

Strategies for Integrating Disaster Risk Reduction and Climate Change Adaptation in Bangladesh.

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Abstract

Climate Change is widely acknowledged for increasing the scale and intensity of disasters. A growing body of literature stresses the necessity to link Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) to make more efficient use of scarce resources and avoid overlapping efforts. However, in reality, integrating interventions for DRR and CCA remains a challenge because these two concepts incepted and sourced from, and are articulated in, distinctive researchers and practitioners. Little study has yet identified the strategies for effective integration of DRR and CCA. This study has identified the strategies for integrating DRR and CCA in Bangladesh. Key strategies include: i) managing more funds and ensuring better funding mechanisms; ii) better governance framework; iii) coordination and collaboration; iv) innovation and adaptation; v) integrating and updating policies; vi) integrating DRR-CCA in development work; vii) involving the community and listening to local voices; viii) a new platform for integrating DRR and CCA; ix) political will and leadership; x) prevailing harmony in power relations; xi) research, information and knowledge sharing; xii) sharing risks and insurance. These strategies are underpinned by the political economy- the nexus of influencing actors relevant to DRR and CCA. This study thus recommends the needs for an in-depth political economy analysis to identify re-oriented institutional arrangements, efficient governance frameworks, improved policies, and mechanisms for effective coordination among influencing actors to assist effective integration of DRR and CCA.

Keywords: Disaster Risk Reduction, Climate Change Adaptation, Integration, Challenges and strategies, Bangladesh.

Introduction

Disaster Risk Reduction (DRR) approach strives for reducing disaster risk through systematic and comprehensive efforts to address the causal factors of disasters (UNISDR, 2016). In contrast, Climate Change Adaptation (CCA) approach strives for adjustment to climate change stimuli or their effects, to reduce adverse impacts or exploit beneficial opportunities (IPCC, 2014). Consequently, actions and interventions from both approaches are intrinsically linked because climate change is one of the most critical factors affecting disaster risk. Literature discussed how increasing frequency and severity of climate-related extreme events can lead to devastating physical,

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environmental and socioeconomic impacts disrupting development objectives (IPCC, 2014). Examples include increased severity of floods with record-breaking water levels in some low-lying countries such as Bangladesh and Maldives (Huq, 2017), and other countries with coastal regions (Vitousek et al., 2017).

Historically, in many countries, climate change and disaster risk specialists have often operated in isolation from one another (Schipper et al., 2016, IPCC, 2012, Mitchell et al., 2010). Literature focused on similarities, differences, and the rationale for effective integration (Thomalla et al., 2009, Birkmann and von Teichman, 2010, Mercer, 2010). Other literature discussed the potential integration with development (Schipper and Pelling, 2006, Kelman and Gaillard, 2010), governance (Howes et al., 2014), and mainstreaming across many sectors. A growing number of actions that aim to develop mechanisms for effective integration of DRR and CCA (Birkmann and von Teichman, 2010, Mercer, 2010), and propose how integration could take place in developing or developed countries (Djalante and Thomalla, 2012, Setiadi et al., 2010)

Notwithstanding, integrating DRR and CCA remains a challenge in practice, little study has yet identified the strategies for effective integration of DRR and CCA. Consequently, the primary objective of this study is to identify the strategies for the integration of DRR and CCA in Bangladesh by exploring from the existing literature and opinions of the stakeholders of DRR and CCA (38 in-depth interviews) in Bangladesh. The study aims to answer two interrelated questions:

- a) What are the main arguments for integrating DRR and CCA stated in the literature?
- b) What are the strategies for the effective integration of DRR and CCA in Bangladesh?

Literature review on DRR and CCA integration: the theoretical concept and global progress

The practical barriers to effectively linking DRR, and CCA are categorised by Birkmann and von Teichman (2010) into the following three key areas: (a) scales, (b) knowledge, and (c) norms. Thus, integrating DRR and CCA more effectively requires further improvements combining across the different scales and reducing the mismatches on which the DRR, and CCA communities primarily focus. Other key challenges to effective integration of DRR and CCA found in the literature include- lack of capacities of actors and institutions (Bhatt et al., 2015), policy gaps (Howes et al., 2014, Ireland, 2010, Mercer, 2010), governance failure (IFRC, 2013, Johnston, 2014), lack of

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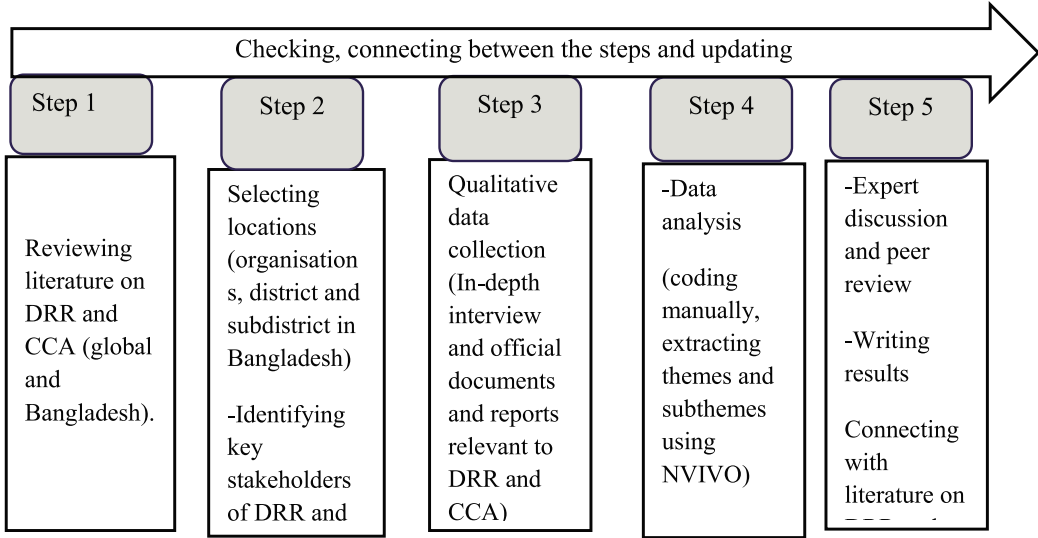
collaborations and coordination (Schipper, 2009b, Setiadi et al., 2010, Begum et al., 2014); and funding mechanisms (Solecki et al., 2011, Mitchell et al., 2010).

It can be concluded that limited literature has studied how the barriers in integrating DRR and CCA can be addressed in different country and contexts. In one of the few papers to address this topic, Ruiz-Rivera and Lucatello (2017) demonstrated the interplay of actors and institutions surrounding DRR and CCA, and their influence in integration, in Mexico. Other case studies are clearly necessary for understanding the nature, extent and consequences of interplay in different contexts. Djalante and Thomalla (2012) also discussed on which potential and actual actors should be involved in the process of DRR and CCA integration; and de Leon and Pittock (2016) showed the progress of DRR and CCA policy integration in the Philippines. More local level case studies are required to assess and evaluate the potential strategies for successful integration of DRR and CCA in different contexts.

Literature surrounding DRR and CCA integration in Bangladesh is limited. Literatures are either concentrated on DRR-related studies, where necessity of CCA is mentioned (Shaw et al., 2013b, Habiba et al., 2012, Kabir et al., 2018), or focused on CCA related studies, where necessity of DRR is discussed (Shaw et al., 2013a, Bahauddin et al., 2016, Vij et al., 2018). The studies focusing progress of integration in Bangladesh and challenges in integration are not found much. However, Shaw et al. (2012) has discussed the issues of DRR-CCA integration from Asian perspective, where Bangladesh-issue was also discussed. Similarly, Rahman et al. (2019) has showed a case of CCA (afforestation) in the rural area of Bangladesh, where DRR was considered. In the same vein, Ayers et al. (2014) discussed mainstreaming CCA in development activities. Therefore, it is necessary to explore the experience of DRR-CCA integration in Bangladesh and to identify the challenges in integration in Bangladesh in order to set the strategies for effective integration.

Now, how the progress of integration can be achieved? Significant progress in integrating DRR and CCA has happened, when Hyogo Framework 2005 and Sendai framework 2015 have included CCA, and United Nations Framework Convention on Climate Change (UNFCCC) has emphasized this (UNISDR, 2005, IPCC, 2014). IPCC reports also discussed the necessity of inclusion of DRR (IPCC, 2012). Internationally the UNISDR, UNFCCC, and IPCC are engaged in linking DRR and CCA, and country-level organisations such as DRR and CCA related ministries and institutions are also engaged in linking these two issues through policies and practices (Schipper, 2009a). The progress of linking is actively implemented by government, non-government, international funding institutions across the global, regional, national and local levels (Mitchell et al., 2010). The linking points and elements to integrate DRR

and CCA are international agreements, National level efforts, funding mechanisms, knowledge sharing, and practices (Street et al., 2018, UNFCCC, 2007, UNISDR, 2015). Considering these linking points and elements, studying and exploring the country and context level of DRR and CCA integration is necessary, however, to what extent Bangladesh has progressed along this path and what strategies DRR-CCA practitioner should take, are yet to be explored, which is the main focus of this study.



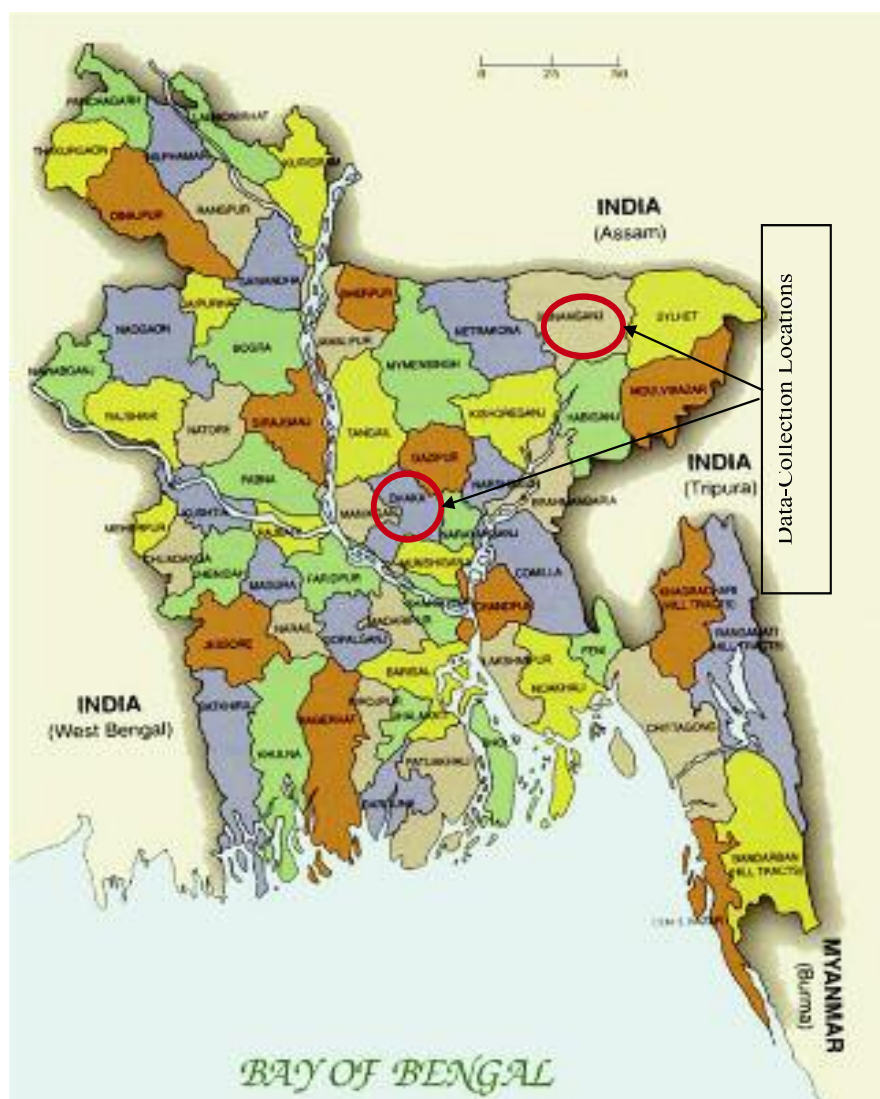
Research Methodology

This study follows a case study design (Creswell, 2014). The following qualitative data were used to identify the strategies for DRR and CCA integration in Bangladesh: a) 38 semi-structured in-depth interviews (Table-3), and b) data synthesised from literature.

Figure 1: Methodological flowchart for this study.

Figure-1 shows the methodological steps followed in this study. The study selected the participants, those have DRR and CCA-related insights and experiences purposively using a snowball-sampling method (Noy, 2008). Interviews started with key points of DRR-CCA stakeholders (MoDMR and MoEF), and from their refernces, the interviews continued until the new themes are emerging and the data saturation was reached (Crowe et al., 2011). A total of 38 in-depth interviews (IDIs) were conducted to understand the DRR, CCA and their integration efforts from the perception, experiences, and opinions

of stakeholders. The number of in-depth interviews became 38 because the efforts were to cover all relevant stakeholders of DRR-CCA at national and local levels, and to reach



the point where the definite catergoires and themes are evident (Noy, 2008). The study was conducted in Dhaka, the Sunamganj districts, and the Shalla subdistricts in Bangladesh. Sunamganj district is one of the most disaster-prone districts in Bangladesh, and Shalla is one of most disaster-prone, remote, and vulnerable Upazila of Sunamganj District (Bangladesh Bureau of Statistics, 2015). (Figure-2).

Participants	Ministry (Top-level)	Ministry (Mid-level)	Local (district, and subdistrict)	Total
Decision makers, and government officials	06	08	05	19
Political leaders, and public representatives				06
Community leaders				03
International organisations' staff				04
Academics, and consultants				04
Journalists				02
Total				38

Figure 2: Study Area and location

Table 3: *Distribution of in-depth interviews (IDIs) participants.*

IDI data collection took place from April 2016 to April 2018. The study started data collection with interview guides prepared both in English and Bengali. It was pretested and updated appropriately. Stakeholders were assured that they would remain anonymous. The duration of most of the interviews between 30 minutes, and one hour. We recorded digitally and taken notes simultaneously during the interview. This study received ethical approval granted by the Griffith University Human Research Ethics Committee (2017/446). Prior consent was taken before each interview.

The study used a qualitative thematic method to analyse the IDI transcripts. By reading and reading the transcript, familiarisation with the data was achieved. Then the transcript was coded to achieve intercoder reliability. Researchers developed a code list and identified DRR and CCA related themes (Braun and Clarke, 2006). These themes were explored by reiterated reading into the literature and interview-transcripts to form a comprehensive picture of the participants' experience, perceptions, and knowledge (Braun and Clarke, 2013). We tried to categorise and subcategorize the themes focusing on our research question. Emergent themes were noted as per the back and forth process of qualitative data analysis, and finalized the results and findings linking with the literature (Creswell, 2014). Data were managed by using NVIVO software 11 version.

Bangladesh setting**Institutions and Policies Surrounding DRR and CCA in Bangladesh**

By following the guidelines of the Hyogo Framework 2005 and the Sendai Framework 2015, DRR policies and strategies are clearly stated within national development policies in Bangladesh (Shamsuddoha et al., 2013). For accelerating DRR and CCA, the government has enacted several acts, circulated several policies, activated many agencies and formed some committees (Table 4). These initiatives demonstrate the sincere commitments of the government towards combating the adverse effects of climate change (Transparency International Bangladesh, 2017).

The National Plan for Disaster Management outlines the systemic and institutional mechanisms under which DRR and emergency response management are to be achieved in Bangladesh. It outlines its disaster management vision, strategic goals, and conceptual framework (Government of Bangladesh, 2014). The government of Bangladesh (GoB) has undertaken several important steps during the last few years for building up institutional arrangements from the national to the union levels (the last tier of local government) for effective and systematic disaster management, facilitating mitigation of the suffering of disaster victims.

Legislation, policies, and guidelines		Ministries, agencies, and committees	
DRR	CCA	DRR	CCA
-Disaster Management Act 2012 -National Disaster Management Policy 2015 -Food For Work Program Policy 2014 -Cyclone/Flood Shelter Construction & Management Policy 2011 -Standing Orders on Disasters 2010 -EGPP Implementation Guidelines 2013 -Test Relief Guidelines 2013 -National Plan for Disaster Management 2010-2015	-The Climate Change Trust Fund Act 2010) -National Adaptation Program of Action (NAPA)2005 -Bangladesh Climate Change Strategy and Action Plan 2009 -Bangladesh Environment, Forestry and Climate Change Country Investment Plan 2017 -Climate Budget Report 2018-19 -National Sustainable Development Strategy 2013	-National Disaster Management Council (NDMC) -Interministerial Disaster Management Coordination Committee - The Ministry of Disaster Management and Relief -National Disaster Management Advisory Committee -National Platform for Disaster Risk Reduction -Department of Disaster Management -District Disaster Management Committee -Subdistrict Disaster Management Committee -Municipal Disaster Management Committee	-National Environment Committee -National Steering Committee on Climate Change -National Committee for Climate Change -The Ministry of Environment and Forest -Department of Environment -Department of Forest -Climate Change Unit -Trustee Board of BCCTF -Ad-hoc working group on long term cooperation action under UNFCCC -Climate Change Focal Points in all Ministries -Climate Change wing under Foreign Ministry of Bangladesh (for negotiation)

Table 4: Legislation, policies, agencies, and committees surrounding DRR and CCA in Bangladesh (prepared by the author)

Figures 3 and 4 show that the DRR- and CCA-related organisations in Bangladesh work separately. Although the MoDMR and the MoEF are responsible for DRR and CCA respectively, both ministries deal with climate-induced disaster risks (Shamsuddoha et al., 2013). However, the National Disaster Management Council (NDMC), National Environment Committee (NEC) and Climate Change Unit (CCU) primarily guide all relevant organisations for linking DRR and CCA (Shaw, Mallick, & Islam, 2013b).

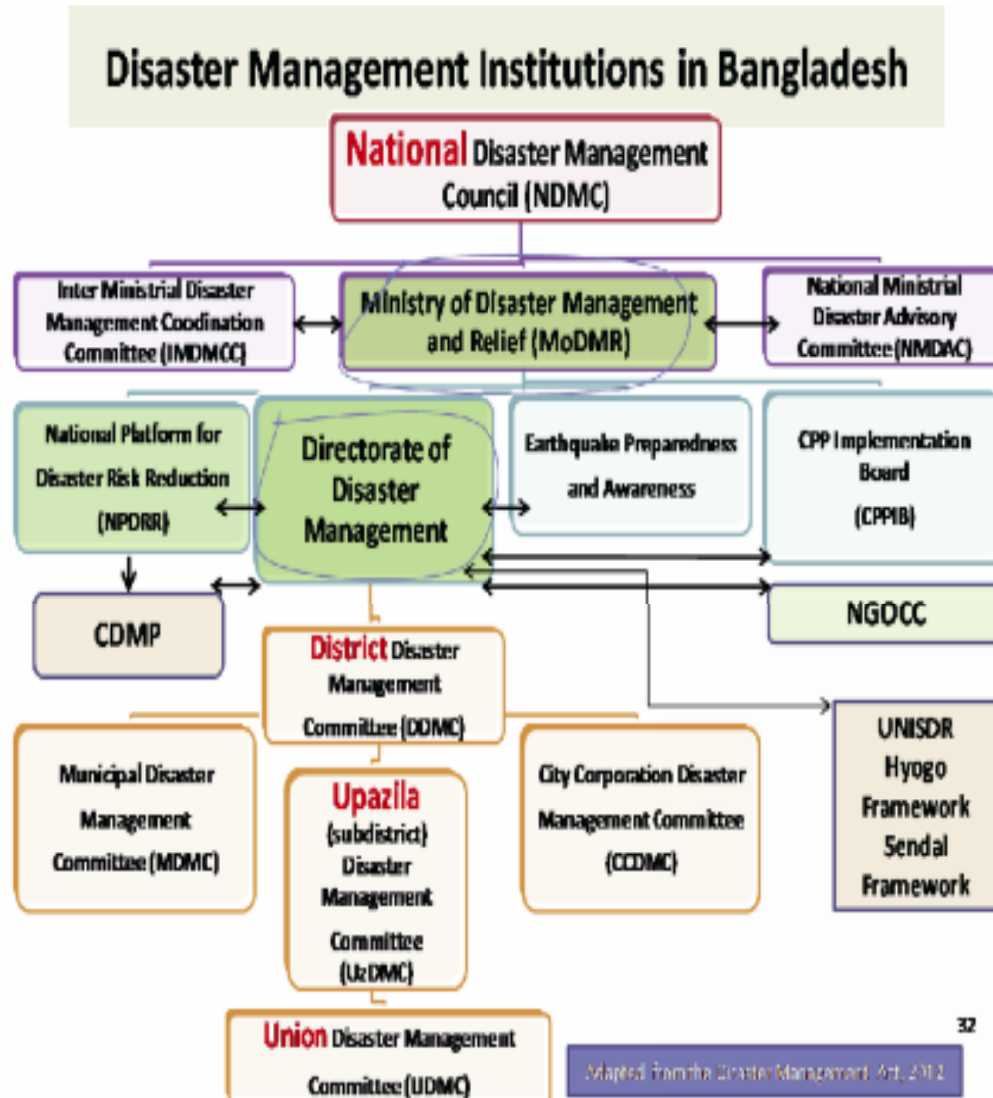


Figure 3: Organisations relevant to DRR in Bangladesh
(drawn by authors based on Shaw et al., 2013b; GoB, 2014; IIED, 2014; Tashmin, 2016).

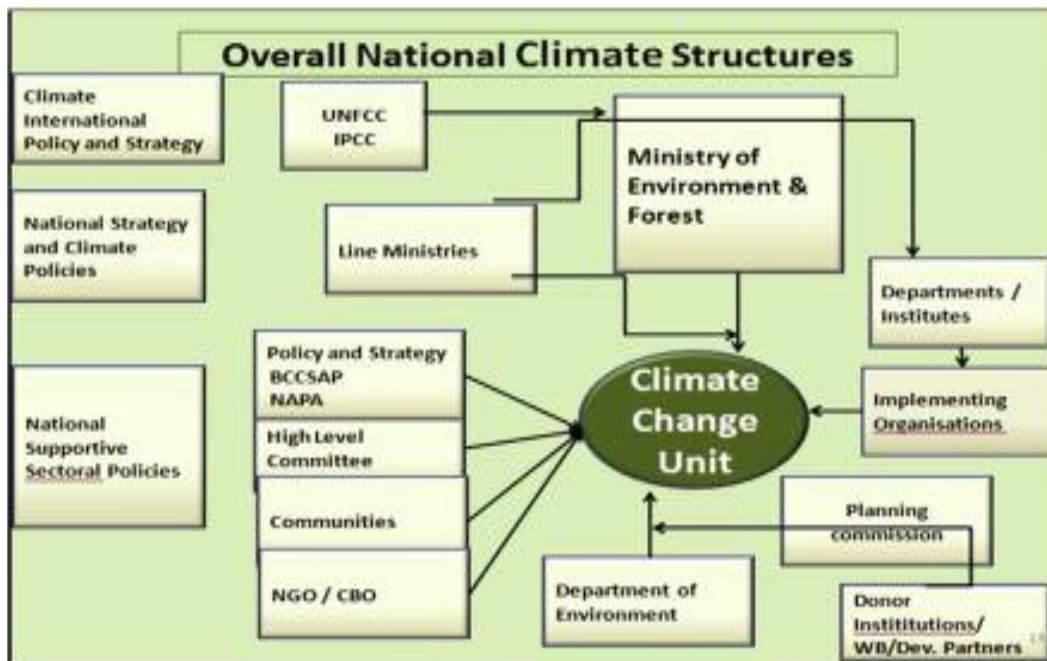


Figure 4: Institutions relevant to CCA in Bangladesh

(Drawn by the author based on UNDP, 2011; Shamsuddoha et al., 2013; Shaw et al., 2013).

The GoB is facing challenges with its limited resources to use domestic and international funds for climate change more efficiently (S. M. Rahman & Ahmad, 2016). This is when a range of ministries work closely to plan how and where the money is spent. Although it is not easy, a collaboration between ministries is needed here for budget management addressing DRR and CCA for planning, spending, and better monitoring, efficiency, and transparency (Tashmin, 2016), the latter three of which, in particular, it has yet to attain. Close links among the institutions of DRR and CCA are missing (IIED, 2014). Integrating DRR and CCA is necessary for reducing overlapping of the efforts and efficient use of resources in Bangladesh. Therefore, this study is focused to identify the strategies for integration of DRR and CCA.

Strategies Recommended for Integrating the Efforts of DRR- and CCA in Bangladesh

Based on the practical challenges in integrating the efforts of DRR and CCA, a range of strategies is derived from this analysis. Figure 5 shows the 12 key strategies for integrating DRR and CCA, explored from the IDIs. These key strategies are themes

derived from more than 100 subthemes. These subthemes are derived from more than 306 codes from transcripts of 38 IDI's. Key strategies include: i) managing more funds and ensuring better funding mechanisms; ii) better governance framework; iii) coordination and collaboration; iv) innovation and adaptation; v) integrating and updating policies; vi) integrating DRR-CCA in development work; vii) involving the community and listening to local voices; viii) a new platform for integrating DRR and CCA; ix) political will and leadership; x) prevailing harmony in power relations; xi) research, information and knowledge sharing; xii) sharing risks and insurance.

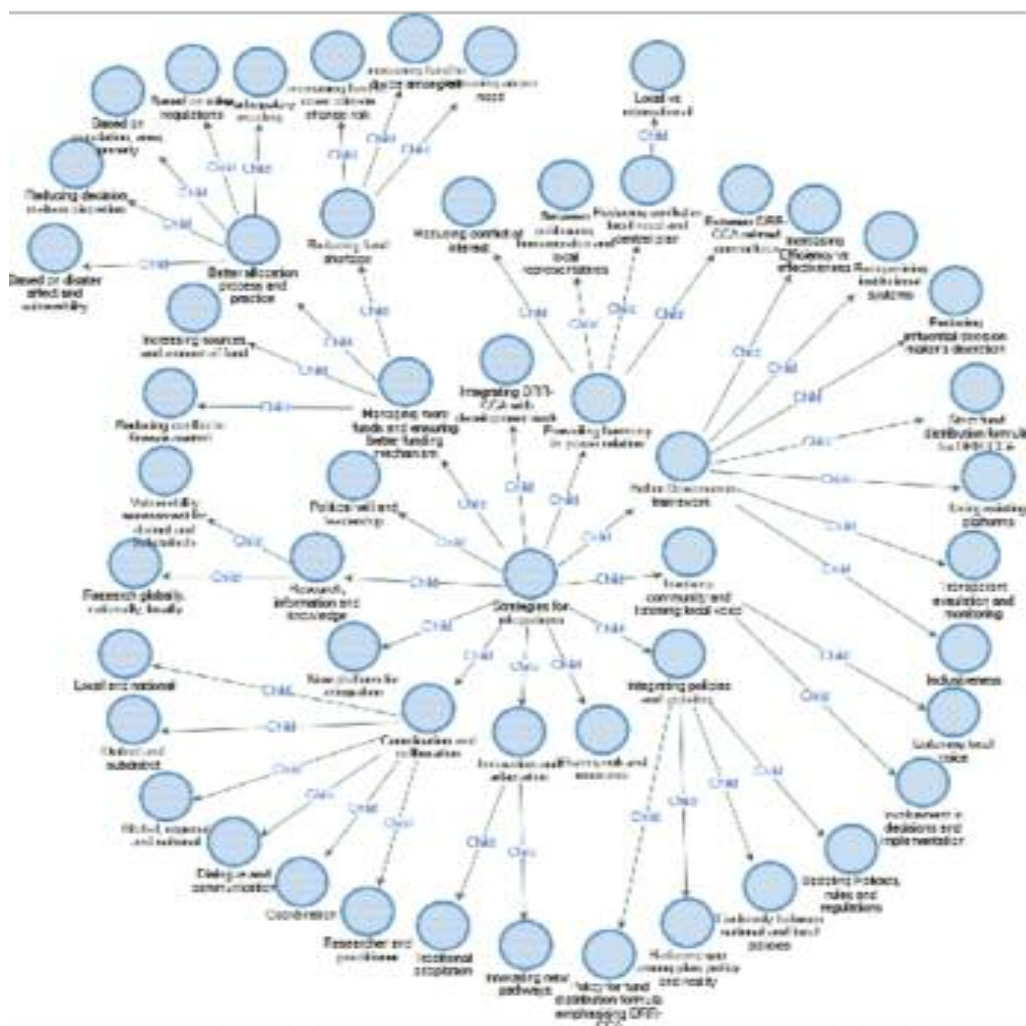


Figure 5: Key strategies for integrating the efforts of DRR and CCA (derived from IDIs using NVIVO software)

Figure 6 shows the highest code references found in each category of strategies extracted from the IDIs. However, if a strategy-theme has more coding references, this does not necessarily mean that it is the most effective or important strategies to address challenges. A strategy holding fewer coding references could be quite a important one, in reality. Therefore, all of these strategies are discussed in the light of the literature and quotes from some of the IDIs which reflect the situation in Bangladesh.

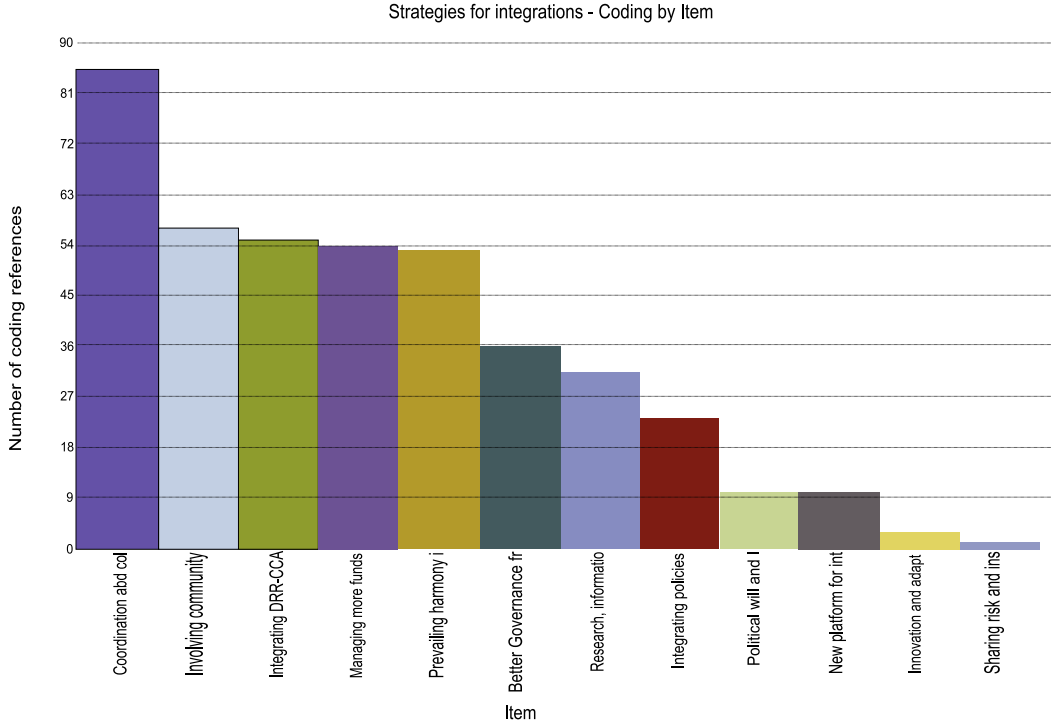


Figure 6: Key strategies-coding by items

Managing more Funds and Ensuring Better Funding Mechanisms

Both DRR- and CCA-related initiatives are struggling with a scarcity of funds, interviewees stated. They also said that more funds need to be mobilised from national revenue, and from development partners and global funds such as disaster related funds, the Green Climate Fund and the Climate Resilience Fund. This is because existing funds cannot cover the necessities for all districts and subdistricts. When the funds are divided, the amounts become too small to implement sustainable DRR or CCA efforts. Respondents also stated that public fund distribution for DRR and CCA needs to follow the established rules and policies so that they are spent in an appropriate manner at the right location and for the right beneficiaries. This is consistent with the literature.

Researchers have stated that cooperative funding and the efficient use of resources (Howes et al., 2014), collaborative funding practices (Ireland, 2010), and coherent funding structures (Begum et al., 2014; Birkmann & von Teichman, 2010) are needed for the effective integration of DRR- and CCA-related efforts.

Better Governance Framework

Participants stated that the inefficient use of resources, ineffective implementation techniques, and decision makers' discretionary use of power make it difficult to integrate the efforts of DRR and CCA. They also said that proper evaluation and monitoring, and strict controls to follow policies could benefit DRR, CCA and integrating their efforts. Researchers also argued that a shared framework for (de Leon & Pittock, 2016a), a sector level (health) governance framework (Banwell et al., 2018), reorienting institutional structures at the national level (Djalante & Thomalla, 2012), and decentralising authority and supervision (Seidler et al., 2018) can enhance DRR-CCA integration. Better governance in DRR and CCA involves bridging arrangements (Forino et al., 2017), increasing administrative capacity (Solecki et al., 2011) and flexible government structures and processes (Pilli-Sihvola & Väättäinen-Chimpuku, 2016).

Coordination and Collaboration

Participants mentioned that the MoDMR and the MoEF are mainly responsible for DRR and CCA respectively, with a lack of collaboration and coordination between ministries and departments. Regular dialogue, signing memorandums, having meetings, sharing views and communicating on issues for DRR and CCA among the actors of multiple sectors and departments could enhance the integration DRR and CCA. Respondents from district and subdistrict stated that the district-level Disaster Management Committee and sub-district-level Disaster Management Committee should coordinate their efforts on DRR and CCA. Similarly, the District Development Coordination Committee and Sub-district Development Coordination Committee should implement coordinated initiatives so that development works by all sectoral officers such as agriculture, education and cooperatives consider both DRR and CCA in their works. Literature recommended similarly that collaboration is necessary among institutions to increase resilience (SVRK Prabhakar, 2010) and expedite integration.

Innovation and Adaptation

In the IDIs, the view was expressed that new dimensions of disaster risk and climate change implications are evident. Therefore, innovative measures for DRR and CCA are necessary, such as accepting new techniques and procedures and adapting traditional methods for better addressing climate-related disasters. For example, a traditional

community centred early warning system works better in the hilly districts of Bangladesh where mobile networks are weak. Thus innovation and adaptation can amplify the process of DRR and CCA, for example, health-related innovation in DRR-CCA (Banwell et al., 2018) and merging science and knowledge surrounding DRR-CCA (Seidler et al., 2018).

Integrating Policies and Updating

Interviewees said that the analysis of policies demonstrates that some DRR-CCA policy integration in Bangladesh has been significantly achieved. However, as DRR-CCA integration connects all other sectors and ministries, all relevant rules, policies guidelines and regulations should accept and comply with the necessity of DRR-CCA integration. They also said that conformity between local and national policies and similarities between global guidelines and national actions should be achieved. Respondents also suggested that the guidelines and mechanisms should be appropriately adjustable to the need of each district and subdistrict. Therefore, all relevant DRR-CCA policies need to be regularly evaluated, integrated and updated. An increased convergence in DRR-CCA policies (Seidler et al., 2018), avoiding fragmented policies (Howes et al., 2017), and a shared policy vision (Begum et al., 2014; Ireland, 2010), are mandatory for DRR-CCA integration.

Integrating DRR and CCA in Development Work

In the IDIs it was claimed that development works are often implemented with DRR- and CCA-related funds but DRR and CCA are not included in the design of the projects. They suggested that all development works should include DRR and CCA measures, and this would enhance the mainstreaming of DRR and CCA in all sectors and promote the process of DRR-CCA integration. Researchers have similarly pointed out that development without reference to the local context can result in dualistic efforts (Birkmann & Pardoe, 2014), so mainstreaming DRR-CCA integration efforts in national and local development plans (Dovers & Hezri, 2010), and linked planning for development and DRR programs bring better results with less cost (Agrawala et al., 2003).

Involving the Community and Listening Local Voices

Interviewed local level practitioners and researchers argued for including the community in the decision-making processes of both DRR and CCA. Interviewed district and subdistrict level stakeholders suggested that the district- and sub-district-level local governments should clarify the divisions of tasks and responsibilities between different key government offices and should work together to implement disaster risk reduction and climate change adaptation following guidelines and funding distribution formula provided by the national government. They also claimed that the community are the ultimate

beneficiaries who deal with disaster risks and climate risks, so they should be consulted before the planning, designing, location selection and implementation of DRR- and CCA-related projects. Listening to local voices could increase the effectiveness of DRR-CCA integration. However, in the literature it has been stated that DRR has been operating at the community level for a long time whereas CCA is just beginning to embrace community based initiatives (Ireland, 2010). Community based DRR could thus be a suitable entry point for CCA measures (Lei, 2014; Mercer, 2010; Solecki et al., 2011). State-sponsored community participation (Howes et al., 2013) and using the experience of community based CCA (Kabir et al., 2018), can expedite DRR-CCA integration in Bangladesh.

New Platform for Integrating DRR-CCA

Some interviewed researchers and academics suggested the formation of a team of independent experts to develop and design the fund distribution formula in consultation with all relevant stakeholders at local, national and regional levels. This could reduce the conflict of resource grabbing by DRR and CCA actors and ensure the appropriate selection of locations and beneficiaries. Other researchers have stated that an independent body for DRR-CCA integration can increase cooperation among institutions (Ayers et al., 2014) and reduce the conflict between agencies (Banwell et al., 2018).

Political Will and Leadership

Interviewed practitioners stated that the National Disaster Management Council and BCCTF include almost all ministers and secretaries of the ministries. Therefore, without political will and leadership it is not possible to integrate DRR and CCA efforts. Key decision makers should appreciate the necessity for this integration to achieve the efficient use of resources and the effective implementation of DRR and CCA. In the literature it has also been argued that when issues are coupled with political interest, integration of decisions, works and programs surrounding DRR and CCA are difficult (Birkmann & Pardoe, 2014; SVRK Prabhakar, 2010). Therefore political will and leadership are necessary for increasing resilience to climate-related disaster in Bangladesh (Alam et al., 2011).

Prevailing Harmony in Power Relations

Interviewees agreed that both the MoDMR and the MoEF struggle and compete over funding sources and financial control. They experienced that tension also exists between the local government representatives and Member of Parliament at the local level, on decisions of who will receive funds, and to which locations where they will be allocated. Therefore, actors surrounding DRR and CCA need to consider the stated policies relevant

to properly address disaster and climate risks, and should act harmoniously in fund distribution and the implementation of projects. The power play which constantly operates between agencies locally, nationally and globally, needs to be curbed (de Leon & Pittock, 2016a). The struggle between the DRR-related ministries and CCA-related ministries for controlling funding mechanisms needs to be replaced with transparent processes (Dias, Amaratunga, & Haigh, 2018; S. M. Rahman & Ahmad, 2016; Transparency International Bangladesh, 2017).

Research, Information and Knowledge Sharing

In IDIs it was agreed that Bangladesh still does not have countrywide disaster and climate change related vulnerability assessments for each district and subdistrict. Therefore, they argued for more research locally, nationally and regionally which could be effectively used for funding distribution, project making, and future actions. Interviewees also stated that with Bangladesh's vast experience on DRR, this could complement the scientific on dealing with climate change impacts, which in Bangladesh' case, is still scant. Thus, experiences from both DRR and CCA should be shared. This is consistent with other studies. Participants also claimed that global and regional organisations, and largest carbon emitting countries should invest in assessing regional and global disaster risks and climate risks. These assessment reports should be disseminated to the relevant authorities in vulnerable countries and regions. A reduction of the knowledge gap between DRR and CCA is needed for DRR-CCA integrated planning (Hallegatte et al., 2018) and scientific research organisations surrounding DRR-CCA can build cooperative networks and translate research findings in applicable actions (Forino et al., 2017; Thomalla et al., 2009).

Sharing Risks and Insurance:

Respondents stated that sharing risks from disaster and climate change is being implemented in many countries. However, Bangladesh still does not have such practices and mechanisms. Bangladesh should initiate and implement those experiences from countries where this has already occurred. Some researchers also suggested insurance as an effective risk management tool which is a cost effective way of risk mitigation through DRR and CCA mechanisms such as through building regulations and land-use planning (SV Prabhakar, Abu-Bakar, Becker, Pereira, & Solomon, 2015; Wamsler & Lawson, 2011).

Discussion and Conclusion

This case study, based on findings from IDIs with key stakeholders, supported by review of the literature, institutions and relevant policies, has clearly outlined common concerns of DRR and CCA, and identified the strategies for integration of DRR and CCA in

Bangladesh. The common concerns of both approaches are: climate-related disaster-risks and uncertainties, increasing resilience, reducing vulnerabilities, focusing on similar communities, and engaging with similar socio-economic and governance apparatus. Linking these approaches should reduce the overlapping efforts, and increase efficient use of scarce resources. Key strategies include: i) managing more funds and ensuring better funding mechanisms; ii) better governance frame work; iii) coordination and collaboration; iv) innovation and adaptation; v) integrating and updating policies; vi) integrating DRR-CCA in development work; vii) involving the community and listening to local voices; viii) a new platform for integrating DRR and CCA; ix) political will and leadership; x) prevailing harmony in power relations; xi) research, information and knowledge sharing; xii) sharing risks and insurance.

Previous studies also found many of these strategies in the integration of DRR and CCA, including: better governance in Australia (Howes et al., 2014); harmonious coordination and collaboration in Indonesia (Dwirahmadi et al., 2013, Gaillard et al., 2013), policy integration in South Asia (Mall et al., 2019); involving communities in local governments (Forino et al., 2017), vulnerability and risk assessment and knowledge sharing in the Philippines (Banwell et al., 2018), mainstreaming DRR and CCA in small island developing states (Robinson, 2019) and implementing ecosystem based DRR and CCA in Rio De Janeiro (Lange et al., 2019). Our study has contributed new insights by exploring all possible strategies for DRR and CCA integration in Bangladesh.

Based on the strategies identified from the IDIs, this study identified the 12 strategies for the effective integration of DRR and CCA in Bangladesh. While we hold that the results and findings from this case study from Bangladesh remain valid and interesting and that lessons can be learned from this, it is likely that some of these findings can be generalised to other low-income resource-constrained countries that share the socio-economic-cultural features of Bangladesh. Notwithstanding this limitation, we argue that this Bangladesh case study sheds light on the effective integration of DRR and CCA.

The practical insights and local dynamics found in this study should serve as a guide to stimulate policymakers and practitioners and assist them in taking the steps required to foster effective integration of DRR and CCA in Bangladesh. In reality, is there a political desire to attempt different strategies to link DRR and CCA considering social issues, equality, and equity in allocation? These important overarching questions should be addressed further in future research. These will further facilitate the practitioners of both approaches to take decisions for reducing overlapping of efforts and increasing efficiency.

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