and Relief	Department of Disaster Management Directorate of Relief and Rehabilitations	High
Ministry of land	Land Reforms Board Land Appeal Board Directorate of Land Records and Survey	High
Ministry of Local Government, Rural Development and Co-operatives	Local Government Division Local Government Engineering Department Rural Development and Cooperative Division	High
Ministry of Housing and Public Works	Public Works Department (PWD) National Housing Authority	Medium
Ministry of Water Resources	Bangladesh Water Development Board (BWDB) Water Resources Planning Organization (WARPO) River Research Institute (RRI) Bangladesh Haor and Wetland Development Board (BHWDB) The Institute of Water Modeling (IWM)	Medium
Ministry of Finance	Economic Relation Division	Medium
Ministry of Planning	Bangladesh Institute of Development Studies (BIDS)	Medium
Ministry of Defence	Bangladesh Space Research and Remote Sensing Organization (SPARRSO) Bangladesh Meteorological Department (BMD)	Medium
Ministry of Social Welfare	Department of Social Welfare	Low
Ministry of Health and Family Welfare		Low
Ministry of Information		Low
<i>Palli Karma Sahayak</i> Foundation		High

The disaster management concept of the Government of Bangladesh is to reduce the risk to the people, especially the poor and the backward. It intends to create an effective Emergency Response System under which large-scale disasters can be handled along with the humanitarian issues while managing the effects of natural, environmental and manmade hazards. Bangladesh began disaster preparedness after the 1991 cyclone. Currently, Bangladesh has the National Disaster Management Act 2012 (MoDMR, 2012), the National Disaster Management Policy 2015 (MoDMR, 2015), Standing Order on Disasters 1997 (revised in 2010) of the Department of Disaster Relief and Management (DM & RD), and the National Disaster Management Plan 2010-2015 (MoDMR, 2010) as essential documents to guide disaster management activities in Bangladesh. The country also has disaster management mechanisms at the national and sub-national levels. Bangladesh National Disaster Management Plan is a strategic document. It provides a comprehensive guide for relevant sectors and disaster management committees

at all levels to prepare and implement specific plans created under various thematic levels of administrative structures [32].

The respondents observed “medium” to “very high” impacts of execution of national policies on local-level disaster management capacity. The practice of the formation of the UDMC according to the SOD and aligned UP-disaster management structures, for instance, generated “very high” impacts and significantly reduced the death toll and property loss due to disasters (Table 1). In line with the roles and responsibilities outlined in the SOD and NDMP, both UDMCs of Nilganj and Dulashar Unions paid particular attention to DRR and all disaster cycle activities. They revised their plans regularly according to major shifts in related national policies. According to the Governmental initiative on climate change and Disaster Management issues in Bangladesh, YPSA and DS(2014) developed the activity matrix on High, Medium and Low ranging (Table 2).

In the study area, other policy implementation practices included (1) local institutions undertaking measures to reduce risk – for example, preparing risk maps and vulnerability indices for both Unions; (2) organizing disaster capacity building training ; (3) preparing union disaster management plans, risk reduction strategies and disaster contingency plans with the help of local NGOs and (4) facilitation of NGO activities by the UPs with monitoring to promote coordination and synergy between various disaster management programs and projects.

4 Discussion

Numerous studies have indicated that compliance with good governance criteria and disaster policy implementation at the local level are vital to the success of disaster governance and effective disaster management [36, 39, 40]. In recent years, decentralization of governing structures for disaster management has been pursued in many countries including Bangladesh [28, 41–43]. The success of these efforts owes much to the removal of major barriers to policy implementation and the strengthening of horizontal and vertical institutional linkages. top-down approaches may be attributed to the prevailing bureaucratic system. Barriers against effective local-level policy implementation and the challenges to address Along with good disaster governance, national disaster policy implementation at the local level is essential for successful DRR and disaster management [12, 44]. We observed that some local-level disaster management programs under national policy frameworks were transformed into practice with noticeable success. Such practices included the formation of the UDMC, organizing various awareness and capacity-building workshops, facilitation of NGO activities, and preparation of union disaster management plans. The identified drivers of policy implementation were political commitment, international disaster policy ratification, donor-driven projects. Communities in other parts of the world have also succeeded in reducing their disaster risk and vulnerability through effective policy implementation; for example, Chau et al. (2014) [45] found that local institutions changing their structure to align with policy was fruitful in integrating DRR and emergency management in Vietnam. In Australia, Zurita et al. (2015) [7] observed that empowering local government and consensus-based inclusive decision making strengthened disaster governance outcome.

However, we observed that many policy initiatives such as drafting a UDMC constitution, storing medicine, organizing workshops on lessons learned and preparing vulnerability maps based on gender and socioeconomic status were not executed effectively by the UPs in accordance with the SOD, NDMP, NPDM, and DMA. Plausible explanations for these failures include insufficient technical and financial capability, poor leadership, top-down decision-making and corruption with local-level institutions. In Ghana, Yaro et al. (2015) [46] observed that the effectiveness of local institutions in implementing climate change policies was constrained by their limited financial and human resources.

5 Conclusions and recommendations

The discourse on local-level disaster governance by local-level institutions has significantly evolved since the UN Sendai Framework for DRR (2015–2030). The success of multifaceted risk mitigation has been associated with the effectiveness of local governance structures, compliance with good governance criteria, and implementation of national disaster policy [47]. The main purpose of our study was to identify barriers to good governance and the implementation of disaster management policies in Bangladesh.

We argue that compliance with good governance criteria can help to develop effective local disaster management structures. The findings reveal that interactive disaster governance,

decentralization of disaster management, and implementation of national disaster policy in a participatory and transparent manner are not only catalysts for rapid recovery, but can also strengthen community resilience to disaster-shocks. For efficient management of disasters at the local level:

(1) Local institutions should be empowered with self-governance instruments, resource procurement and allocation and decision-making capacity.

(2) Local institutions require to comply with good governance criteria, ensuring that they follow the rule of law, are transparent and accountable and engage in participatory and gender-inclusive risk identification and disaster management action development.

(3) The technical and financial capacity of local institutions should be strengthened to enable them to execute policy actions, delegate disaster management activities and build community awareness.

(4) Implementation of all national disaster policies and guidelines through interactive disaster governance is required to facilitate local institutional adaptation and ensure positive outcomes.

Overall, this study confirms that compliance of local-level institutions with good governance criteria, implementation of disaster policies and transforming policy into practice can improve disaster management and enhance resilience to disasters.

References

- [1] Barua P, Rahman SH and Morshed M. Sustainable adaptation for resolving climate displacement issues of south eastern islands in Bangladesh. *International Journal of Climate Change Strategies and Management*, 2017, **15**(2): 440-465.
<https://doi.org/10.1108/IJCCSM-02-2017-0026>
- [2] Barua P and Rahman SH. Community-based rehabilitation attempt for the solution of climate displacement crisis in the coastal area of Bangladesh, *International Journal of Migration and Residential Mobility*, 2018, **1**(4): 358-378.
<https://doi.org/10.1504/IJMRM.2018.094811>
- [3] Barua P and Rahman SH. Impact of river erosion on livelihood and coping strategies of displaced people in South-Eastern Bangladesh. *International Journal of Migration and Residential Mobility*, 2019, **2**(1): 34-55.
<https://doi.org/10.1504/IJMRM.2019.103275>
- [4] Barua P, Rahman S H and Eslamin S. Rehabilitation and Relocation Program for Climate Displaced People of Bangladesh, W. Leal Filho et al. (eds.), *Handbook of Climate Change Management*, Springer Nature, 2021.
https://doi.org/10.1007/978-3-030-22759-3_298-1
- [5] Tierney K. Disaster governance: social, political, and economic dimensions. *Annual Review of Environment and Resources*, 2012, **37**(3): 341-363.
<https://doi.org/10.1146/annurev-enviro-020911-095618>
- [6] Fan M F. Disaster governance and community resilience: reflections on Typhoon Morakot in Taiwan. *Journal of Environmental Planning and Management*, 2015, **58**(4): 24-38.
<https://doi.org/10.1080/09640568.2013.839444>
- [7] de Zurita M, Cook B, Harms L, et al. Towards new disaster governance: subsidiarity as a critical tool. *Environmental Policy and Governance*, 2015, **25**(6): 386-398.
<https://doi.org/10.1002/eet.1681>
- [8] Ashu R and Van KD. Building national and local capacity for disaster risk management in Cameroon. *Disaster Prevention and Management*, 2019, **28**(6): 764-777.
<https://doi.org/10.1108/DPM-06-2019-0176>
- [9] Islam R, Walkerdin G and Amati M. Households' experience of local government during recovery from cyclones in coastal Bangladesh: resilience, equity, and corruption. *Natural Hazards*, 2017, **85**(1): 361-378.
<https://doi.org/10.1007/s11069-016-2568-6>
- [10] Ahrens J and Rudolph PM. The importance of governance in risk reduction and disaster management. *Journal of Contingencies Crisis Management*, 2006, **14**(4): 207-220.
<https://doi.org/10.1111/j.1468-5973.2006.00497.x>
- [11] Van Niekerk D and Wisner B. Integrating disaster risk management and development planning: experiences from Africa. *Disaster Management*, 2014, **70**(3): 80-100.
- [12] Choudhury M, Uddin M and Haque C. Nature brings us extreme events, some people cause us prolonged sufferings: the role of good governance in building community resilience to natural disasters in Bangladesh. *Journal of Environmental Planning and Management*, 2019, **62**(2): 1761-1781.
<https://doi.org/10.1080/09640568.2018.1513833>
- [13] Ryan R, Hastings C and Woods R. Why Local Government Matters: Disaster Context Scenario of 2015. *Disaster Scenario*, 2015, **40**(3): 80-90.
- [14] Bouckaert G and Van WS. Comparing measures of citizen trust and user satisfaction as indicators of "good governance": difficulties in linking trust and satisfaction indicators. *International Review of Administrative Sciences*, 2003, **69**(2): 329-343.
<https://doi.org/10.1177/0020852303693003>

- [15] Ariely G. Public administration and citizen satisfaction with democracy: cross-sectional evidence. *International Review of Administrative Sciences*, 2013, **79**(4): 747-766.
<https://doi.org/10.1177/0020852313501432>
- [16] Stipak B. Citizen satisfaction with urban services: potential misuse as a performance indicator. *Public Administration Review*, 1979, **39**(1): 46-52.
<https://doi.org/10.2307/3110378>
- [17] Paula V and Carolina Q. Disaster Governance for Community Resilience in Coastal Towns: Chilean Case Studies. *International Journal of Environmental Research & Public Health*, 2017, **14**(9): 1063.
<https://doi.org/10.3390/ijerph14091063>
- [18] Raju E and Costa K. Governance in the Sendai: a way ahead? *Disaster Prevention and Management*, 2018, **27**(3): 278-291.
<https://doi.org/10.1108/DPM-08-2017-0190>
- [19] Van Niekerk D. Disaster risk governance in Africa: a retrospective assessment of progress in against the hyogo framework for action (2000-2012). *Disaster Prevention and Management*, 2015, **24**(5): 397-416.
<https://doi.org/10.1108/DPM-08-2014-0168>
- [20] IPCC. *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation: Special Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, 2012, London, Uk.
- [21] Hasan M, Adhikary G, Mahmood S, *et al.* Exploring mental health needs and services among affected population in a cyclone affected area in coastal Bangladesh: a qualitative case study. *International Journal of Mental Health Systems*, 2020, **14**(2): 1-9.
<https://doi.org/10.1186/s13033-020-00351-0>
- [22] Ahmed B, Kelman I, Fehr HK, *et al.* Community resilience to cyclone disasters in coastal Bangladesh. *Sustainability*, 2016, **8**(8): 1-29.
<https://doi.org/10.3390/su8080805>
- [23] Van Doeveren V. Rethinking good governance. *Public Integrity*, 2011, **13**(4): 301-318.
<https://doi.org/10.2753/PIN1099-9922130401>
- [24] Howe B. Governance in the interest of the most vulnerable. *Journal of Public Administration and Development*, 2012, **32**(3): 345-356.
<https://doi.org/10.1002/pad.1621>
- [25] Satpathy B, Muniapan B and Dass M. UNESCAP's characteristics of good governance from the philosophy of Bhagavad-Gita and its contemporary relevance in the Indian context. *International Journal of Indian Culture and Business Management*, 2013, **7**(5): 192-198
<https://doi.org/10.1504/IJICBM.2013.055504>
- [26] UNESCAP. *What Is Good Governance?* United Nations Economic and Social Commission for Asia and the Pacific, Bangkok, Thailand.
- [27] Islam S, Chu C, Liew L, *et al.* Distributing flood shelters for disaster risk reduction: exploring the practices in Bangladesh from a political economy perspective. *Disaster Prevention and Management*, 2020, **29**(3): 322-339.
<https://doi.org/10.1108/DPM-02-2019-0060>
- [28] Azad MA, Uddin MS, Zaman S, *et al.* Community-based disaster management and its salient features: a policy approach to people-centred risk reduction in Bangladesh. *Asia-Pacific Journal of Rural Development*, 2019, **29**(2): 135-160.
<https://doi.org/10.1177/1018529119898036>
- [29] Sovacool B. Don't let disaster recovery perpetuate injustice. *Coastal Management*, 2017, **54**(7): 433-450.
<https://doi.org/10.1038/549433a>
- [30] Sattar M and Cheung K. Tropical cyclone risk perception and risk reduction analysis for coastal Bangladesh: household and expert perspectives. *International Journal of Disaster Risk Reduction*, 2019, **41**(2): 145-165.
<https://doi.org/10.1016/j.ijdrr.2019.101283>
- [31] Alam K, Shamsuddoha M, Tanner Tk, *et al.* The political economy of climate resilient development planning in Bangladesh. *IDS Bulletin*, 2011, **42**(3): 52-61.
<https://doi.org/10.1111/j.1759-5436.2011.00222.x>
- [32] Hasan M, Nasreen M and Chowdhury M. Gender-inclusive disaster management policy in Bangladesh: a content analysis of national and international regulatory frameworks. *International Journal of Disaster Risk Reduction*, 2019, **41**(3): 50-60.
<https://doi.org/10.1016/j.ijdrr.2019.101324>
- [33] Bhuiyan S. Adapting to climate change in Bangladesh: good governance barriers. *South Asia Research*, 2015, **35**(3): 349-367.
<https://doi.org/10.1177/0262728015598702>
- [34] Forino G, Van W and Brewer G. A conceptual governance framework for climate change adaptation and disaster risk reduction integration. *International Journal of Disaster Risk Science*, 2015, **6**(3): 372-384.
<https://doi.org/10.1007/s13753-015-0076-z>
- [35] Rahman S, Islam M and Khan M. Climate change adaptation and disaster risk reduction (DRR) through coastal afforestation in South-Central Coast of Bangladesh. *Journal of Management of Environmental Quality*, 2019, **30**(3): 498-517.
<https://doi.org/10.1108/MEQ-01-2018-0021>

- [36] Ahmed I. The national plan for disaster management of Bangladesh: gap between production and promulgation. *International Journal of Disaster Risk Reduction*, 2019, **37**(10): 1179-1200.
<https://doi.org/10.1016/j.ijdr.2019.101179>
- [37] Yin RK. *Case Study Research, Design and Methods*, 2014, 5th ed., Sage Publication, London.
- [38] Harrison MF, Anderson PJ, Johnson JB, *et al.* Acute Mountain Sickness Symptom Severity at the South Pole: The Influence of Self-Selected Prophylaxis with Acetazolamide. *PLoS ONE*, 2016, **11**(2): e0148206.
<https://doi.org/10.1371/journal.pone.0148206>
- [39] Haque A, Kamal A and Hassan S. Partnership, Coordination, and Accountability in Urban Disaster Management: A Review of Policies in Bangladesh. *Climate Change and Management*, 2017, **30**(3): 60-70.
- [40] Choudhury M and Haque C. We are more scared of the power elites than the floods: adaptive capacity and resilience of wetland community to flash flood disasters in Bangladesh. *International Journal of Disaster Risk Reduction*, 2016, **19**(2): 145-158.
<https://doi.org/10.1016/j.ijdr.2016.08.004>
- [41] Haque C and Uddin M. Disaster management discourse in Bangladesh: a shift from post-event response to the preparedness and mitigation approach through institutional partnerships. *Disaster Management*, 2013, **60**(3): 85-95
- [42] Bae Y JooY and WonS Y. Decentralization and collaborative disaster governance: evidence from South Korea. *Habitat International*, 2016, **52**(2): 50-56.
<https://doi.org/10.1016/j.habitatint.2015.08.027>
- [43] Valdivieso P, Andersson K and Villena-Roldan B. Institutional drivers of adaptation in local government decision-making: evidence from Chile. *Climate Change*, 2017, **143**(1): 157-171.
<https://doi.org/10.1007/s10584-017-1961-9>
- [44] Berkes F. Understanding uncertainty and reducing vulnerability: lessons from resilience Thinking. *Natural Hazards*, 2007, **41**(2): 283-295.
<https://doi.org/10.1007/s11069-006-9036-7>
- [45] Chau VN, Holland J and Cassells S. Institutional structures underpinning flood management in Vietnam. *International Journal of Disaster Risk Reduction*, 2014, **10**(2): 341-348.
<https://doi.org/10.1016/j.ijdr.2014.10.008>
- [46] Yaro J, Teye J and Bawakyillenuo S. Local institutions and adaptive capacity to climate change/variability in the northern savannah of Ghana. *Climate and Development*, 2015, **7**(3): 235-245.
<https://doi.org/10.1080/17565529.2014.951018>
- [47] Jones S, Aryal K and Collins A. Local-level governance of risk and resilience in Nepal. *Disasters*, 2013, **37**(3): 442-467.
<https://doi.org/10.1111/disa.12006>