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Disaster Management Discourse in Bangladesh: A Shift from Post-Event Response to the Preparedness and Mitigation Approach Through Institutional Partnerships

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1. Introduction

The discourse of disaster management has undergone significant changes in recent decades and their effects have been profoundly felt in the developing world, particularly in terms of reduction in the loss of human lives. In this chapter, we concentrate on the evolution of disaster management approaches in Bangladesh and the method of their implementation by mobilizing institutions as a case in the developing world. The geographical location of Bangladesh in South Asia, at the confluence of three large river systems – the Brahmaputra, the Ganges, and the Meghna – and north of the Bay of Bengal, renders it one of the most vulnerable places to floods and cyclones. Human-induced climate change exacerbates the problem, with its already manifested effects and the predicted rise in sea level of 0.3 m to 0.5 m by 2050 [1, 2, 3]. Climate models have revealed that the effects of climate change are not only affecting individual countries, but resulting in increased climate variations at regional levels [4]. Bangladesh, as part of South Asia, is likely to experience more variations in climate regimes, as well as more extreme weather events.

Bangladesh is the most densely populated country in the world, except city states, with more than 1,000 people per sq km [5]. Agriculture, which provides a quarter of the gross domestic product (GDP), depends largely on timely monsoon rainfall and regularity in seasonal fluctuations. In the period 1970–2004, about 0.7 million people lost their lives due to natural disasters, and economic losses totaled about US \$5.5 billion [6, 7, 8, 9]. The cyclone of 1970, in the coastal areas of what was then East Pakistan, alone claimed over half a million lives. Again, the 1991 and 2007 cyclones caused the loss of about 149,000 and 3,406 people respectively. In recent years, the frequency of extreme floods has increased, as has the corresponding economic loss. The flood in

July 2004 was the most devastating – with an economic loss of about US \$2.2 billion [5]. In terms of GDP, this loss was less than what the world's poorest countries faced during the 1985–99 disasters – a loss of 13.4% of combined GDP [10]. But the loss in Bangladesh amounted to an immense step backwards in development efforts. The floods in 2007 inundated about 36% of the total area in 57 out of 64 districts [11] and affected at least 4.5 million people [12].

Because of the extreme vulnerability of the people in general and of the economy to natural disasters, various regimes of the government of Bangladesh (pre- and post-independence) have developed an institutional infrastructure to deal with natural hazards and their potential losses [13, 14]. Traditionally, the disaster management approach in the country has been to respond to disaster in the aftermath of the events. Nonetheless, the ever-increasing human and economic costs have raised serious questions about such approaches. Also, flood-disaster management has relied heavily on structural engineering and post-flood relief operations. Overall, such a post-facto approach has failed to effectively deal with the problems of disaster loss.

In recent years, there has been a shift to recognize the critical roles of non-structural measures as well as pre-disaster mitigation and preparedness. These initiatives recognize the roles of different stakeholders. For example, the Disaster Management Act of 1998 acknowledges the capacity of affected populations [15]: “An event, natural or man-made, sudden or progressive, that seriously disrupts the functioning of a society, causing ... such severity that the affected community has to respond by taking exceptional measures and is on a scale that exceeds the ability of the affected people to cope with using only its own resources.” Disaster management warrants more than relief and recovery: it should be part of development planning, without which the loss of life and property is likely to intensify. It is recognized that institutional partnerships can be effective when they involve all stakeholders – government, local communities, NGO/CBOs, media, the private sector, academia, neighboring countries, and donor communities.

In this study, we examine the extent and effectiveness of institutional partnership from the perspective of a shift from a managerial approach to an approach using participatory, collective decision-making and resource-sharing to manage disaster risk. Since community members are the direct and most seriously affected victims, effective and sustainable partnership requires a change from a partnership approach based on equality to a focus on the community [16]. Our central concerns are to assess who decides, at what level, and how. There has been only very limited analysis of the shifting approaches and of how institutions at different levels are presently functioning in Bangladesh. Is this mechanism based on partnership, with collective decision-making? Is a culture of working together on a national cause such as disaster management evolving? How functional are these elaborate institutional mechanisms? What is the role of the private sector or the knowledge stakeholders? How can an effective partnership be built into disaster management? These are questions we examine in this chapter.

2. Methodology

Our research examines whether the elaborate institutional mechanisms of disaster management in Bangladesh reflect the partnership of stakeholders. For this purpose, social science

policy analysis seemed useful. Obtaining reliable quantitative data on activities of both government and NGOs is a chronic problem in Bangladesh; our research therefore applied qualitative, rather than quantitative, tools and techniques.

Both primary and secondary data sources were used for empirical investigation and policy analysis. To collect the primary data from local communities, we applied a case study approach which employed participatory rural appraisal tools, such as focus group discussions (FGDs), household interviews and key informant interviews, in two coastal communities of Bangladesh severely affected by Cyclone Sidr. We analyzed data procured from a total of 162 households distributed across eight villages, which were randomly selected to conduct the interviews and FGDs. We received 100% response from the targeted households for household interview. A random sampling procedure was followed to select households from the complete list of households in the selected villages for interview. Households were proportionately selected according to the size of the villages, and household heads were interviewed. Eight FGDs were carried out by administering a semi-structured questionnaire to each village.

For policy analysis, we relied chiefly on secondary data, which were supplemented by primary data. Because Bangladesh has experienced numerous devastating cyclones, as well as long-lasting floods that have caused immense suffering to people and damage to properties in recent decades, we relied on secondary data on the relevant disaster response and management policies. Official documents from the government and donors, study reports from NGOs and other organizations, journal articles, newspaper clippings, TV reports and documentaries, and internet resources from reliable and responsible sources provided additional information for our analysis. To ensure openness in discussing sensitive issues, we used informal discussions with stakeholders at different levels. Through personal contacts and over the internet we collected reports and documents from government agencies, NGOs, and donors in Bangladesh, such as the Bangladesh Disaster Preparedness Centre (BDPC), the Disaster Forum, the Disaster Management Bureau, the Sustainable Development Resource Centre, and the United Nations Development Program (UNDP).

3. Shifting approaches in disaster management

In recent decades, government agencies, non-governmental organizations (NGOs) and local communities in Bangladesh have undertaken various measures to mitigate the impacts of natural disasters, including floods and cyclones, on the people, economy and society. The concept of developing national preparedness, as opposed to post-event response, to disasters like floods and cyclones evolved after the floods of 1988 and the devastating cyclone of 1991. The main argument behind this shift was that if people were well prepared for frequent disasters they would minimize their impacts, resulting in a reduced need for relief and rehabilitation. It was also strongly felt by the public institutions that if disaster preparedness could be integrated in the socio-economic development process at household, community, regional and national levels, it would build the long-term capacity of the community to mitigate risk and vulnerability to disasters [17]. The aim of the shift also included changing

disaster management approaches and measures from structural engineering interventions to the social dimensions and community partnerships.

The stated significant change in emergency and disaster management approaches demanded institutional restructuring in the governance portfolios. Consequently, the government of Bangladesh, led by the Ministry of Disaster Management and Relief, has undertaken various steps in the form of policy, strategy and programs considering the concept of disaster management through mitigation, preparedness, recovery and rehabilitation. The government established the Disaster Management Bureau (DMB) under the Ministry of Disaster Management in 1993 to promote disaster prevention, mitigation and preparedness; to provide guidelines; and to organize training and awareness for the concerned people and stakeholders to mitigate the impacts of disasters. Currently, the DMB has focused on risk reduction through community mobilization, capacity-building and linking risk reduction with the socio-economic development of the poor and vulnerable groups and with developing the DMB's partnership with other government agencies, NGOs and international organizations.

Alongside the development thinkers, international development partners (such as UNDP, DFID, Oxfam GB, USAID, Care International, Caritas) and local NGOs which are concerned with, and are experienced in, disaster management in Bangladesh, the government has promoted the approach of capacity-building and disaster preparedness at all levels. A call for institutional partnerships therefore stemmed from both the government as well as non-governmental and civil society organizations. A few key policy planners and senior government officials have also favored this new thinking and reflected this through the renaming of the Ministry of Relief and Rehabilitation to the Ministry of Disaster Management and Relief. In 1993, the Ministry of Disaster Management then established the Disaster Management Bureau (DMB) and the government set up a national council and various committees at national, district, *upazila* (sub-district) and union (local council) levels, for overall disaster management preparedness [17]. The implications of this institutional restructuring were manifold, and evolved through a sequence of placing increasing emphasis on institutional partnership and community-based disaster management (CBDM).

3.1. Institutional Restructuring to Reflect a Shift in Disaster Management

In order to manage the consequences of natural disasters, formal public policymaking institutions in Bangladesh have formulated a well-developed mechanism (Figure 1) at national and field levels. The factors that led to such a development can be explained as follows:

- a. the severity of the consequent casualties has led to motivations at local, national and international levels to address the issue;
- b. the recurrent disasters created serious development setbacks: loss in the production and infrastructure sectors set back the affected regions and the country; and
- c. in order to attract external investment, the minimization of disaster risks and vulnerabilities warranted intervention at the policy level.

In Bangladesh, at the national level, four high-profile bodies were established for the multi-sectoral coordination of emergencies associated with environmental disasters as well as disaster management in general: the National Disaster Management Council (NDMC), headed by the prime minister; the Inter-Ministerial Disaster Management Coordination Committee (IMDMCC), led by the minister of food and disaster management; the National Disaster Management Advisory Committee (NDMAC), headed by a specialist nominated by the prime minister; and a Parliamentary Standing Committee on Disaster Management to supervise national policies and programs. The common missions of these bodies have been to provide policy and management guidance and the macro-coordination of activities, particularly relief and rehabilitation.

Presently, the lead actor in disaster management is the Ministry of Disaster Management and Relief (MoDMR) until 2002. It has the role of inter-ministerial planning of disaster management and coordination and of responding in the event of a disaster. Under the MoDMR, there are two line agencies, the Disaster Management Bureau (DMB) and the Directorate of Relief and Rehabilitation (DRR). The DMB is a small professional unit at the national level that performs specialist functions, working with district and *upazila* (sub-district) administrations and line ministries under the overall guidance of the IMDMCC. It is a catalyst for planning, for arranging public education, and for organizing the systematic training of government officers and other personnel from the national down to the union (local council) or community level. The DRR manages the post-disaster provision of relief and rehabilitation. At present, it leads risk reduction at the local community level.

Among all the other ministries, the Ministry of Water Resources (MoWR) plays a vital role in flood management. It is involved in the planning of water resources, including planning for water-related natural disasters such as cyclone protection, flood proofing, riverbank erosion control and drought management, although the mitigation of disasters remains beyond their mandate. The Flood Forecasting and Warning Center (FFWC), under the Bangladesh Water Development Board (BWDB) of the MoWR, plays an important role in providing early warning about impending floods to the agencies involved.

In the areas of both cyclone and flood hazards, the Bangladesh Red Crescent Society (BRCS) and various donor agencies play important roles. The Cyclone Preparedness Program (CPP) was established in 1972 following the devastating cyclone of 1970, under an agreement between the BRCS and the government of Bangladesh, with an aim to undertake effective cyclone preparedness measures in the coastal areas. CPP, under the BRCS, has a joint management structure, with two committees, *viz.* a 7-member Policy Committee headed by the Minister of MoFDM, and a 15-member Implementation Board led by the Secretary of the MoFDM. Now the CPP has about 33,120 trained volunteers, including 5,520 women [18].

Besides, the government has a "standing order" for natural disasters (mainly for floods and cyclones), which was last updated in August 1999. The standing orders are followed by all ministries, divisions/departments and government agencies during normal times, precautionary and warning stages, the disaster stage and the post-disaster stage.

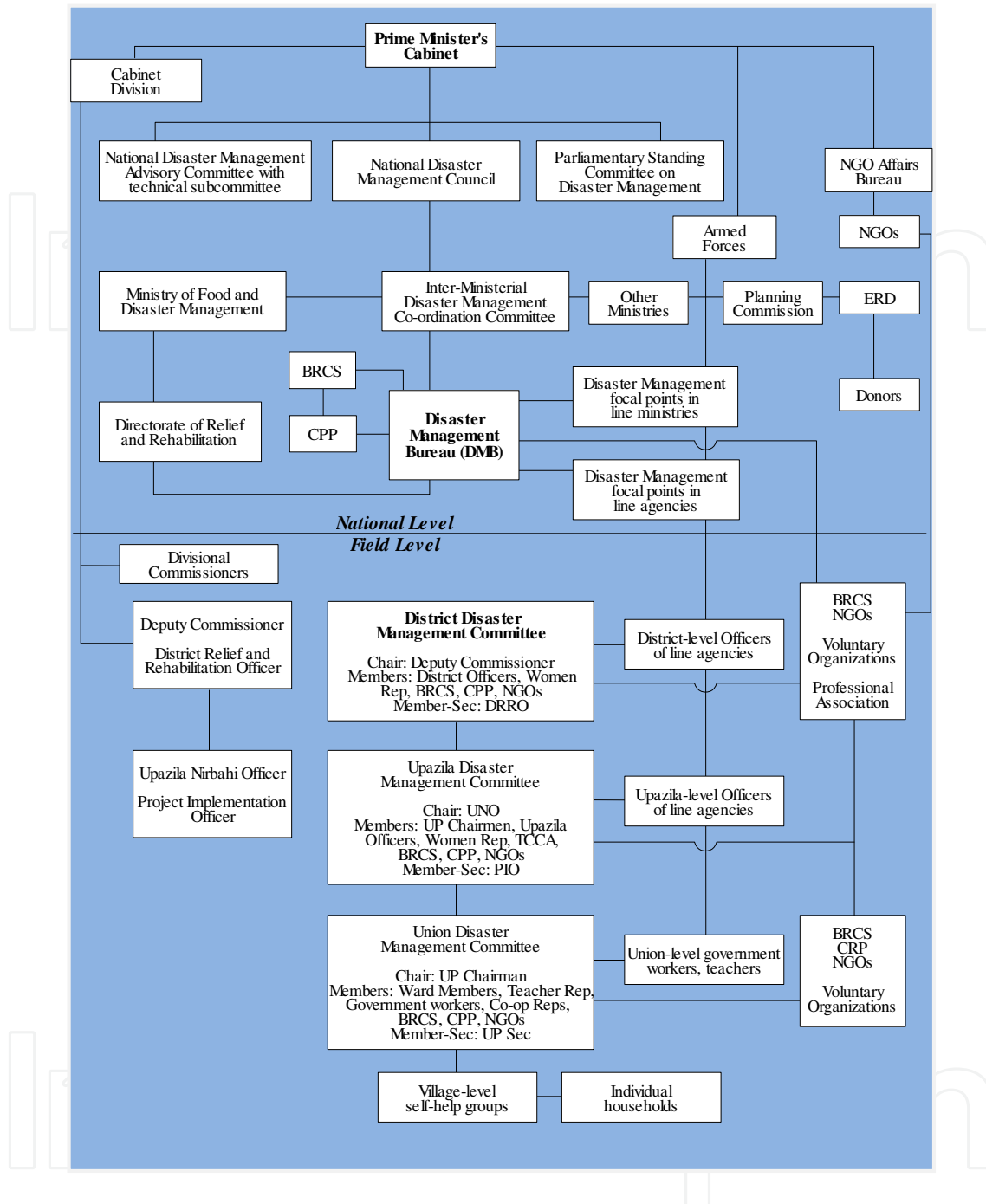


Figure 1. Organizational structure and institutional arrangements for disaster management at the national level and field level

The National Water Management Plan also underlines the importance of implementing effective non-structural measures to reduce the impact of floods and erosion. Thus, as opposed to the structural measures against floods (like dams, river embankments, and flood control and drainage projects) and riverbank erosion control projects (like the building of hard points, canalization and revetment), the recent policies and plans have recognized the importance of participatory planning that focuses on sustaining people’s livelihoods.

At the field level (Figure 1), disaster management and related mechanisms start with the district administrations covering all 64 districts of Bangladesh. The District Disaster Management Committee (DDMC) is chaired by the deputy commissioner, the chief civil administrator of the district. The members of the committee include departmental officers and NGO, BRCS and CPP and women's representatives. Likewise, below the district level, there are the *upazila*, union and village tiers of the disaster management committees. These local-level committees include representatives from almost all relevant interest groups in society (Figure 1). An examination of how these committees function appears in succeeding sections.

3.2. Increasing roles and responsibilities of NGOs

The Disaster Management Bureau (DMB) has been assigned the role of coordinating the activities of NGOs. The NGOs constitute a vibrant sector in Bangladesh, and have been acclaimed worldwide. NGOs and CBOs are actively involved, among others, in disaster management, micro-credits, family planning, and human rights protection. As a matter of fact, the advent of NGO activities in Bangladesh owes its origin to the rehabilitation works immediately after the devastating war of independence in 1971. Currently, about a quarter of foreign assistance to Bangladesh is channeled through the NGOs. Therefore, their contributions, particularly to the social service sector and the mobilization of the poor, are quite prominent. This has been acclaimed by the international community. NGOs like the Grameen Bank and Bangladesh Rural Advancement Committee (BRAC) have extended their development and disaster management programs at the international level as well.

NGOs such as CARE-Bangladesh, OXFAM-Bangladesh, Action Aid, Intermediate Technology Development Group-Bangladesh, Bangladesh Disaster Preparedness Center (BDPC) and Disaster Forum are particularly involved in various pre-, during and post-disaster activities. Pre-disaster activities include advocacy, public education campaigns and training programs for personnel involved in disaster management from the national down to the union or local community level. NGOs also are active in emergency evacuation and in taking people to shelters. The post-disaster activities include offering new micro-credits or rescheduling their loan payment programs for rehabilitation.

3.3. Developments in the Institutional Framework: Introduction to the Comprehensive Disaster Management Plan (CDMP)

Besides the Cyclone Preparedness Program (CPP) and the standing orders, the government of Bangladesh adopted a Corporate Plan (2005-2009) called "Comprehensive Disaster Management: A Framework for Action." The US \$15 million Comprehensive Disaster Management Plan (CDMP, Table 1) was funded by DFID and UNDP. It aimed "to reduce the level of community vulnerability to natural and human-induced hazards and risks to manageable and humanitarian levels." This program was supposed to be implemented through a "program-based approach" that encompassed all aspects of risk management. The approach comprehended a transition from a single agency response and relief system to a holistic strategy involving the entire development planning process of the government. CDMP Phase II was launched in 2010 to institutionalize the adoption of risk reduction approaches, and to channel support through government and development partners, civil society and NGOs into a people-oriented disaster management and risk reduction partnership. The project period will be 2010-2014.

Strategic Directions	Sub-programs	Target Area/ Group	Key Outputs	Responsible Agencies
Raising the level of expertise of the Disaster Management Systems	Capacity-building	MDMR and Implementing Agency	<ol style="list-style-type: none"> 1. PPDU established and effectively executing its key functions. 2. New MDMR allocation of business and organogram reflecting broader responsibilities in disaster risk management 3. Professional skill enhancement program developed and implemented 4. Professional training institutionalized 5. Phase II program identified 	MDMR/ UNOPS
Mainstreaming Disaster Risk Management Programming	Partnership Development	National, District and Upazila level officials	<ol style="list-style-type: none"> 1. High level advocacy program established and implemented 2. Review of the development project appraisal processes and integration of disaster risk management 3. Training for national, district and upazila officials implemented 	MDMR/ DMB/ NGO MDMR/ DMB
Strengthening Community Institutional Mechanisms	Community Empowerment	Union, Ward and Community levels	<ol style="list-style-type: none"> 1. Inventory of existing programs developed and gaps identified 2. Community risk management programs based on formal hazard analysis 3. The Local Risk Reduction Fund is supporting community risk reduction efforts 	UNOPS DRR UNOPS
Expand Preparedness Programs across a broad range of hazards	Research, Information and Management	Dhaka and selected cities	<ol style="list-style-type: none"> 1. Urban search and rescue pilot for Dhaka fire services based on earthquake threat 2. Establishing an integrated approach to climate change risk management at national and local levels 	MDMR/Fire Service MoEF/ DoE
Operationalizing Response Systems	Response Management	Whole country	<ol style="list-style-type: none"> 1. Upgrading the capacity in information management during normal and emergency periods 2. Regional networks strengthened 3. Timely deployment of resources 4. Operational response capacities strengthened 	MDMR

Table 1. Sub-programs, outputs, target area/group and implementing agencies of CDMP. Adapted from [19].

The Corporate Plan (2005-09; 2010-14) acknowledged the need for pre-disaster mitigation and preparedness of the people as opposed to the earlier concepts of responding after a disaster had taken place. Priority was accorded to focus on community-level preparedness, response, recovery and rehabilitation. Programs to train people living in disaster-prone areas were emphasized to improve their capability to cope with natural disasters. The Corporate Plan emphasized a series of broad-based strategies: First, disaster management involved the *management of both risks and consequences* of disasters, which included prevention, emergency response and post-disaster recovery. Second, *community involvement* was a major focus for preparedness programs to protect lives and properties. The involvement of local government bodies was an essential part of the strategy. Self-reliance was the key for preparedness, response and recovery. Third, *non-structural mitigation measures*, such as community disaster preparedness, training, advocacy and public awareness, were given a high priority; this required the integration of structural mitigation with non-structural measures.

The strategic focus of the CDMP was to lay the foundation for the shift in principle from a post-disaster relief and response strategy towards a comprehensive risk minimization culture that encouraged disaster-resilience initiatives. This approach was to be realized through a series of interconnected strategic directives:

1. Raising the level of expertise of the disaster management systems,
2. Mainstreaming disaster risk management programming,
3. Strengthening community institutional mechanisms,
4. Expanding preparedness programs across a broad range of hazards, and
5. Putting the response systems into operation.

Based on these directives, the major sub-programs of CDMP included: (1) Capacity-building, (2) Partnership Development, (3) Community Empowerment, (4) Research and Information Management, and (5) Response Management. Under the sub-program of *Partnership Development*, the government actively sought to achieve a multi-agency approach that encompassed the institutions of the government, NGOs and private sector in a collaborative strategy for the alleviation of disaster-induced poverty. This enhanced coordination and information-sharing among the various actors and thus maximized the efficacy of resource use for effective risk reduction. Under the *Community Empowerment* sub-program, the government planned to further consolidate the empowerment process by expanding the program and by realizing community capacity-building through awareness and skill development and by expanding disaster management studies within the school system and staff training academies.

Besides these, disaster risk reduction was incorporated as a component into the Poverty Reduction Strategy Paper (PRSP) of Bangladesh as Annex-9 of Disaster Vulnerability and Risk Management [14]. The preparation of the PRSP, funded by the World Bank, acknowledged a holistic approach to disaster management.

4. Shift from relief and response to disaster risk management

In the last few decades, disasters have typically been viewed by the public institutions as numerous individual extreme events, and the responses included top-down-oriented government policies and efforts by local and international relief agencies that did not take into simultaneous account the social and economic implications and causes of these events. With the significant advancement in the understanding of the natural processes that underlie the hazardous events, a more technocratic paradigm came into existence which conceded that the only way to deal with disasters was by the public policy application of geophysical and engineering knowledge and the associated interventions. These approaches treated disasters as exceptional or “abnormal” events, not related to the ongoing social and developmental processes. Gradually, with recognition of the fact that these are not “natural events” per se, but directly linked with social structures and their dynamics [20], this structural engineering, technocratic approach shifted to an emphasis on preparedness measures, such as stockpiling of relief goods, preparedness plans and a growing role for relief agencies such as the Red Crescent [21]. This evolution of public policy approach from “relief and response” to “risk management” has begun to influence the way disaster management programs are planned and financed. Initiatives have been aimed more and more at reducing social and economic vulnerability and at investing in long-term mitigation activities.

Community-Based Disaster Management (CBDM)

Recognizing the need for vulnerability reduction for effective disaster management, the failures of a top-down management approach have become evident. This approach has been unsuccessful in addressing the needs of vulnerable communities. A better understanding of disasters and losses also brings to light the fact that the increased occurrence of disasters and disaster-related loss has been due to the exponential increase in the occurrence of small- and medium-scale disasters. As a result, numerous scholars and stakeholders feel that it is important to adopt a new strategy that directly involves vulnerable people in the planning and implementation of mitigation, preparedness, response, and recovery measures. This bottom-up approach has received wide acceptance because it considers communities as the best judges of their own vulnerability and capable of making the best decisions regarding their well-being. The search for the newer approach led to the formulation of the Community-Based Disaster Management (CBDM) strategy.

The aim of CBDM is to reduce vulnerabilities and to strengthen people’s capacity to deal with hazards and cope with disasters. A thorough assessment of a community’s exposure to hazards and an analysis of their specific vulnerabilities and capacities is the basis for activities, projects and programs that can reduce disaster risks. Because a community is involved in the whole process, their real and felt needs, as well as their inherent resources, are considered. Therefore, there is a greater likelihood that problems will be addressed with appropriate interventions. People’s participation is not only focused on processes but also on the contents. It is anticipated that the local community should be able to gain directly from improved disaster risk management. This in turn will contribute to a progression toward safer conditions and to the improved

security of livelihoods and sustainable development. This underlines the point that the local community is not only the primary actor but also the beneficiary of the risk reduction and development process [21].

The implementation of CBDM requires consideration of many essential features. Following Yodmani (2001), [21], the primary ones could be identified as:

- a. The local community has a central role in long-term and short-term disaster management and therefore the focus of attention in disaster management must be on the local community.
- b. Disaster risk or vulnerability reduction is the foundation of CBDM; the primary content of disaster management activities revolves around reducing vulnerable conditions and the root causes of vulnerability. The primary strategy for vulnerability reduction is by increasing a community's capacities and their resources, and by improving and strengthening coping strategies.
- c. Disaster management must also establish linkages to the development process as disasters are viewed as unmanaged development risks and unresolved problems of the development process. CBDM should lead to a general improvement of the quality of life of the vast majority of the poor people and of the natural environment.
- d. CBDM contributes to people's empowerment – to possess physical safety; to have more access to, and control of, resources; to participate in decision-making which affects their lives; to enjoy the benefits of a healthy environment.
- e. As community is a key resource in disaster risk reduction, their role and interests must be recognized. The community is the key actor as well as the primary beneficiary of disaster risk reduction. Within the community, priority attention is given to the conditions of the most vulnerable, as well as to their mobilization in the disaster risk reduction. The community must directly participate in the whole process of disaster risk management -- from situational analysis to planning and to implementation.
- f. A multi-sectoral and multi-disciplinary and trans-disciplinary approach must be applied. CBDM brings together the multitude of community stakeholders for disaster risk reduction, as well as to expand their resource base. The local community-level institutions link up with the intermediate and national levels and even up to the international level to address the complexity of vulnerability issues. A wide range of approaches to disaster risk reduction is employed.
- g. The CBDM is an involving and dynamic framework, and therefore its implementation must be monitored, evaluated and adapted to incorporate newer elements. Lessons learned from practice continue to build into the theory of CBDM. The sharing of experiences, methodologies and tools by communities and CBDM practitioners continues to enrich practice.

5. Is the present framework based on a partnership approach?

As is evident from the institutional structure explained above, Bangladesh has developed quite an elaborate framework and disaster preparedness and response mechanism. Moreover, some policy and plan pronouncements in the recent past indicate that the government has begun to adopt an approach to disaster management that includes both risks and consequences. Some progress has been made in enhancing the disaster management capacities during the last decades. After the experiences of the devastating 1988 floods and 1991 cyclone, the concept of *disaster management* was introduced in place of *disaster control*. The ministry was renamed the Ministry of Disaster Management and Relief (MoDMR) in 1993 and then again renamed the Ministry of Food and Disaster Management (MoFDM) in 2002. After the formation a new government in 2008, this name of this ministry went back to its previous title as the Ministry of Disaster Management and Relief (MoDMR).

The primary function associated with disaster management is outlined in the government's Rules of Business which are undertaken by the DMB and the DRR. The Rules of Business have been revised to reflect the current MoDMR approach of comprehensive, community-based vulnerability reduction and risk management. The result is that though there has been a declining trend in loss of lives and property, particularly from cyclone disasters, flood damage has tended to rise because of the large spatial extent of floods, their increased frequency and the expanding economy.

Government documents and the NGO literature indicate that there is a wide recognition that effective disaster response at the local level is not possible by government agencies alone and that the cost of management needs to be shared by all stakeholders. Still, the major lacuna in the institutional framework continues to be a lack of functioning partnerships among the stakeholders. The massive flood of July 2004 showed that there were no partnerships functioning and there was little coordination. The Local Consultative Group (LCG) concluded that massive shortcomings existed in the forecasting, preparedness and coordinated response to the crisis [22]. As a result, the NGOs conducted relief and rehabilitation efforts largely without government directives and coordination. Initially, the government appeared confident to deal with the post-disaster recovery singlehandedly. When things were getting worse, it made a flash appeal on 17 August 2004 through the UNDP, Dhaka, for international assistance. Another report argues about the handling of 1998 floods, indicating that "limited evidence of government coordination was found in the recovery phase" [23]. Save the Children (USA) also proclaimed that "there was a general lack of coordination among actors" [24]. In the wake of the latest cyclone, Sidr in 2007, BBC reported, "Plenty of agencies, but not enough aid - too little, too late," and further quoted a professional working in an affected area, "The reason why these people are not receiving enough help is because there is no coordination between the government and aid agencies" [25].

A striking example of poor management and coordination is the following case. Southkhali village in Shoronkhola *upazila* of Bagerhat district was one the worst hit areas in Sidr. During a visit immediately after the event to the area, the Indian foreign minister pledged his country's intention to build all the houses in this and the surrounding villages. From then onwards,

nominal government initiative was taken to give shelters to the affected people in this area, and a virtual official ban was put into effect on others, including NGOs and aid agencies, to build houses for the affected people. The pledged Indian support did not come in due time and even 100 days after the event people in this area were forced to live under the sky [26]. Perhaps this unfortunate decision arose from the lack of international/bilateral coordination, bureaucracy on both sides in Bangladesh and India, a lack of understanding of the gravity of not giving shelter to victims in time, or from the unnecessary exercise of power on the administration's part, even when in distress.

5.1. Empirical Investigation of Cyclone Sidr Victims at the Local Level: Vulnerability of the Poor

It is worth noting that the recent initiatives on community-based disaster risk management became subject to stern criticisms because of their general inadequacy in addressing the vulnerability of the poor to natural hazards and socioeconomic shocks. CBDM programs that aim at prevention and mitigation are few in low- and middle-income countries like Bangladesh and they are poorly funded and insignificant when compared to the financial capital spent by donors and development banks on humanitarian assistance, relief and post-disaster reconstruction. Another weakness of such initiatives was that they were often taken up in the formal sector of the economy, and therein bypassed the poor and the most vulnerable sections of society. As Maskrey (p. 86) points out, "in the year or so between the occurrence of a disaster and approved national reconstruction plans, many vulnerable communities revert to coping with risk, often in the same or worse conditions than before the disaster actually struck" [27]. Therefore, in the current paradigm of risk management approaches, there is more room than ever before for addressing the issues of risk reduction for the poor. This is also consonant with the paradigm shift in mainstream development practice, which is now characterized by a focus on good governance, accountability and greater emphasis on bottom-up approaches [21]. In light of the above perspective, the case of Cyclone Sidr can be examined.

Bangladesh has experienced several catastrophic environmental disasters during the last two decades; among these events, the April 1991 [28] and November 2007 major cyclones were the most catastrophic in terms of both physical and human dimensions [29]. Cyclone Sidr struck the coast of Bangladesh on 15 November 2007 and was the most powerful mega-cyclone to impact Bangladesh since 1991. However, the death toll (officially, 3,406 lives were lost) caused by Cyclone Sidr was significantly lower than comparable cyclones in previous years due to the improved warning system and evacuation. Nonetheless, the damage to crops and infrastructure was considerable across 30 districts, 200 *upazilas* and 1,950 unions. In total, more than 55,000 people were injured by the Cyclone Sidr event. The Joint Damage, Loss, and Needs Assessment (JDNLA) committee estimated that the total damage and losses caused by the cyclone were more than US \$1.7 billion [30].

Our investigation along the coastal plains of Bangladesh revealed that the geographical location and patterns of settlement associated with low income populations were the most important determinants of vulnerability to tropical cyclones and related storm surges. Coastal and island people observed that the new, isolated, single-unit settlements were the most severely

impacted by the cyclone and storm surge forces. The settlements near the coast and those which were in linear patterns along the coastal embankment suffered the most. This type of settlement, which was more susceptible to cyclonic storm surges, was inhabited primarily by the poor of the coastal zones. The fragmentation of families and the building of new settlements also contributed to high cyclone disaster loss. The soil of the new settlements was less cohesive, and in most cases, the properties had few or only very small trees. The houses of the linear settlements along the coastal and island embankment were made of straw, bamboo and other locally sourced materials. Apart from high winds and storm surges, these houses were also vulnerable to breaches of the embankment that occur in major cyclonic storms. In our survey, we registered that most of the houses constructed using straw, bamboo, jute stalk, and corrugated iron sheets alongside of the coastal embankment had faced the sea. Such positioning of the housing structures also made them more susceptible to severe damage by the cyclones. In contrast, houses located in the interior mainland were usually clustered in groups of six or seven houses called *Baris* in dense tropical forest. Several closely located *Baris* comprise a *Samaj*. This type of settlement is less susceptible to severe cyclonic wind and storm surges.

Landless families tend to occupy coastal embankments illegally, as there are no public housing or welfare programs in Bangladesh for the landless. The respondents of our survey asserted that because of easy access to both land areas and the sea, they preferred to live on the embankment despite the well-known risks related to both illegal settlement and tropical cyclones (Figure 2).

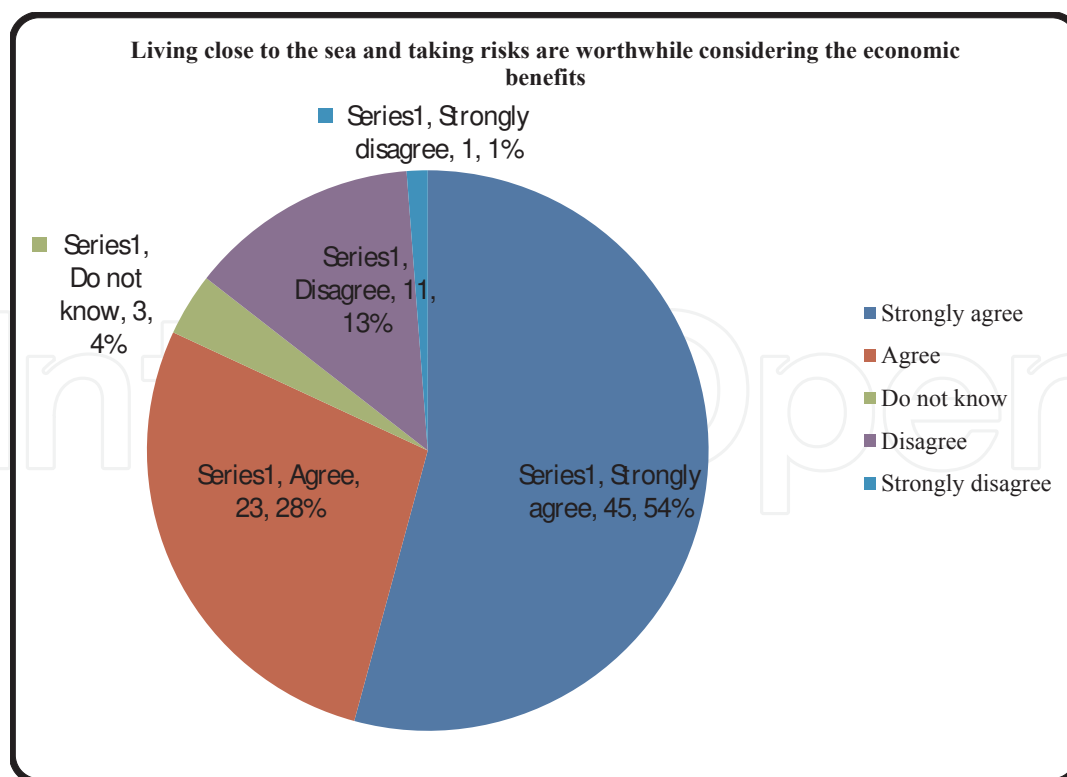


Figure 2. Consideration of villagers living close to the sea

5.2. Cyclone preparedness at the local level

Cyclone preparedness programs that have been implemented in recent years in the coastal zones of Bangladesh have involved both non-structural and structural measures. Appropriate cyclone preparedness training and enhancement of awareness by campaigns and public education have been major tools for building a well-prepared and cyclone-resilient community. Our field investigation revealed that only 31% of the local community members have received cyclone preparedness training during non-cyclone periods. Such training was chiefly provided by the non-governmental organizations (NGOs) that were locally active (30% of the local community members received training from them); national and local government initiatives in this regard were nominal (only 1% received training from them) (Figure 3).

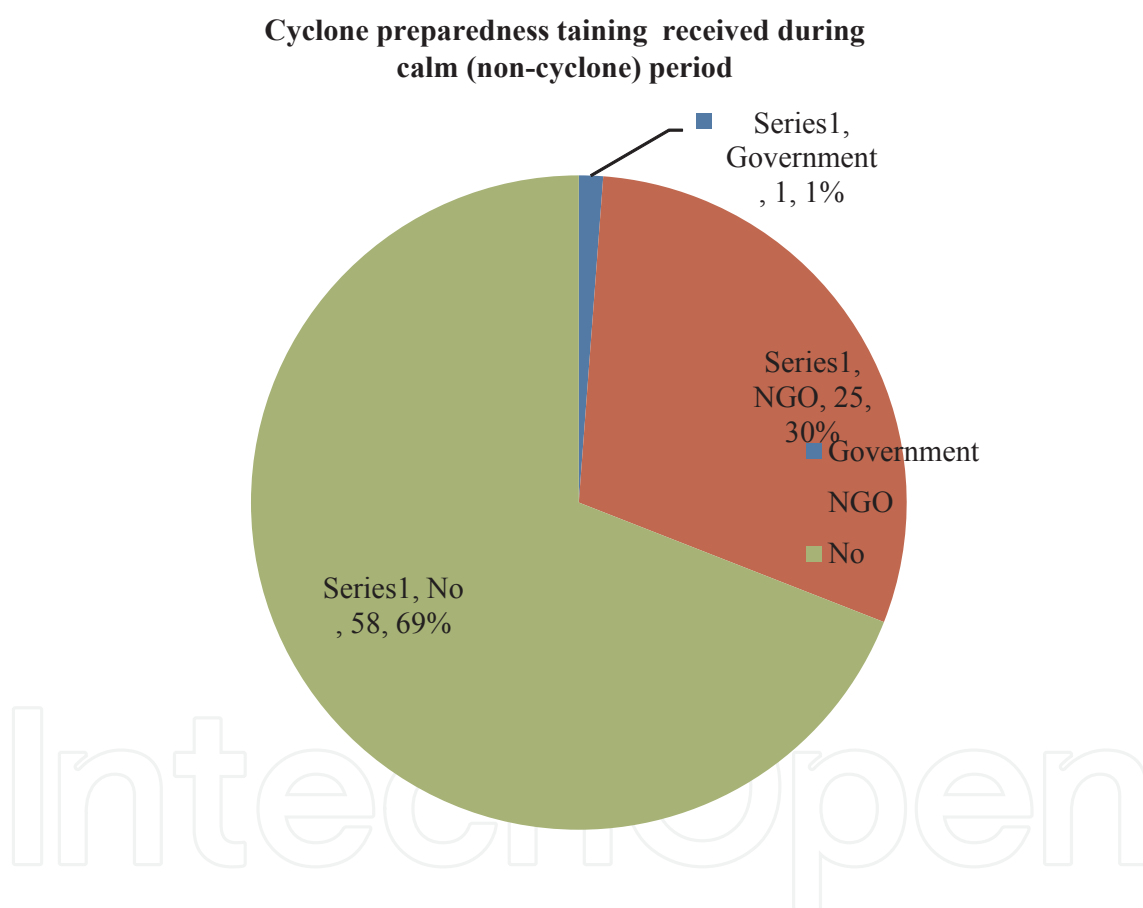


Figure 3. Training on cyclone preparedness

Among the structural engineering measures, the construction of cyclone shelters and raised mounds (locally known as *killa*) to provide refuge during the onset of cyclones were the principal ones. The expansion of coastal embankments and reforestation programs to protect settlements and properties from cyclone gusts and storm surges along the coast and estuary channels were among other significant structural measures. The majority (59%) of the community members took refuge in the designated cyclone shelters or in the masonry build-

ings of neighbors, friends, and relatives during the onset of Cyclone Sidr. About 41% stayed in their homes and opted not to go the cyclone shelters. Such behavior was attributed either to a strong belief that their lives were in the hands of *Allah* (i.e., strong presence of fatalism), a desire to save property from potential looting, the considerable distance of the shelters from their houses, or the unavailability of cyclone shelters in their locality.

The degree of variation in the number of people who took refuge per cyclone shelter among the localities was significant. Our field research calculated that there were 34 cyclone shelters for 631,138 people (according to the 2001 population census) in the Burguna Sadar *upazila*, under Burguna district, implying that each cyclone shelter would need to provide refuge to 18,563 people. In Kalapara *upazila*, under Patuakhali district, there were 113 cyclone shelters for 202,078 people, implying that each shelter would need to accommodate 1,788 people during the onset of a cyclone. Our exploration into why a considerable population did not use cyclone shelters during Cyclone Sidr provided a number of explanations. All cyclone shelters were being used as civic facilities (such as primary schools or community centers) during the non-cyclonic periods but lacked adequate drinking water supply infrastructure and toilets. A total of 87% of the cyclone shelter users identified low sanitation and inadequate drinking water facilities as major constraints to using these shelters. They also opined that low physical capacity (79%) and difficulty in maintaining privacy (47%) were other major problems in using the shelters (Table 2). The poor dispersion of cyclone shelters and the lack of road access were other major concerns about the cyclone shelters. The degree of satisfaction about the cyclone shelters was very low among the local community members (only 6% were satisfied). The examination of the use pattern of cyclone shelters at the local level revealed that although cyclone shelters saved many lives during Cyclone Sidr, many local people opted not to use them or they were simply unavailable in some localities. Clearly, these cyclone preparedness and mitigation measures are testimony of institutional partnerships at various levels of governance and public services.

Factors	Respondents (%) (n= 162)
Inadequate sanitation and drinking water facilities	87
Inadequate physical capacity	79
Hard to maintain privacy	47
Fragile structure	43
Unhygienic conditions	24
Absence of access road	14
Situated in a distant place	12
Do not know	5

Table 2. Problems in using cyclone shelters. Source: Field survey

Are you satisfied with the number and facilities of the cyclone shelters in your locality?

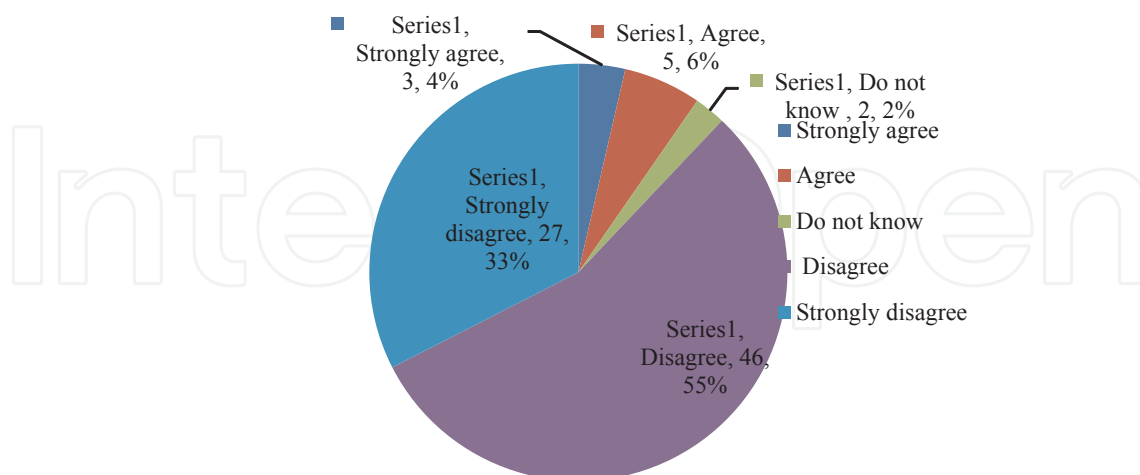


Figure 4. People’s response on cyclone shelters and facilities

Over the last four decades, the Water Development Board, in collaboration with other ministries, has constructed about 5,333 km of embankments in the coastal districts to support agriculture and protect the lives and property of coastal residents during cyclones and storm surges. Reducing vulnerability via these structural measures has been quite effective in coastal Bangladesh. There is clear evidence that these embankments along the coastal areas provided an effective buffer during the storm surge associated with Cyclone Sidr. Lives were saved, and damages and property losses were much lower where embankment structures had been properly maintained. Some embankments did not fail even when the storm surge overtopped them. More than 90% of our survey respondents observed that coastal embankments had saved their lives and property from Cyclone Sidr. They also registered that coastal plantations were another major living structural feature that reduced the velocity of the wind and the speed of tidal surges along with the cyclone and, in turn, saved their lives and properties.

6. Conclusions

The findings of our study reveal that, officially and legislatively, the government of Bangladesh in recent years has taken a comprehensive and integrated approach to disaster management. Both preparedness and response capacity have increased as a result. However, in the absence of stable and transparent institutions, this strong institutional partnership approach remains largely on paper. Individual stakeholders continue to make significant contributions, but synergy and multiplier effects are still missing. Our analysis shows that no, or only a very limited, culture of partnership in disaster management has yet been established. Divisive partisan politics and the lack of good governance prevent partnerships among stakeholders.

Therefore, in the following section we propose a partnership framework that outlines new roles and responsibilities for major players. Implementation of the framework could lead to partnership in disaster management in Bangladesh. Government agencies, NGOs and policymakers need to understand the perspectives of local communities, the impacts of floods, and the levels of vulnerability to improve information, knowledge, resource support and services. For this, there is a need for more “action research” involving communities and scientists from different disciplines and greater awareness about the integration of floods, cyclones and other natural disasters and climatic events into the development process among key actors, particularly, government agencies.

Disaster management is a nationwide affair, involving each and every organization and citizen of the country. The government of any country cannot do it alone because of the resource constraints as well as the wide scope of the tasks involved. Therefore, a broad-based partnership involving all the stakeholders is a desirable and realistic approach to realizing the full potential at all stages of disaster management, namely, prevention, preparedness, response and recovery [31]. Experience that demonstrates the value of partnership in managing disasters is grounded in the mutual recognition of many different ideas and interests. The constituencies or interests associated with this partnership include the stakeholders, such as government ministries/agencies, National Parliament and the Parliamentary Standing Committee on Disaster Management, NGOs/CBOs, the private sector, the media, academia, donors and regional countries (Figure 5). The approach, involving multi-modal communication and interaction, proposes to integrate the activities of different stakeholders into a functional partnership framework. This outline describes how each stakeholder can be a loop in an integrated chain.

Ministry of Disaster Management and Relief (MoDMR)

This organization, directly supported by DMB and DRR, remains the pivot and is destined to channel and coordinate all communications and activities between and among all the partners in the loop. This coordinated process, particularly during non-crisis periods, is expected to result in the shift of focus from post-disaster to pre-disaster risk management. However, the MoDMR must ensure the transparency of its own and all other agencies involved in developing the partnership for disaster management. Public disclosure and documentation should be mandatory for all the stakeholders and must be published by this pivotal agency on a regular basis. The ultimate goal of the partnership is to enhance the investment and social capital for community empowerment against disaster risks.

From a partnership point of view, the following measures need to be initiated by the MoDMR:

1. Adoption of a comprehensive national disaster management policy, with clear guidelines for an effective partnership of all stakeholders.
2. Coordination of the functions of disaster management and climate change communities; this is likely to help integrate prevention with preparedness, response and recovery efforts, in both short-term and long-term perspectives; CDMP appears to be beginning in the right direction.

3. Strengthening the capacity of the MoFDM and other disaster management-related agencies and committees at all levels, with particular emphasis on the district-level disaster management committees (DDMC). Each of the DDMC in the risk-prone areas can be equipped with a Geographic Information System (GIS) Cell as a planning tool for managing development and disaster reduction activities.
4. Large-scale training of staff at all levels, including the stakeholders, particularly from the media, NGOs and private sector, in team and motivational works and in how to prevent disasters; for the purpose, a Disaster Management Training Cell can be established at the DMB.
5. Activating the Disaster Management Committees (DMC) at all levels, including the national ones, through organizing meetings at regular intervals.

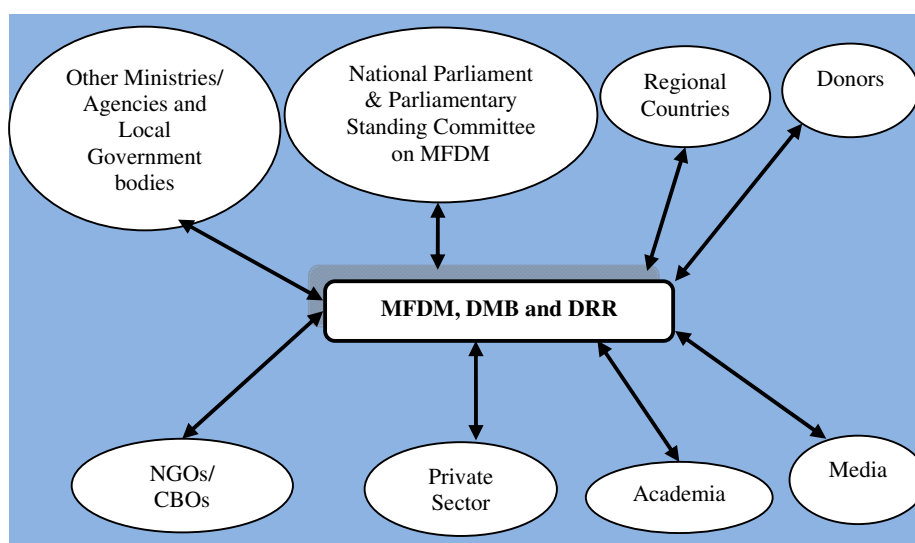


Figure 5. Proposed partnership framework for disaster management in Bangladesh

1. Strengthening the project monitoring and evaluation capacities at all levels, with the involvement of local stakeholders; the establishment of broad-based and inclusive monitoring and evaluation committees for projects will ensure transparency, accountability and therefore the delivery of intended results.
2. Decentralization of not only responsibilities, but also decision-making power, to DDMCs, led by the local governments with sufficient financial resources and autonomy.
3. Establishment of small teams at all levels of DMCs to better coordinate and integrate disaster management planning and activities from the national to local levels.
4. Finally, developing a network among the GOs, NGOs, researchers, academics, journalists and other professionals in order to enlist their potential roles and contributions in mitigating disaster-related problems. The MoDMR can act as the coordinating agency for building up this network.

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