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Community-Based Disaster Risk Management: A Good Practice of Rural Bangladesh

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The purpose of this study is to clarify the functionality of disaster risk management at community level focusing on a disaster-prone *haor* region of Bangladesh. We conducted this study in a rural *haor* area of Bangladesh having a fragile ecosystem. The data were collected through focus group discussion (FGD) with union council members of Itna union, Kishoreganj, Bangladesh to reach the purpose of this study. The results clarified that the although the union council members are aware of the institutional responsibility in relation to the disaster risk management at community level, but their functionality is still weak. Therefore, our policy implications drawn from the research suggest that more attention should be paid to the capacity development of union council members through the development of human capital in the region.

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JEL Classification: Q10.

ABBREVIATIONS

BBS : Bangladesh Bureau of Statistics
CBDRM : Community-based Disaster Risk Management
CRA : Community Risk Assessment
DRM : Disaster Risk Management
CDMP : Comprehensive Disaster Management Project
UDMC : Union Disaster Management Committee
UzDMC : Upazila Disaster Management Committee
SOD : Standing Orders on Disasters
FGD : Focus Group Discussion
PIC : Project Implementation Committee

1. INTRODUCTION

Bangladesh ranks 6th in the world in the risk of natural disasters [1]. Natural disasters happen regularly and their frequency is getting increased by time in different forms in Bangladesh due to its geographical position. In developing regions, natural disasters wreak havoc on agriculture, food security, and resources and livelihood opportunities [2]. Thus, effective disaster risk management is important for achieving sustainable development [3]. Disaster risk and vulnerability can be reduced by understanding the underlying risk factors and capacity strengthening of community and institutions [4].

However, the traditional method of disaster risk management in Bangladesh was based on the concept of providing relief and rehabilitation facilities after a disaster, but these did not contribute to the development process [5]. Now, the experts in the field of disaster risk management are emphasizing on the need of capacity building of the people for disaster risk reduction shifting out of this traditional concept.

The government of Bangladesh has implemented different regulative framework with the help of international donors for professionalizing and mainstreaming disaster risk management at all sectoral ministries; and to strengthen the capacity from national to community level for disaster risk management such as Standing Orders on Disaster 2010, Disaster Management Act 2012 and National Plan for Disaster Management 2010-2015. The disaster risk management vision of the government of Bangladesh is “to reduce the risk of people, especially the poor and the disadvantaged, from the effects of natural, environmental and human induced hazards, to a manageable and acceptable humanitarian level, and to have in place an efficient emergency response system” [6].

The large inland depression commonly known as the *haor* basin is situated in the north-eastern part of Bangladesh. The *haor* region is considered as one of the fragile ecosystems in Bangladesh and lags in the national socio-economic development of the country [7,8]. In addition, the Cooperative for Assistance and Relief Everywhere (CARE) Bangladesh has implemented several programs in the *haor* region of Bangladesh over the past decade to assist the local people in improving their livelihood conditions. Based on their findings, CARE Bangladesh has recommended to be prioritized to empower the poor community of the region building resilience through necessary interventions with GO-NGO collaborations [9].

Furthermore, the economic and social challenges of DRM at the micro-level in Asian countries particularly the poor and most vulnerable communities should be strengthened to respond to disasters by enhancing their resilience. Therefore, the main purpose of this study is to clarify the functionality of disaster risk management at community level focusing on a disaster-prone *haor* region of Bangladesh. This study contributes to the existing literature of community-based disaster risk management in the context of rural Bangladesh and helps to formulate appropriate policy implications.

1.1 Existing Situation of DRM in Bangladesh

Bangladesh suffered an average annual loss of 1.8% of the country’s GDP due to natural disasters [10]. However, the country has made significant progress in recent decades in disaster risk management (Table 1) through collaborative

program implementations with national and international organizations by mainstreaming the disaster risk management in national policy level of all socio-economic sectors [10].

Bangladesh has placed emphasis on working with various stakeholders to reduce disaster risk by building strategic and collaborative partnerships with all relevant governmental agencies, NGOs, academic institutions, and the donors. In this case, the government is primarily responsible for directing national policies, programs, and budgetary functions. In order to properly implement the National Disaster Risk Management Plan, key issues of DRM policy and practice such as capacity building, livelihood security, gender mainstreaming and community empowerment need to be addressed [6].

Bangladesh has already achieved some milestones regarding disaster risk management through Comprehensive Disaster Management Program (CDMP) project from 2004 to 2014 with the help of international donors especially UNDP. These includes- (i) mainstreaming disaster risk management system into planning and budgeting process of Bangladesh (ii) empowering communities at risk (DRM committees at different levels) (iii) strengthening emergency response systems (iv) incorporation of DRM issues at school level curriculum (v) developing early warning system etc. The disaster risk reduction mainstreaming framework of Bangladesh (Fig. 1) which already adopted at policy and practice. Based on the report on functionality assessment of union disaster management committees (UDMCs), it needs more effort to fully

Table 1. Major cyclones that hit the Bangladesh in last two decades

Date	Maximum wind speed (km/hr)	Death toll (persons)
15/11/2007 (Sidr)	223	3,363
25/05/2009 (Aila)	192	190
16/05/2013 (Mohasen)	100	17
21/05/2016 (Roanu)	128	26
30/05/2017 (Mora)	146	03
04/05/2019 (Fani)	250	17
09/11/2019 (Bulbul)	140	25
22/10/2022 (Sitrang)	136	35

Data source: Bangladesh Metrological Department and Wikipedia

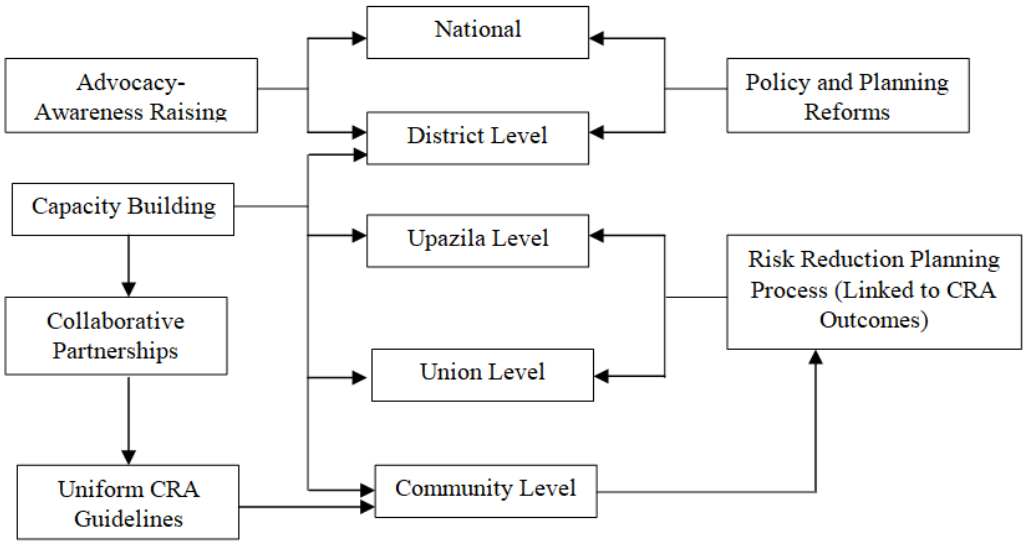

Fig. 1. Disaster risk reduction mainstreaming framework (Source: Bangladesh National Plan for DM 2010-2015)

operationalize of the DRR mainstreaming framework at union as well as community level [11].

2. SELECTIVE LITERATURE REVIEW

2.1 Community Based Disaster Risk Management Approach

At the local level the communities and local governments respond first to the natural disasters. Furthermore, they remain in the place even withdrawal of external assistance. Therefore, it is very important to strengthen the relationship between the local community and local government for better disaster risk management [12], and enhancing resilience [13] at the grass-root level. Thus, community-based disaster risk management (CBDRM) practices should be promoted through interlinkage of multiple disciplines at the local level [14,15,16,17,18] towards sustainable development. UNISDR [19] also strongly recommended the CBDRM at the local level in the Hyogo Framework for Action (HFA). CBDRM focuses on a broader perspective of community-based risk reduction activities at all the stages of disaster management such as prevention, mitigation and preparedness, response, and recovery [20,21] and widely practiced all over the world with differences in regional perspectives [22].

Responses by governments and other agencies to disaster risk management have focused primarily on emergency response to affected populations and on structural mitigation—attempts to prevent hazards from flood defense technology. Although structural mitigation measures such as dams and tidal barriers will continue to play an important role in flood management, there is now also a strong trend towards advocating broader aspects of flood prevention and less reliance on engineering measures (Smith 2000) [4]. Pearce [23] suggested that local government must work to encourage community participation through education and consensus-building processes that increase citizen ownership of a particular disaster management plan.

3. METHODS

This is a qualitative research based on primary field survey. Primary qualitative data was collected through focus group discussions (FGDs) with union council[1] members during August 2019. Among the 13 members of union council 6 were present in the discussion session. In this study, we consider the same analytical tools (Appendix 1) as used in the functionality assessment report of union disaster management committees in rural Bangladesh [11].

4. RESULTS AND DISCUSSIONS

4.1 Target Area

This study was conducted in a rural *haor* area (Itna union under Kishoreganj district) of Bangladesh (Fig. 2). The *haor* area of Bangladesh has a fragile agro-ecosystem, the management of which is very important for the overall livelihood development of the people living in this region [7]. The socio-economic characteristics of the target regions is descried in Table 2 based on the statistical data.

4.2 DRM at community level

The summery of the results of focus group discussion with union council members are explained as follows. Flood and flash floods are identified as main disasters in the target area (Table 3). The union council members have knowledge about the local context of disaster risks because they are living in the area. In addition, they also introduced with the different legal infrastructure of disaster risk management as a responsible person under UDMC. The administrative capacity is weak in the target area (Table 4). Because, there are different barriers to enhance general administrative capacity of UDMC. Such as the lower level of education of union council members, lack of administrative skills and lack of cognition change in different aspects of administrative management in relation to DRM. Risk reduction capacity is moderate in the area. DMC did not organize any mock drill for awareness building or training for skill development of different stakeholders in DRM.

1 Union council is the grass-root administrative unite in rural areas of Bangladesh. The structure of union council is that, there should have 13 elected members (1 chairman, 9 general members, 3 women members in reserved seats). Based on the executive committee of union council the disaster risk management committee has been formed including other members of different stakeholders.

The UDMC is also weak in capacity to implement risk reduction schemes due to lack of proper planning and lack of budget. Capacity for early warning dissemination during warning period is weak (Fig. 3). However, there are few local practices to for example information sharing by individuals through families, friends and relatives etc. There is a disparity in the emergency response especially the relief distribution. The GO and NGO collaboration is weak in the region. According to Gilingham [9], there has been no organizational strategy to support the donor organizations for program development in the *haor* region to date. CARE Bangladesh's indicates that, given the unique environmental vulnerabilities and poverty profile of the *haor* region, there is a need for ongoing programming and a strengthening of the organization's portfolio as well as collaboration of each other in the region. Capacity to manage post-disaster period is also weak due to lack of proper loss and damage estimation in the locality and biasness in the distribution to support materials.

4.3 Needs to be Addressed at Community Level DRM

Rana el al. [28] clarified that the issues of gender, poverty, level of social capital and people's access to the local institutions are significant in their performance in DRM at community level in the *haor* region of Bangladesh. In another study, it is showed that the socio-political transformation for the women's empowerment in disaster risk governance in the region is also weak due to non-cooperation in the institutional structures [29]. In the discussion session, unfortunately, the following important points such as (i) recognition of women's role in DRM (ii) capacity building of poor farmers in DRM (iii) accumulation of mutual trust (linking social capital) among different stakeholders in DRM are not mentioned. However, the capacity building of poor farmers here might exclude women (because the awareness of union council members towards farmer is generally man not including their wife, mother, sister and daughter).

Table 2. Socio-economic characteristics of the study area

Indicators	Kishoreganj district	National	Data source
Total population	2911907	144043700	BBS [24]
% of population live in the rural areas	83.20%	76.76%	
Population density/km^2	1083	1203	
Gender ratio (male/female %)	97	101.24	
Household size	4.62	4.35	
Literacy rates (%)	41.18%	53.0%	
Annual household income (BDT)	187,854	202,724	BBS [25]
% Below the upper poverty line	53.50%	24.30%	BBS [26]
% Below the lower poverty line	34.10%	12.90%	
% of HH with access to improved sanitation facilities	41.10%	55.90%	MICS (2013)
% of HH with access to improved drinking water sources	100%	97.90%	
% of population with electricity	49.60%	57.0%	BBS [24]
Disaster recovery support (HHs received loans at post disaster period)	12.76%	16.99%	BBS [27]

Table 3. Hazards identified in the study area

Frequency	Hazards
Most frequently identified hazards	Flood, flash flood, cyclone, riverbank erosion
Less frequently identified hazards	Hail storm, earthquake

Table 4. Summary of the disaster risk management at different indicators

Indicators	Score (Out of 10)	Rating
1. DMC members conversant with disaster management issue	10	Good
2. General management/administrative capacity	3	Weak
3. Risk reduction capacity	6	Moderate
4. Capacity to implement risk reduction scheme	4	Weak
5. Capacity for early warning dissemination during warning period	5	Moderate
6. Emergency response capacity during disasters	7	Moderate
7. Capacity to manage post-disaster period	4	Weak

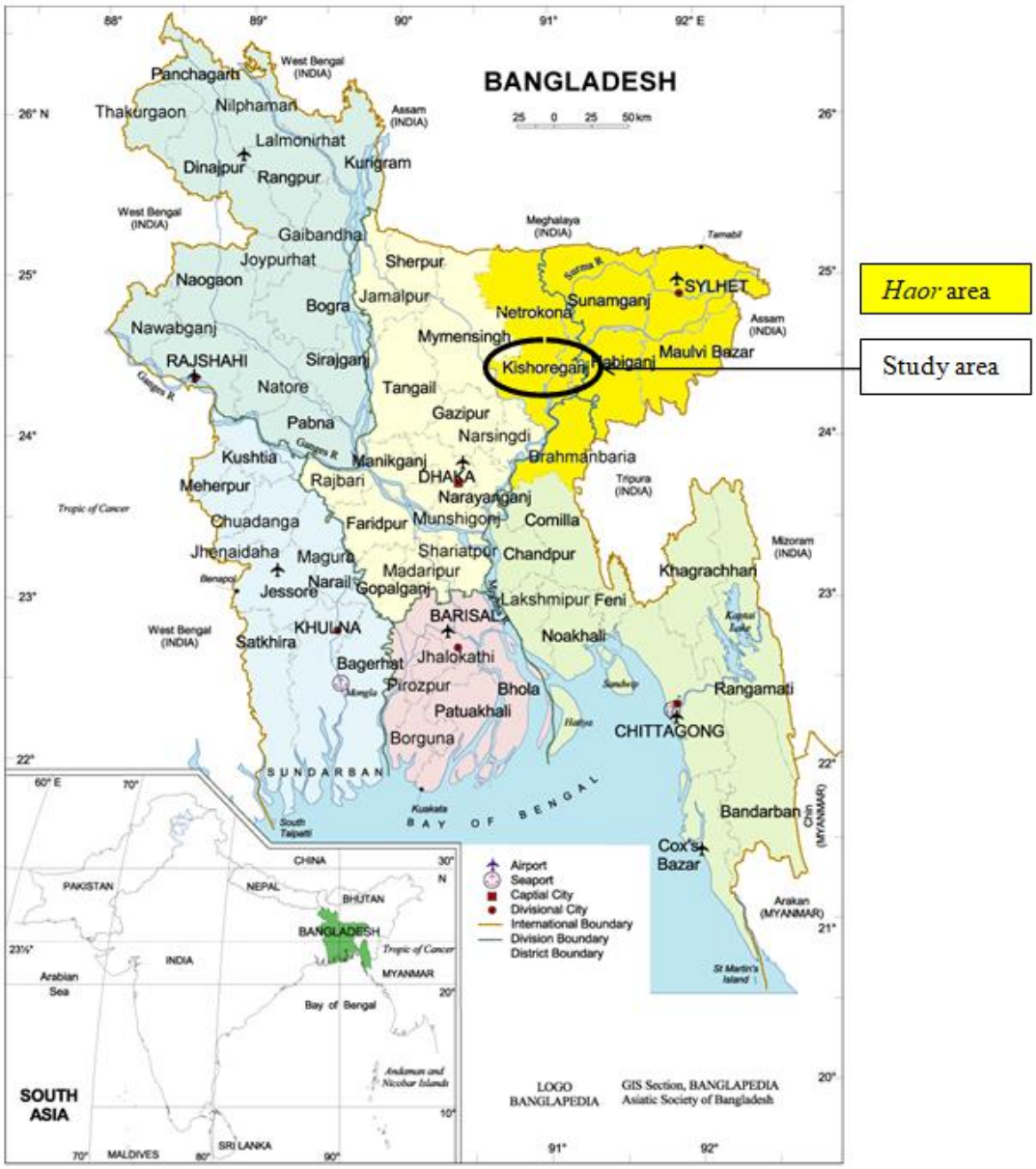

Fig. 2. Map of Bangladesh showing specific study are (Source: Banglapedia)

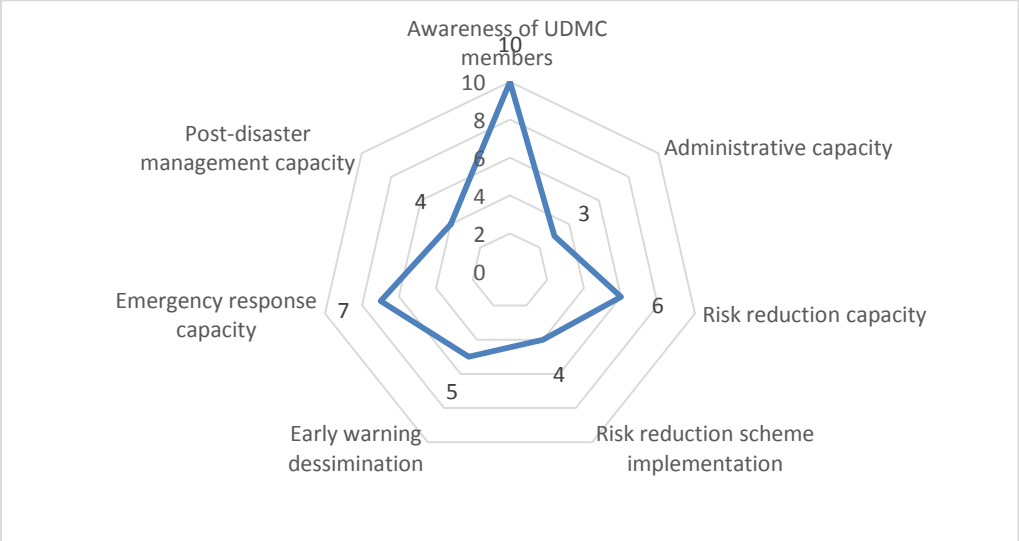

Fig. 3. Radar diagram of functionality of community in DRM

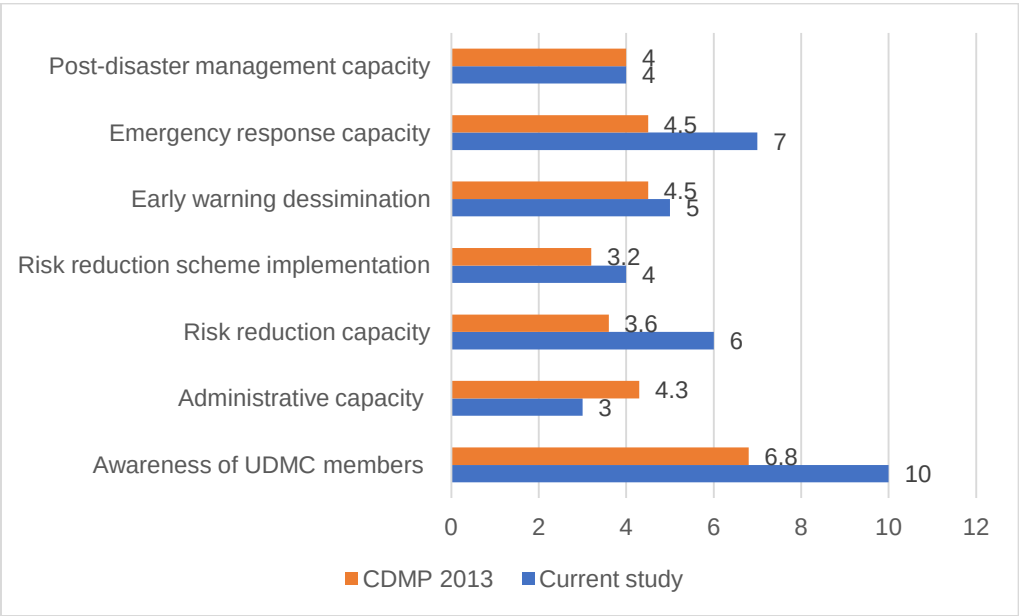

Fig. 4. Comparison of DRM functionality at community level between CDMP 2013 baseline report and current study

4.4 Changing Scenario of Functionality in DRM of Union Council

In the current study we can compare the present scenario with the baseline report of CDMP 2013 (Fig. 4). In some cases, significant improvement occurs such as awareness of UDMC members, risk reduction capacity, and emergency response capacity. However, the administrative capacity of union council is decreased by the time and no improvement in post-disaster management capacity.

5. CONCLUSION AND WAY FORWARD

The findings of this research clarified that capacity of community level organization especially union council should be increased in

relation to the disaster risk management at rural community level of Bangladesh towards sustainable development. Although building capacity for the local community is part of national policy, in practice there is a gap. The importance of community-level disaster risk management is increasing day by day and it should be linked to national-level planning. Around the world, there is an emphasis on building a resilience community for disaster management due to climate change. Therefore, the policy implications drawn from this research suggest that the government should pay more attention to improving the capacity building of the union council through decentralization of decision-making process and infrastructure development for better disaster risk management in rural Bangladesh. However, similar research should be carried out in other rural communities of different regions in order to generalize the results and formulate more appropriate policies in this regard. This will be our next research issue.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Alliance Development Works, UNU-EHS. World risk report 2015, Germany; 2015.
2. Srivastava N, Shaw R. Interrelationship of disaster and employment from the perspective of urban rural linkage in India. In R. Shaw and P. Tran, (ed) Environment disaster linkages, Bingley, UK: Emerald. 2012;145–164.
3. Collins AE. Linking disaster and development: Further challenges and opportunities. Environmental Hazards. 2013;12(1):1-4.
4. Wisner B, Blaikie P, Cannon T, Davis I. At risk: Natural hazards, people's vulnerability and disasters. 2nd edn. London: Routledge; 2004.
5. EC. Vulnerabilities and capacities of people to cope with disaster. European Commission. Handicap International, Bangladesh; 2007.
6. MoDMR. National plan for disaster management 2010-2015. Ministry of Disaster Management and Relief, Government of the People's Republic of Bangladesh, Dhaka; 2010.
7. Bokhtiar SM, Samsuzzaman S, Jahiruddin M, Panaullah GM. Agricultural development for fragile ecosystems in Bangladesh. Bangladesh Agricultural Research Council, Dhaka, Bangladesh; 2023.
8. MoWR. Master plan of haor area. Bangladesh Haor and Wetland Development Board, Ministry of Water Resources, Government of the People's Republic of Bangladesh, Dhaka; 2012.
9. Gillingham S. CARE Bangladesh program strategy: haor region 2015-2020. CARE Bangladesh, Dhaka; 2016.
10. MoP. 7th five-year plan FY2016-FY2020: accelerating growth; Empowering citizens. Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka; 2015.
11. CDMP. Report on functionality assessment of union disaster management committees. Comprehensive Disaster Management Project (CDMP-II), UNDP-Bangladesh; 2013. Available:http://pio.kushtiasadar.kushtia.gov.bd/sites/default/files/files/kushtiasadar.kushtia.gov.bd/law_policy/1a815dc6_1c3b_11e7_8f57_286ed488c766/UDMCs%20Capacity%20Assessment%20Report.pdf (Accessed on 20 January 2019).
12. Shaw R. Disaster risk management at local and community levels. In Ian Davis (Ed) Disaster risk management in the Asia and the Pacific, Routledge, New York; 2015.
13. Azad MAK, Uddin MS, Zaman S, Ashraf MA. Community-based disaster management and its salient features: A policy approach to people-centred risk reduction in Bangladesh. Asia-Pacific Journal of Rural Development. 2020;29(2): 135-160.
14. Maskrey A. Disaster mitigation: a community-based approach. Oxford, UK: Oxfam; 1989.
15. Victoria L. Community based disaster management in the Philippines: making a difference in people's lives. Bangkok: ADPC; 2009.
16. Shaw R, Okazaki K. Sustainability in grass-roots initiatives: Focus on community-based disaster management. Kobe, Japan: UNCRD; 2003.

17. Delica-Willison Z. Community-based disaster risk management: local level solutions to disaster risks. Tropical Coasts. 2005;12(1):66-73.
18. Kafle SK, Murshed Z. Community-based disaster risk management for local authorities: participant's workbook. Pathumthani, Thailand: Asian Disaster Preparedness Center (ADPC); 2006.
19. UNISDR. Chair's summary on fourth session on the GPDRR, people resilient planet. Geneva, Switzerland: UNISDR; 2013.
20. Krummacher A. Community based disaster risk management. Vienna: 22nd OSCE Economic and Environmental Forum; 2014.
21. Shaw R. Community based disaster risk reduction. Emerald, Bingley; 2012.
22. Niekerk DV, Nemakonde LD, Kruger L, Genade KF. Community-based disaster risk management. In Rodriguez et al. (ed) Handbook of Disaster Research, Handbooks of Sociology and Social Research, 2nd edn. Springer, Switzerland; 2018;411-429.
23. Pearce L. Disaster management and community planning, and public participation: how to achieve sustainable hazard mitigation. Journal of the International Society for Prevention and Mitigation of Natural Hazard. 2003;28(2): 211-228.
24. BBS. Population and housing census 2011. Bangladesh Bureau of Statistics, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka; 2011.
25. BBS. Report on agriculture and rural statistics 2018. Bangladesh Bureau of Statistics, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka; 2018.
26. BBS. Report on the household income and expenditure survey 2016. Bangladesh Bureau of Statistics, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka; 2016.
27. BBS. Bangladesh disaster-related statistics 2015, climate change and natural disaster perspectives. Bangladesh Bureau of Statistics, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka; 2015.
28. Rana S, Kiminami L, Furuzawa S. Analysis on the factors affecting farmers' performance in disaster risk management at community level: Focusing on a haor locality in Bangladesh. Asia-Pacific Journal of Regional Science. 2020;4(3):737-757.
29. Rana S, Kiminami L, Furuzawa S. Social innovation for women's empowerment in disaster risk governance: focusing on common interest groups in the *haor* region of Bangladesh. Studies in Regional Science. 2021;51(1):145-155.

APPENDIX 1

Table 5. Questions regarding disaster risk management at community (Union council) level

Indicators	Score	
Indicator-1: DMC members conversant with disaster management issue	**Yes**	**No**
1.1 DMC members are aware of the DM issues at local level	2	0
1.2 DMC members are acquainted with SOD	2	0
1.3 DMC members are aware of the DMC's responsibilities	2	0
1.4 DMC members can explain the responsibilities of DMC Chairman	2	0
1.5 DMC members can explain the responsibilities of DMC secretary	2	0
Indicator-2: General management/administrative capacity		
2.1 DMC has met the quorum once per month during normal period	2	0
2.2 DMC has met the quorum at least once per week during warning phase	1	0
2.3 DMC has met the quorum at least once per week during disaster period	1	0
2.4 DMC has met the quorum once per week during recovery phase	1	0
2.5 DMC maintains minutes of meeting held	2	0
2.6 DMC maintains separate files and books of records	2	0
2.7 DMC has internet facilities to use as and when necessary	1	0
Indicator-3: Risk reduction capacity		
3.1 DMC has organized mock drill/simulation for awareness building	1	0
3.2 DMC conducted CRA and document is available	1	0
3.3 DMC arrange training/workshop on disaster issue	1	0
3.4 DMC prepared contingency plan and document is available	1	0
3.5 DMC prepared risk and resources map and displayed it	1	0
3.6 Copy of RRAP has been sent to UzDMC	1	0
3.7 DMC prepared and submitted at least one RR scheme for funding	1	0
3.8 DMC has prepared community based high land for emergency shelter use	1	0
3.9 DMC has organized volunteer group to work in emergency	1	0
3.10 DMC has organized training for volunteer	1	0
Indicator-4: Capacity to implement RR scheme		
4.1 Small scale RR scheme/ADP schemes are selected from RRAP/development plan	2	0
4.2 DMC has initiated local level fund generation for RR schemes	2	0
4.3 PIC was formed in DMC meeting	1	0
4.4 PIC meeting have been held	1	0
4.5 PIC minutes exist	2	0
4.6 Project account has been operated by joint signature of PIC members	2	0
Indicator-5: Capacity for early warning dissemination during warning period		
5.1 Volunteers have been prepared for disseminating early warning messages	2	0
5.2 DMC has megaphone and signal flags for early warning messages	2	0
5.3 DMC checked emergency shelter readiness on receiving early warning	2	0
5.4 DMC has ensured essential services and security for pre-determined emergency shelter center	2	0
5.5 DMC has established emergency coordination with other organizations/agencies	1	0
5.6 DMC prepared to do list for use at warning phase	1	0

Indicators		Score
Indicator-6: Emergency response capacity during disaster		
6.1 DMC made volunteers mobilize for rescue operation in last disaster event	2	0
6.2 DMC organized response team to evacuate people, distribute drinking water, food and lifesaving kits	2	0
6.3 DMC ensured special security measures for women	1	0
6.4 DMC ensured special security measures for children	1	0
6.5 DMC ensured special security measures for persons with disabilities	1	0
6.6 DMC ensured quick funeral of corpses and buried animal dead bodies in last disaster	1	0
6.7 DMC coordinated relief activities with GO-NGO	2	0
Indicator-7: Capacity to manage post-disaster period		
7.1 DMC collected loss and damage statistics as per the guideline in last disaster	2	0
7.2 DMC arranged distribution of materials among the people affected	2	0
7.3 DMC facilitated the return of displaced people	2	0
7.4 DMC supported injured people in getting proper treatment	2	0
7.5 DMC prepared distribution report and submitted to UzDMC/Donor	2	0
Rating based on score: 0-4 Weak; >4-7 Moderate; >7-10 Good		

Note: In this study the same data collection tool is used based on the report on functionality assessment of union disaster management committees [11]. The CDMP report is considered as the baseline for this study

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