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A study on national DRR policy in alignment with the SFDRR: Identifying the scopes of improvement for Bangladesh

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ABSTRACT

Sendai Framework sets four priority areas and 7 targets to meet in between 2015 and 2030 timeline. Of the seven Sendai Framework global targets, international attention has increasingly concentrated on the one with the most urgent deadline, target E. The target E stands for “substantially increase the number of countries with national and local disaster risk reduction strategies by 2020”. The reported status of the member states is not that satisfactory in the context of meeting the deadline. Moreover, the worldwide COVID-19 outbreak has slowed the progress of updating national DRR policy documents. This study has investigated the existing shortfalls in the foundational DRR policy instruments of Bangladesh and contributes in developing a framework of National DRR Strategy in line with the SFDRR guideline in order to meet the target E. In doing so, this study has critically reviewed the national DRR policies to find out the gaps in line with SFDRR considering the country context and also compared different aspects of national DRR strategy with a few developed and developing countries. In addition, the policy initiatives of Bangladesh Government tackling COVID-19 outbreak have been evaluated. This research is anchored with qualitative research focus. The method of the study is carried out by an extensive literature review and key informants’ interview to get the perspective of relevant stakeholders.

Keywords:
DRR policy documents
SFDRR
COVID-19 outbreak
Policy review
Bangladesh

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http://dx.doi.org/10.1016/j.pdisas.2021.100206
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1. Introduction

The world is facing disasters on everyday basis. Despite the fact that the entire world is facing different types of natural and anthropogenic disturbances, most of the victims are reported in the under developed and developing countries from Asia and the Pacific region [3,23,50]. The complex context of the countries obstructs their capacity to act towards the hazards (both foreseeable and unforeseeable) and react counter to the disasters. Hence, the region is continued to be the world’s most disaster prone zone where disaster-induced deaths rose more than three-fold in the past decade [1,12]. Locating in the South Asia Region, Bangladesh is badly impacted by numerous disasters such as flood, cyclone, riverbank erosion, landslide, tornado, drought, Nor Wester, etc. The geological settings, geographical features and demographic profile compels Bangladesh to experience excessive physical and social vulnerability. As a result, the high-risk profile causes the country to rank 13th out of 181 countries of the world, whereas rank 7th in terms of impact level from the climate led disasters that took place between 2000 and 2019 [4,11].

Bangladesh is regarded as a model of disaster management transforming from traditional relief and rehabilitation to a comprehensive disaster risk management system by following the Hyogo Framework for Action (HFA Progress Review, [38]). The country scored a higher than the average score in every category including early warning systems, risk assessment, DRR policy, and preparedness for effective response. The government of Bangladesh has promulgated the Disaster Management Act 2012 and Disaster Management Policy 2015. The formulated policy provides set of guideline and action needed for managing disaster through disaster risk reduction.

Though the Hyogo Framework for Action creates a noteworthy change in our disaster management system, followed its targeted actions policy-makers have given their primary attention to the outcomes and suggestions of the hazard paradigm, almost ignoring the vulnerability paradigm [13]. The knowledge gaps and lessons learned from the HFA help to direct the targets and actions of the Sendai Framework for Disaster Risk Reduction (SFDRR) (2015-2030). Sendai Framework sets four priority areas and 7 targets to meet in between 2015 and 2030. Of the seven Sendai Framework global targets, international attention has increasingly concentrated on the one with the most urgent deadline, target E. The target stands for “substantially increase the number of countries with national and local disaster risk reduction strategies by 2020” [46].

The reported status of the member states is not that satisfactory to meet the deadline for target E. Moreover, the worldwide COVID-19 outbreak has slowed the progress of updating national DRR policy documents. The pandemic has forced every nation to divert their concentration towards immediate health response.

This study will try to investigate the existing shortfalls in the existing foundational DRR plan of Bangladesh and contribute in developing a framework of National DRR Strategy in line with the SFDRR guideline in order to meet the target E in time. In addition, this study will also try to evaluate the policy initiatives of Bangladesh tackling COVID-19 outbreak. In doing so, this research will look into the available sources of objective information and then carry out a comprehensive analysis to reach a conclusion.

The result of the research will signify the existing foundational lacking in our policy content that may help the planners and policy makers to understand and overcome the expected implementation drawbacks. The future researchers can work explicitly on those identified gaps to address them in a more coherent manner. Moreover, the framework that will be designed focusing on the SFDRR requirements and the multi-sectoral context of the country, hope to assist in formulating a national and local DRR strategy and will provoke further research on this topic.

2. Literature review

2.1. DRR policy context

Bangladesh has experienced numerous devastating as well as mild disasters among which the deadliest cyclone of 1970 took place right before the birth of the country. The impact of that disaster was so immense that in 1972 following the independence, two separate ministries were formed naming the Ministry of Relief and Rehabilitation and the Ministry of food. In 1982 the ministries were merged, nonetheless they were further alienated and named as the Ministry of Relief in 1994. Therefore, the amalgamation and separation happened following 2004 and 2009. Ultimately, in the year of 2012 the Ministry of Disaster Management and Relief (MoDMR) has been formed as a distinct entity, which is not just obliged to respond in a disaster but also reduce community vulnerability in order to manage disaster risk [34].

As we know that different systematic processes or approaches do exist to scrutinize policy documents through developing supportive frameworks. One of the most important priority areas of DRR policy is the DRR governance, in practice, which mostly discusses the actions of government during emergency response and recovery phase. [17] highlighted how government can be prepared in different disaster phases, while focusing on the basic principles and necessity of business continuity plan in enhancing community resilience. However, during investigation of several countries policy implementation process [41] shed light on public intervention in planning and implementation process of DRR policy to ensure well-being at root level of community. The authors highlight on resilience building programs through adaptation of different targeting mechanisms grounding on administrative criteria, proxy means tests, or categorical variables. Therefore, the resilience building programs such as social safety net programs that mostly directed to vulnerable groups suggested to be followed by a person-specific transfer approach for execution.

Disaster policy however remains contested on the ground of differing perceptions between scholar and different level stakeholder. Compared to research on stakeholder efforts in extreme events, the literature on the dissimilarities and imbalances between academic endeavor and practitioner-led interests are hardly explored by researchers [41]. Aside the tensions among disciplinary and political perspectives, in a developing country context, Cheema et al. [6] identify several flaws in the organizational structure of disaster management discipline at the local level. The study uses a historical case study approach to review disaster management structures, policies and institutions at different policy scales (from local to national).

Few notable studies have been noticed concentrating on the disaster management system of Bangladesh. In this respect, Reza et al. [39] suggest a model strengthen preparedness measures by examining the disaster management scheme and development pace of the system with changing context. The institutional capacity of the existing disaster management regulatory framework also been assessed in other studies [5,55]. While Bangladesh is known for its transition from a traditional DRM to a dynamic DRR approach, more studies need to be conducted on this transitional phase.

2.2. Research gap identification strategy

A number of frameworks have been formulated throughout the time for managing disaster. Formulation of a new framework by substituting the former is nothing but a demand of time. For instance the global agreement on national action for disaster risk reduction (DRR) replaced the Hyogo Framework for Action 2005–2015 [46]. However, considering present natural and manmade context of the world, SFDRR consider the target E to be accomplished in an urgent basis. At the opening of UN World Conference on DRR 2015, the practice of disaster risk reduction is addressed not only for reporting but also as a political decision-making support tool. To review the progress of the directed actions in every two years, the first conference of [49] identifies the importance of ensuring that preparedness and recovery plans need to be risk-informed by 2020 as a key component of achieving the Sendai Framework target E. Moreover, it highlights a context and situation specific DRR strategy in which the targets and measures may vary with the environmental, physical, social, cultural and economic conditions. At the same time [47] recognizes the need to accelerate support to regional countries on key priorities before the deadline of 2020. Resulting from the need, Asian Ministerial Conference on DRR (2020) becomes an important
outcome of SFDRR that gives a long-term road map with a set of defined chronological milestones and a two-year strategic action plan for Asia-Pacific region. However, challenges still remain in using risk information in policy design, planning, and investments. The statistical database issued in each consecutive year disclose that 25 member states reported the status of their national and local DRR strategies for 2015, 27 for 2016 and only 47 for 2017 [49]. Though the number of reported countries has increased over the time, it seems still difficult to meet the target-E within the projected deadline.

Reviewing the progress of the countries towards the national DRR strategy, there seems an enormous scope to work in this problem in the context of Bangladesh. Moreover, it is also evident in extant literature that majority of the studies focus on solely the governance mechanism of Bangladesh and there is no such research found that can help to signify the scopes for improvement in light of SFDRR. So this study decidedly taps this opportunity in order to anticipate the gap in this aspect and address a DRR supporting framework. Fig. 1 provides a diagrammatic representation of the proposed conceptual framework.

The framework exhibits linkage among the overlapping thematic areas of the SFDRR for a sustainable DRR strategy framework at the national level. The framework will help to identify sound practices and assess impediments in our policy content within the four priority areas of SF.

3. Research methods

This study is anchored with qualitative research focus (Fig. 2). The method of the study is carried out by an extensive literature review and key informants’ interview to get the perspective of relevant stakeholders. The literature review references to both peer reviewed publications as well as grey literature as secondary data sources. The literature search is framed by the keywords from the title of this paper such as disaster frameworks, strategies and policy documents at both global and national level. The global level investigation focuses on the global frameworks on DRR, mostly the Sendai Framework for Disaster Risk Reduction 2015–2030. For the national level, the foundational DRR policy documents are reviewed comprising national DRR strategy, policy, plans, guidelines, and legal frameworks (where disaster and environmental aspects have been explicitly mainstreamed).

Alongside literature review, the study was aided by an extensive key informant interview with senior-level policymakers and professionals of disaster and health sector in order to test the ideas and interpretations of the literature review, investigate the progress and current status of national DRR strategy adapted in Bangladesh aligned to SFDRR. To understand the flow of activity, a methodological framework has been proposed below Fig. 2.

4. Findings and discussion

4.1. Synthesis of national DRR policy documents

The timeline of National DRR policy instruments of Bangladesh is quite young. This scenario is graphically represented in Fig. 3. Hence, all the foundational national DRR policy documents starting from 2010 to the present date have been synthesized in this section.

The history of DRR policy documentation basically started in 1997 with the formulation of Standing Orders on Disaster (SOD) written in Bengali. The English version of the document published in 1999. It has been revised and modified two times after that, first in 2010 and then in 2019. This policy document constructively shapes the outline of the DM regulative framework and the supportive coordination mechanisms at district, upazila, pourashava, and union level. The obliged functions of the local authority are described for four phases involving pre-disaster, warning, during-disaster, and post-disaster period. Grounding on this layout the last revised version of SOD was introduced in a more reliable and well structural format to be followed both nationally and locally [27–30]. The gaps from previous edition are readdressed here. For instance, the regulation and direction for international assistance during or after a disaster caused a point of discourse in the earlier version. As being one of the most disaster-prone countries, the country frequently gets support from different international organizations through disaster preparedness and development programs, hence this fact demands an extra attention. Moreover, it has introduced the terminology “Zoonotic Disease” for the first time through integrating directives into the National Platform for DRR. It has also asked the DM committees at all levels to be responsible not only for relief and response, but also responsible to execute DRR activities. Following this particular policy tool also ensures coordination and accountability at all levels.

Through the timeline it can be seen that the ‘Cyclone Shelter Construction, Maintenance and Management Policy’ was the first policy document leading a hazard specific issue [35], nonetheless in Bangladesh cyclone shelters are constructed for multiple hazards and purposes. The guideline has described all necessary directives concerning shelter management, perhaps the role of local regulatory body could be given more emphasize. Beside local government, the role and participation of community people should be come out in a more focused and explicit manner.

![Fig. 1. Conceptual framework](image1)

![Fig. 2. Methodological Framework.](image2)
In 2012 the Disaster Management Act has been formulated as a principle legislative tool to direct the obliged function and accountability on relevant organizational body towards the overall DM system [10]. It is evident that DRR strategy needs a coordinated approach in every phase. The chain of communication and coordination among the vital sectors should be addressed from the beginning of the strategic plan to the end of its evaluation phase. Being the Bible of the overall DM system, the act remarks the importance of communication and coordination among the vital sectors should be addressed from the beginning of the strategic plan to the end of its evaluation phase. Here, the strategy delivers the contingency plan for the three most prioritized hazards including earthquake, flood, and cyclone. Nevertheless, the plan could cover some other dominant hazards of the country such as landslide, fire hazard, industrial hazards, storm surge, etc. Indeed, this is a coherent guidebook to follow; as there is no doubt that it covers a good piece of inter-sectoral and inter-institutional strategies at the local level. Nonetheless, the effectual completion of a contingency plan depends on the proficiency of risk monitoring mechanism. Hence, in such regard a set of regulation is needed to ensure the early warning tools and mechanisms for activating the plan properly by the Humanitarian Coordination Task Team (HCTT).

The basic dimensions addressed in the Dead body Management Guidelines are identification, collection, management, psychosocial support, and database management of dead bodies after disaster [32]. This guideline might be helpful to disaster respondents preventing operational mismanagement. However, the experience of Rana Plaza collapse and fire incidents of recent year’s show that well equipped manpower is highly needed along with the implementation of such directives.

The Urban Volunteer Management Guidelines 2019’ has been formulated to respond properly to natural or anthropogenic disturbances and build a disaster-resilient community in an urban context [27–30]. The effect of volunteers having awareness instinct can be observed through society, as such practice strengthens relationship and networking among community people. The urban community along with its surrounding built environment needs to be robust and resilient to disasters. To ensure disaster resilience in the built environment, the Disaster Resilient Housing Construction Guideline has been introduced in 2019 [27–30]. In recent time the successive earthquake caused mild shaking in the north-eastern part of the country that prompts us to further ensure the implementation of such policy. As we know that Bangladesh has numerous environmental problems with undefined solution. The Disaster Management Research Guideline 2020 has been shaped to find out underline facts and solutions to disaster or disaster risk focused problems through systematic research work, which will be supportive tool in achieving the targets of national and international strategic actions [27–30].

The Disaster Management (Fund Management) Rules 2021 is a major contribution in the DM policy instrumentation [24]. It has been created according to article 58 and clause (6) of article 32 of the disaster management act. Indeed, a definite financial legislative tool was needed long before. It will resolve many monetary complications such as donation from individual personnel or agency, if implementation of this can be ensured properly.
Bangladesh follows a five-year plan to build a disaster resilience nation from the year of 2010. There are three consecutive plans (2010–2015, 2016–2020, 2021–2025) called the National Plan for Disaster management (NPDM). The plan determines a set of priority actions with a strong institutional base grounded on country context and concurrent global agreements (SFDRR, SDGs, etc.). The on-going NDMP (2021-2025) focuses on the gaps found through the implementation of the earlier plan [25]. Bangladesh has been going through several shocks in last few years, specially the Covid-19 pandemic which is still persisting worldwide. Throughout this time the nation follows a whole society approach to fight the pandemic that work in many cases, but certainly expose the fragile parts of the system. The priority areas of NDMP (2021-2025) are highly influenced by the shortfalls came to light by COVID-19. Thus, the document incorporates health hazards at its highest priority that adds a new dimension, yet some essential facts remain overlooked. There always need a collaborative approach to combat a global crisis. The plan could incorporate humanitarian and collaboration models to keep the frontline actors in one string. Though the approach towards Covid-19 and seasonal disturbances are distinct in character, a connecting point need to identify for reinforcing capacity and building resilience.

Considering health care as a basic human right Bangladesh has developed the National Health Policy in 2011 [36]. The visionary initiatives framed under the policy eventually conducive to poverty alleviation, as it prioritizes vulnerable groups (marginalized people, people with disabilities) and critical issues (equity, gender equality). The policy has well defined targets to combat health hazards, nonetheless very limited of which put in practice. Such distortion of policy implementation largely reveal right after the pandemic. Thus, the necessity of a set of coherent rules and regulations for COVID-19 was immense and so, a national plan naming Bangladesh Preparedness and Response Plan for Covid-19 has been formulated [26]. It is basically based on two papers, one is the COVID-19 Strategic Preparedness and Response Plan (SPRP) and another is the Country Readiness Checklist by WHO. As COVID-19 is no different to a disaster (assimilated as Zoonotic Hazard in DRM discipline), even more complex in nature, it is reasonable to review it through the lens of DRR. The plan scrutinizes strategic interventions through ten technical-pillars dividing in two different groups, the epidemiological response group and the health service delivery group. The M&E framework is one of the most remarkable part of the plan having an intact budgetary scheme for each of the pillar. The last pillar of the plan stands for Research that claim an additional concern in our country context. Research that claim an additional concern in our country context. Research and knowledge generation programs.

The National Disaster Management Policy encourages innovation in adaptation strategy according to community skill, resource, knowledge and experience. – The policy highlights the monitoring strategy augmented to modern time and scientific knowledge.

The National Plan for Disaster Management (NPDM) incorporates action to accumulate earthquakes data products – The regional and international DRM networks will be encountered through cooperation, information and knowledge sharing programs as highlighted in the NPDM

The NPDM has the following interventions under this particular domain:

○ Studies on resilience building for biological hazards
○ Studies on resilience building for human induced hazards
○ Prior knowledge management and research on scientific and socio-economic issues for all DRM and development action by allocating at least 5% of the project budget.
○ Innovation programs on weather and climate monitoring, prediction and forecasting
○ Establishing seismology and earthquake engineering disciplines in universities

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Establishing seismology and earthquake engineering disciplines in universities

The Disaster Management Act (DMA) highlights maintaining the information flow in an emergency situation (DMA: section-28)

The National Plan for Disaster Management (NPDM) incorporates action to accumulate earthquakes data products

The regional and international DRM networks will be encountered through cooperation, information and knowledge sharing programs as highlighted in the NPDM

The policy highlights the following interventions under this particular domain:

○ Exploring the root causes of all potential hazards
○ Develop sector-based demand and loss assessment method
○ Conduct earthquake and urban risk assessment

The NPDM targets to take the following actions:

○ Develop and install disaster impact assessment (DIA) tool
○ Conduct and Review Community based Risk Assessment (CRA/URA)
○ Implement Risk Reduction Action Plan (RRAP) based on the CRA priority
○ Conduct a comprehensive risk assessment to label priority wise investment scheme.
○ Update and expand hazard, vulnerability and risk assessment for earthquake and flood

The policy involves micro-zonation mapping for earthquake.

Risk assessment programs under the NPDM come up with mapping as by-product.

4.2. National DRR policy evaluation: Alignment with SFDRR

Sendai Framework for Disaster Risk Reduction (SFDRR) is acting as the focal guidance of the contemporary DRR strategy for all the UN member countries. This section deals with the issues and strategic actions of the DRR policy of Bangladesh in alignment with the SFDRR priority areas in

Table 1

| Focused Themes                  | Key Issues Emphasized                                                                 | Reflectivity on Priority Areas |
|--------------------------------|--------------------------------------------------------------------------------------|-------------------------------|
| Disaster Information and Data Management | The Disaster Management Act (DMA) highlights maintaining the information flow in an emergency situation (DMA: section-28)  | Disaster Risk Understanding   |
| Research and knowledge generation programs | The DMA authorize the responsibility to establish a ‘National Disaster Management Research and Training Institute’ to take relevant programs including research (DMA: section-12) |                               |
| Hazard, risk, vulnerability and capacity assessment | The NPDM targets to take the following actions:                                      |                               |
| Zoning or Mapping                | The policy highlights the following interventions under this particular domain:          |                               |

Studies on resilience building for biological hazards

Studies on resilience building for human induced hazards

Prior knowledge management and research on scientific and socio-economic issues for all DRM and development action by allocating at least 5% of the project budget.

Innovation programs on weather and climate monitoring, prediction and forecasting

Establishing seismology and earthquake engineering disciplines in universities

○ Exploring the root causes of all potential hazards

○ Develop sector-based demand and loss assessment method

○ Conduct earthquake and urban risk assessment

○ Develop and install disaster impact assessment (DIA) tool

○ Conduct and Review Community based Risk Assessment (CRA/URA)

○ Implement Risk Reduction Action Plan (RRAP) based on the CRA priority

○ Conduct a comprehensive risk assessment to label priority wise investment scheme.

○ Update and expand hazard, vulnerability and risk assessment for earthquake and flood

○ The policy involves micro-zonation mapping for earthquake.

○ Risk assessment programs under the NPDM come up with mapping as by-product.
order to highlight the interlinkages and synergies in pursuing risk-resilient development pathways.

Disaster risk management policies and practices should be based on the solid understanding of disaster risk in all its dimensions. Such knowledge can be leveraged for the purpose of pre-disaster risk assessment, for prevention and mitigation and for the development and implementation of appropriate preparedness and effective response to disasters [46]. The Table 1 highlights the key strategic actions to meet the first priority area of the SFDRR named “Understanding Disaster Risk” which is the basis for all measures taken to withstand hazards. Following the SFDRR guideline, the study divides the first priority area into four thematic areas under which country’s key strategic actions have been pointed out. These are the focused themes: 1. Disaster information and data management, 2. Hazard, risk, vulnerability and capacity assessment, 3. Research and knowledge generation programs and lastly 4. Zoning or mapping.

Although significant initiatives have been taken targeting this priority area, few aspects yet need to be addressed. A national web portal development is necessary to store and disseminate all the disaster related data among different stakeholders. Even the damage and loss data need to be preserved which act as the forensic study to diagnose the error of the systems. National policy documents in most cases targets single hazards and sets directives to solve hazard specific problems. However, nowadays most of the hazards occur in chain, therefore multi-hazard risk assessment-based policy documents need to be formulated. Similarly, Bangladesh has made appreciable progress in the context of flood and cyclone early warning. However, multi-hazard early warning system development is still demanding further attention. In addition, systemic risk assessment and systemic impact scenario consideration is necessary to support government in priority setting and decision making that considers all risk and its systemic impact. As the nature of risk becomes increasingly systemic, so the way we think and act also needs to be more systemic in order to sustain the health and well-being of the people of our country. The issue of uncertainty in risk assessment also need to be addressed with state-of-the-art research to facilitate effective decision-making. Research and innovation are prioritized in each national DRR policy documents especially in recent ones. In connection, the use of science and technology in DRR is increasing with passing times. However, the number of users is still low especially users at local level are not fully IT literate. Bangladesh has brought almost all major cities under land use planning in a strict manner. However, the recent urban development needs to be properly monitored to evaluate the performance of urban growth compared with the formulated land use plan. The importance of global and regional cooperation and collaboration has been emphasized in National DRR policy documents; however, the modality of enhancing this collaboration is not well defined.

Disaster risk governance at all levels is important for an effective and efficient management of disaster risk. To ensure disaster risk governance, a well-coordinated institutional set up/arrangement guided by legal framework is necessary. Moreover, to smoothly run the DRR activities, sufficient fund and continuous fund generation is also necessary.

Table 2 summarizes the key strategies for ‘Strengthening Disaster Risk Governance’. The priority area is divided into four themes under which key issues are pointed out. These are the four priority actions- 1. Mainstream and integrate DRR, 2. Mechanism development and strengthening,

| Table 2 | Issues on ‘Disaster Risk Governance’ highlighted in the National DRR policy documents. |
|---|---|
| **Focused Themes** | **Key Issues Emphasized** | **Reflectivity on Priority Areas** |
| **Mainstream and Integrate DRR** | The policy forwards action to enhance the capacity of DM framework and institutions by mainstreaming DRR and CCA | Disaster Risk Governance |
| | The NPDM targets- |  |
| | To ensure DRR addressed public investments and inclusion of Disaster Impact Assessment (DIA) |  |
| | To establish National Emergency Operation Centre (NEOC) and Humanitarian Staging Area (HAS) |  |
| | To enhance gender responsive and disability inclusive DRM in all phases |  |
| **Mechanism Development and Strengthening** | The DMA directs the following mechanism to the National Disaster Management Council: |  |
| | o Provide strategic guidelines concerned to DM policies and plans |  |
| | o Provide necessary guidelines for implementation of DM law, policy and plan |  |
| | o Provide strategic guidelines for revision, correction and change after evaluation |  |
| | o Develop strategic guidelines for developing post disaster response and rescue operations |  |
| | Update the directives to implement Multi-agency Disaster Incident Management System |  |
| | SOD outlines the roles and responsibilities of all concerned bodies associated in handling any disaster meanwhile working as foundation of individuals detail plan. |  |
| | The policy incorporates endorsing long-term plans and effective policies for people migrated due to climate change; |  |
| | Innovation in the way of community informed DM strategies and their implementation |  |
| | ERP delineates |  |
| | o The Minimum Preparedness Actions (MPA) for emergency response phase grounding on a multi-hazard and domain specific approach such as, health, education, logistics etc. |  |
| | o The Standard Operating Procedures (SOP) for early warning and emergency response phase |  |
| | o Contingency response plan for earthquake, flood and cyclone. |  |
| | The NPDM highlights the following measures under this domain: |  |
| | o To review and update the National Earthquake Contingency Plan |  |
| | o To prepare, review and update sectoral DRR strategies/guidelines for ministries/division as per SOD |  |
| | o To prepare guidelines for private sector investment for resilience. |  |
| | o To develop strategy for sustainable embankment management |  |
| | o To close gaps in institutional policies and programs on drought and cold wave hazards |  |
| **Empower Local Authority** | The DMA provides special rights and powers to the government of disaster-stricken area (DMA: section-24) |  |
| | The policy leads to construct grassroots organizations, ensure their participation, and establish partnership with endangered communities |  |
| **Technical, Financial and Administrative Capacity Assessment** | The DMA addresses utilizing the consent about early purchase in pre-disaster period. |  |
| | The policy emphasizes installing a separate DM unit in all relevant organization, promoting public-private association (DMA: clause-1, section-25) and good governance practices. |  |
| | The policy also highlights the combination of modern and scientific techniques with local strategy |  |
| | The NPDM has the following measures under this domain: |  |
| | o Expand Capacity building program of OPP |  |
| | o Ensure inter-ministerial coordination to develop sectoral policies and capacity building |  |
| | o Activate urban DMCs and strengthen the capacity of DMCs |  |
| | Strengthen formal institutional capacities and social protection institutions. |  |


3. Empower local authority and lastly 4. Technical, financial and administrative capacity assessment.

Bangladesh has a strong institutional arrangement, legal frameworks, civil society, full time cluster mechanism, very strong UN system and highly adaptive community. Still all the members of the concerned institutions do not understand the national DRR policy fully. National resilience program is working on leadership development so that each sector becomes enabling to the execution of risk informed decision-making. It is appreciable that national DRR policy documents have been periodically and systematically get updated. The fund availability is much increased to execute the DRR related activities compared to fifteen years earlier. The aspect of coordination seems to be everybody's concern, however, apparently observed no solution soon. Therefore, a significant strive is necessary to make coordination effective from top to local level. Moreover, the annual progress evaluation is also required to monitor the success of legal instruments. Voice of the affected communities need to be sensitized with a sophisticated manner at this stage. An exploration of effective, emergent-based approaches to systemic risk assessment, management and governance for sustainable and resilient societies and ecosystem is also necessary.

Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health, environmental and cultural resilience of nations. This investment can be drivers of innovation, growth and job creation. Such cost-effective measures are instrumental to save lives, prevent and reduce losses and ensure effective recovery and rehabilitation.

The Table 3 highlights the key strategies of the policy documents for the third priority area ‘Investing in DRR’. The projected priority area is divided into three priority actions under which key strategic interventions are pointed. These are the three focused themes- 1. Sufficient funding for Risk Governance 2 Investment in developing resilient system 3. Risk transfer and insurance mechanism, and lastly 4. Investment in physical and critical infrastructure. 5 business continuity plans. However, investment in increasing resilience addresses the point 5 too.

There should also be sufficient fund available to operate all the disaster risk management activities. Well-equipped local actors both financially and technically can play a more active role in implementing DRR. So, further investment is required in enhancing the capacity of the local actors. SFDRR also advocates enhancing the resilience of national health systems including disaster risk management into primary, secondary and tertiary health care, especially at local levels. Health workers and health professionals should be sufficiently trained in order to act efficiently in the field of disaster medicine and supporting and training community health groups in health programmes. SFDRR also emphasized to promote and integrate disaster risk management approaches throughout the tourism industry as this sector is a key economic driver but badly affected by disaster impact. SFDRR also advocates promoting and supporting collaboration among relevant public and private stakeholders to enhance the resilience of business during disasters. Investment in livelihood generation is essential along with implementation of risk reduction measures. Investment is necessary to develop an effective mechanism to monitor and evaluate the progress and success of national DRR activities. Fortunately, IDF (infrastructure development fund) has been launched to assure own funding to construct massive infrastructure like Padma bridge, similar fund raising is also necessary at each local constitution to facilitate DRR activities.

The steady growth of disaster risk and loss due to the increase of exposure combined with lesson learned from past disasters indicates the needs to further strengthen disaster preparedness for response and recovery at all levels. SFDRR has demonstrated that the recovery, rehabilitation and reconstruction phase, which needs to be well prepared ahead of disaster which will ensure “Build Back Better”, making nations and communities resilient to disaster.

Table 4 summarizes the disaster preparedness issues to meet the SFDRR recommended priority area-4. Following the SFDRR guidelines, the study divides the projected priority area into two thematic parts under which country’s key strategies have been illustrated. The three focused themes are- 1. Training & practice drills, 2. Stockpiling and awareness generation program and forecast based and anticipatory financing. The progress of

Table 3
Issues on ‘Disaster Investment’ highlighted in the DRR policy documents.

| Focused Themes | Key Issues Emphasized | Reflectivity on Priority Areas |
|----------------|-----------------------|------------------------------|
| **Investment in Increasing Resilience** | | | Disaster Investment |
| | The DMA directs assistance to the poor for suitable rehabilitation and DRR to the vulnerable or affected community (DMA: section-27). | | |
| | The DMA specifies funding mechanism by articulating two separate funds namely ‘National Disaster Management Fund’ and ‘District Disaster Management Fund’ (DMA: section-32). | | |
| | The DM policy incorporates the following measures- | | |
| | ○ Incorporate environmental protection, climate change adaptation and poverty reduction mechanisms into the DM programs and simultaneously prioritize the ecosystem approaches | | |
| | ○ Encourage the development and cultivation of disaster resistant crop varieties and alternative livelihoods | | |
| | ○ Prioritize marginalized populations and lay out proper food supply | | |
| | ○ Build multidimensional culture of DM | | |
| | The NPDM has the following action to be done within 2021–2025: | | |
| | ○ Nationwide capacity building for resilience | | |
| | ○ Ensure institutional resilience of Research & Development Center, National Emergency Operations Center, and Humanitarian Staging Area (HAS) | | |
| | ○ Ensuring business continuity during the crisis e.g. pandemic | | |
| | The NDDP has disaster risk managing financial options for private sector, insurance and funding for social protection; improve supply chain resilience of the industrial sector by developing riverine transport system. | | |
| | The DMA involves the following actions: | | |
| | ○ Formulate community-based programs and voluntary organization namely National Disaster Volunteers (DMA: section-13) | | |
| | ○ Restore treatment facilities and carry relevant expenditure of hospitals or any type (autonomous, private, or NGOs) of treatment centers (DMA: clause-2,5; section-25) | | |
| | ○ Emergency purchase to response in disaster (DMA: section-33) | | |
| | ○ The policy incorporates DRR informed institutional and structural reformation | | |
| | The NPDM involves the following actions: | | |
| | ○ Invest in construction of resilient rural housing | | |
| | ○ Strengthen flood management | | |
| | ○ Strengthen cyclone management. | | |
| | Follow an ‘all-hazards’ approach | | |
| | Develop resilience of haor infrastructure system | | |
| | Systemic risk assessment-based lifeline development | | |
forecast based financing (FbF) is still at its infancy in the context of Bangladesh. Nearly realistic FbF is the key to ensure build back better. In addition, the government should focus to building a proactive culture at all levels to accelerate build back better.

In addition to priority actions, SFDRR also advocates for the role of stakeholders and promoting international cooperation and global partnership. While states have the overall responsibility for reducing disaster risk, it is a shared responsibility between the Government and relevant stakeholders. Non-state stakeholders also play an important role in providing support to states through their commitment, goodwill, knowledge, experience and resources. Participation of diverse stakeholders including women, children and youth, person with disability, older persons, indigeneous people, migrants, academia and scientists, business professionals and media groups has been particularly encouraged in the SFDRR. It is worthy to note that the commitments of stakeholders should be specific and time-bound in order to support the development of partnerships at local, national, regional and global levels and in the implementation of local and national disaster risk reduction strategies and plans [46].

Furthermore, International, regional, subregional and transboundary cooperation is pivotal in supporting the efforts of states, their national and local authorities, as well as communities and businesses, to reduce disaster risk [46]. To promote mutual learning and exchange of good practices and information through, inter alia, voluntary and self-initiated peer reviews among interested states is vital for strengthening mutual collaboration and partnership.

The thematic analysis of the national DRR strategies according to the SFDRR presented in this study to identify a set of sound practices and opportunities that can be addressed in the DRR strategy of Bangladesh. The DRR strategies are developed in an coherent manner, though in some areas it needs to emphasize on few facts that have been already discussed above in this section. The graphical representation of the whole discussion summed up below to get a better perspective. A brief analysis of the policy documents eventually leads to explore and suggest opportunities (Fig. 4) for improvement in the DRR strategy of Bangladesh.

### 4.3. GoB policy initiatives for COVID-19

Starting from the day after the World Health Organization (WHO) declared Covid-19 as a pandemic and issued an international public health emergency, the entire world is trying its best to withstand till date. Bangladesh is no different from this circumstance, especially in our country context it’s more complicated to deal with such phenomenon. The Government of Bangladesh has taken different kind of initiatives at different time in response to country’s on-going requirement which are issued and archived as letter, GO (Government Order), office order, etc. [37]. The Government policy initiatives could be better visualized in Fig. 5. The trend of daily confirmed COVID-19 positive cases is also provided to better understand and visually correlate the impact of policy initiatives taken by the government.

In the earlier days, the decision-making body had followed lenient protocols with low COVID cases and so consequently, the number began to surge within a few days. Therefore, the Prime Minister declared a nationwide general holiday for all public, private, autonomous offices and a ban on all types of public gatherings from March 26 to May 30 affirmed in different phases. However, this decision has put many people especially low- and middle-income group into financial constraints. In such a state of economic stagnation, the government puts forward remittance incentives, distinctive loan and different stimulus packages for low-income professionals, farmers, micro businessmen, and industries at different orientation in order to mitigate economic fallout from Covid-19 [22]. Moreover, maintaining social distance is not easy in an overpopulated country such as Bangladesh. On this note, imposing ‘lockdown’ (movement restrictions) as invariably followed by many governments across the world is challenging for Bangladesh where a large part of the country’s population lives under poverty and maintain their livelihoods through daily work.

The world is yet to reach an ultimate solution in combatting COVID-19. So far, maintaining social distance and following health safety protocols (e.g. washing hands for 20 s) remain effective to control the spread of the virus. After reopening the offices on a limited scale from 31 May (2020), a set of orders imposed on the administration of all level to set up thermal scanner, disinfect office space and maintain social distances of 3 ft in public transport by doubling the travel cost than regular for the convenience of the public transport operators. For the safety of factory workers, each factory has been instructed to form its own medical team on mandatory and emergency basis. Apart from the Institute of Epidemiology, Disease Control and Research (IEDCR), Institute of Public Health (IPH), Institute of Public Health Nutrition (IPHN), and National Institute of Preventive and Social Medicine (NIPSOM) are some of the major institutions working for the cause. The general and weekly holidays are cancelled for all the healthcare workers serving in these institutions.

In spite of the complex context and government’s several insufficient preventive actions, people also witness many notable works in ensuring citizen’s health security, social and financial wellbeing. This pandemic situation demands attention and cooperation among all stakeholders from international to regional, regional to national and national to sub-national level. To strengthen the authoritative body as an effective and reliable support structure within communities, the government has formed a committee of 42 members on national level having cabinet minister of MoHFA as the chairperson. The committee is devoted to settle necessary directives with supporting logistic or financial assistance and also provide required guidance to the local level committees in curbing COVID-19 outbreak. Besides the national committee, sub-committees have been formed at different administrative levels. The assigned functions of these committees are to implement directives at their respective tier through proper coordination and communication with the upper hierarchical committees.
Department of health service assigned responsibilities to the public health expertise by levelling major Covid-19 dedicated hospitals splits in different divisions and districts. A Technical Advisory Committee and a Taskforce Committee has formed to support the national focal point. The expert opinion of the advisors from the National Technical Advisory Committee ensured within the root level committees through the inclusion of individual responsibilities. The taskforce committee monitor time-to-time progress of actions while synchronizing individual decision-making process. They also examine existing facilities (e.g. technical, manpower, etc.) and inspect the accuracy of COVID-19 concerned news or features, license and renewal status of hospitals or health institutions performing tests. Therefore, the department of health service established a control room for reporting these actions to the workforce and maintaining a continuous chain of communication and coordination with the IEDCR.

Beginning of the Covid-19 outbreak, the scarcity of testing opportunities was one of the main topics of discussion. According to the IEDCR the total number of laboratories conducting Covid-19 test is 33, 17 among which located inside and other 16 outside the Dhaka division. The coverage of testing shows the statistic of 513 per million of country population which is still not enough for a highly populated country like us [52,53]. Nevertheless, we can notice steady increase in the number of testing coverage with the expansion of sample collection and testing facilities. In every district at least three vehicles (two for sample collection and one for carrying patients infected with COVID-19) made ready, especially in areas those are far from the testing sites. Government has selected private hospitals for testing with a certain fee, among which 17 hospitals or institutions are issuing COVID-19 free certificates to the Bangladeshi migrant workers and citizens.

On this note, international travellers have to follow both local and global rules and restrictions. Globally travellers are followed the instructions documented in ‘WHO’s International Travel Guidance on COVID-19’. Moreover, the Bangladeshi emigrants quarantining under government supervision are given daily food and basic healthcare services for free of cost. Till now, mass gathering discouraged by ensuring minimum distancing during relief support. In addition, social distancing is maintained even in the office, market and shopping centres.

The non-therapeutic intervention suggested by the healthcare workers is the only way to combat the virus until an effective antidote is discovered. Government has approved the Direct Procurement Method (DPM) for...
procuring the Coronavirus (COVID-19) vaccines as a matter of urgent state necessity. A committee has formed to create SOP for the long-term purchase of medical goods and devices used to diagnose or treat COVID-19 such as diagnostic tests, masks, gowns, gloves, sterilizers, etc. As the elderly people are highly susceptible to infection and for some reason they don’t want to go to the sample collection place for tasting, GoB issues an order to collect their (greater than 50 year old) sample from home.

Government is working on placing public hospitals functional and well equipped for providing treatment to the COVID and the non-COVID patients simultaneously. Hospitals are directed to establish liquid oxygen tanks on an emergency basis and create a separate COVID unit for women expecting child. Private hospitals, clinics and diagnostic centres are proposed to keep operable for patients apart from COVID symptoms. Government directs legal action against irregularities and negligence in the service through immediate investigation and coordination with the deputy commissioner. With foreign help government organizes different training session since this is an unusual situation we are going through. An authorized body with knowledge and proficiency has conducted special training sessions on burial shroud of Coronavirus infected dead person.

The salvation of humankind from the pandemic is wayward without providing proper protection to the frontline warriors, especially doctors, nurses, and people working in the health-care sectors. A Quick Response Team has been formed to provide food, medicine and other basic support to the COVID-19 affected frontline workers serving in different hospitals. Government announces money twice the basic salary as lump sum allowance to the frontline health workers devoting to serve COVID patients. Moreover, several public rest houses, hotels, and government residences near COVID dedicated hospitals are arranged for doctors, nurses, health workers, and other medical staffs. In the face of inadequate production or supply of PPE, the need for a set of strict terms and regulations from the highest level of the government was apprehended from the very initial phase of the pandemic. The Government issued a guideline for using Personal Protective Equipment (PPE) rationally in order to curb the spread of the disease and provide healthcare services to both the patients and the healthcare workers ([26], Rational use of Personal Protective Equipment for COVID-19). The Department of Disaster Management (DDM) under the Ministry of Disaster Management and Relief (MoDMR) prepares its own contingency plan for Covid-19, which delineates necessary actions corresponding to certain response areas and their respective authority for

**Fig. 5.** Timeline of Government Policy Initiatives.
accomplishment [7]. To ensure proper execution of the humanitarian assist-
tance in disasters arisen in the midst of this pandemic situation, the
MoDMR has issued a guideline in this respect. There is another plan of
the Directorate General of Health Services (DGHS) that involves the pre-
paredness and response schemes to the pandemic titled as “National Pre-
paredness and Response Plan for Covid-19, Bangladesh” [19]. It outlines
the importance and scope of using PPE for targeted health workers follow-
ning the sensitivity of their responsibility. Besides, the platform of develop-
ment agencies working in Bangladesh, HCTT (Humanitarian Coordination
Task Team) also formulated contingency plan for climate related disasters
in the COVID-19 pandemic context [18]. Especially, importantly, the gov-
ernments’ initiative to arrange early vaccination in February 2021 is really
appreciable. Procuring the vaccines from the University of Oxford way
ahead of the discovery was the greatest gamble, however, widely successful
government initiative. During this ongoing vaccination program, about
25,000 vaccines can be kept at Upazilla level. The Government has now
about 3 crore vaccine preserving capacities. The support of volunteers
and the support from Dhaka Ahsania Mission, German Redcross and
Bangladesh Red Crescent Society were appreciable.

However, this good initiative could not continue to give benefit in the
2nd and 3rd wave due to the failure in timely supply of the required vac-
cines. Bangladesh has been witnessing the second and 3rd COVID wave
started from early 2021. The number of COVID infected patients has started
to increase rightly after the identification of a new variant called Delta Plus.
This deadly and the most active variant of SARS-CoV-2 first found in India
and caused a huge life loss. The government of Bangladesh has then de-
cided to shut down its border with India on April 26 before it’s widely dom-
inance over there. Nevertheless, on May 8 the first COVID-19 patient
carrying Delta variant has been identified in Bangladesh. In the month of
May the statistic shows 45% Delta cases and just within a month in the
end of June, it jumped to 78%.

4.4. Life in new normal

Timely implementation of national DRR agendas will be challenging
given the impact of ongoing pandemic. Anticipating further world-
changing systemic events of this scale, national DRR policy and strategies
need to be explored to identify what risk management and risk governance
approaches, institutions and structures fit for purpose in a world living with
COVID-19. Although the understanding the complexity of risk in post
COVID-19 situation is challenging, COVID-19 also creates opportunities
to make cities resilient as the city dwellers are the worst victim. Pandemic
preparedness is more urgent in cities. Tackling inequality in cities is essen-
tial for fighting COVID-19. It’s about shared responsibility. Risk cannot be
divided into categories assigned solely to health authorities instead solu-
tions are needed across sectors. The effects of COVID-19 can be felt beyond
the economy and health even on mental health especially for the elderly
person and in the context of enhanced domestic violence. Building resilient
infrastructure and supply chain is crucial to save lives and to avoid
overburdening health systems. Lack of adequate infrastructure and ser-
vices, unsafe housing, inadequate and poor health services can turn natural
hazards into disaster. However, leaders need to understand and address this
gap by taking best decision on COVID-19 recovery spending. Small and
medium-sized enterprises are critical in reducing disaster risk. This is how
governments can help them withstand shocks and become more sustain-
able. Smooth operation of supply-chain mechanism is necessary to main-
tain business continuity. Using digital technology, considering changing
climate scenario, contingency planning and insurance coverage make the
business more resilient. COVID-19 recovery could also be turned into
green recovery. No one is safe until we are all safe. Human rights dimension
needs to be perfectly addressed in the pandemic situation. Special empha-
size need to be put on education and tourism sector during the pandemic.
Education system in post COVID situation should follow its hybrid strategy
i.e. conducting education and research both on campus and online. Tourism
industry has also suffered a huge loss and therefore, new safer strategy is re-
quired to sustain in new normal situation. In addition, can climate
preparedness mitigate emerging pandemics? – this question is a vital one
to continue our life in a changing climate. System transformation including
urban transformation should follow a resilient pathway in order get solu-
tion in the context of climate change.

4.5. Cross-country disaster management: Best practices in the context of DRR strategy

DRR is considered as one of the most important priority options with a
strong institutional basement that can take a variety of forms based on a
country context. The concurrent global DRR framework, SFDRR, is acting as
the focal guidance of the contemporary DRR strategy for most of the
UN countries. Few noticeable good practices of India, Nepal, Philippine,
Vietnam, Japan and Turkey are mentioned here.

Nationwide collaboration and up-gradation of bilateral, regional, and
international cooperation are explicitly mentioned in Nepal’s strategic plan
[31]. Nepal has exceptionally exhibited concern to reveal disaster infor-
mation publicly too. In Japan, there is a recognized Disaster Information
Hub promotion team collaborated between national and local government
to comprehend and assemble disaster databases through all the phases of
disaster. Aside from the accustomed information management team,
Japan has laid out special corps involving skilled and experienced re-
sponders to respond to large scale events. A special disaster information sys-
tem called ‘L-Alert’ is expected to be used for sharing and disseminating
information from the acquire to residents [21]. The administrators of
both Bangladesh and India have pointed out the incorporation of DRR dis-
cipline at university level curriculum (India, 2016), whereas Nepal and
Japan incorporate the discipline from school to university level. The gov-
ernment of Japan has developed a DRR inclusive education system
followed by a set of regulations complied in “Guide to Make a Disaster Re-
duction Manual for Schools (Earthquake and Tsunami),” and “Development
of a Disaster Reduction Education to Nurture Power to Live On”.

The forecasting schemes are revised and committed to being innovative
for modelling the prioritized hazards. Though the mentioned initiatives
are appreciable, all these three South-Asian countries are deferred to ad-
dress the formulation and strengthening of institutional frameworks to
carry on knowledge generation programs and corresponding implementa-
tion processes. Furthermore, funding for research and knowledge genera-
tion programs is another drawback for developing countries like us.
Indian administration body allocates research grants to researchers and in-
situtions concentrated on DRR [20]. ‘HRVC assessment’ has been ad-
dressed through cross-national DRR programs such as EPAC, AMCDRR,
Delhi Declaration, Asia-Pacific Economic Cooperation (APEC), Asian Disas-
ter Reduction Center (ADRC), etc. As India and Bangladesh have just pre-
pared their draft plan, HRVC (Hazard Risk Vulnerability) assessment and
monitoring mechanisms are not precisely elaborated in their plans. Indeed,
in this case, Nepal and Japan are worth mentioning as an example to be
followed by others.

The strategic action of Nepal administrator towards coordination mech-
anism development is notable, as they lay down a strategic plan for several
relevant areas with the incorporation of funding and monitoring ap-
proaches. The Grievance Redress Mechanism (GRM) and accountability
mechanism of India are distinct compared to others. On the other hand,
as Japan already has a well-established DRR mechanism, inter-
institutional coordination and inter-regional relationship have been
highlighted in its recent strategy. Furthermore, unlike the previous plan,
MoDMR (2016-20) has underlined to prepare a business continuity plan
to ensure the regular flow of resources and functions during a disaster. More-
over, Japan has two formal documentation on business strategic planning
such as Business Continuity Plans (BCPs) and Business Continuity Manage-
ment (BCM) which are grounding on government authorized guidelines for
ensuring business stability.

The fourth focused theme of DRR governance determines the strategy
for empowering the local administration system, as the lowest body of gov-
ernment ultimately executes the plans and provides services to build resil-
ience in its respective vicinity. In the context of developing countries, the
scope for the local authority is very limited and therefore, such drawbacks observed in the strategy most of the time. However, the adaptation capacity of local government in Japan complements its central governing system by incorporating a joint public-private expert team in the disaster-affected local authority. Moreover, if we look into their technical, financial and administrative capacity assessment initiatives, it will be noticed that except Japan, the other three countries hardly grounded on a specific DRM system that counts both budgetary funding and human resources.

Nepal aims to invest in financial incentives and development of the marketing sector to strengthen the cornerstone and maintain the flow of goods and services in the time of rapid or slow-onset hazards. However, a noticeable initiative taken by Japan government is to invest in livelihood generating options for people living in disaster-prone areas. In spite of these distinctive strategies, some relatable initiatives have been noticed such as investment for retrofitting, emergency facilities, loan facilities at minimum interest, critical infrastructure, etc. that actions help us to act effectively in the state of emergency. The investment pattern in the DRM sector mostly followed a traditional pattern that is centered on post-disaster actions covering response and recovery mechanisms. Correspondingly all the case studies emphasize to keep investing in physical and critical infrastructures such as emergency operation centre (EOC), multi-purpose shelters, embankments, fire stations, etc. Nonetheless, the Risk transfer and insurance schemes are contemporary risk financing approaches for catastrophic events like earthquake, cyclone, storm surge, flood, etc. The risk transfer and insurance mechanisms weren’t widely practiced before in the south-Asian region. Especially, Nepal promotes insurance programs targeting its risk profile and emergency public structures like schools, hospitals, health posts, and critical infrastructures. In contrast, Bangladesh is in a preliminary stage to initiate such practices. Japan in this respect committed large insurance payments against damage from natural disasters which hold a policy of ‘no loss and no profit’.

Built back better is closely aligned with humanitarian-development nexus. Japan is certainly ahead on the process of strengthening the preparedness capacity of residents at all levels. The adapted approach of the country targets to grow a culture of DRR, as the topography and climatic circumstances have bound it to be gone through numerous unavoidable natural hazards. The government of Japan conducts emergency drill or simulation exercises on a regular basis and so, it emphasizes these exercises repeatedly in its current plan as well. In addition to the disaster training programs, the projected countries divulge to promote notable awareness generation programs where Nepal emphasizes on emergency communication system and stockpiling; India demonstrates its preparedness strategies as a whole, despite pointing out some distinctive initiatives like focusing on special courses on DRR and community based risk assessment initiatives, it will be noticed that except Japan, the other three countries hardly grounded on a specific DRM system that counts both budgetary funding and human resources.

In addition to the above good practices, a few DRM activities of Philippines, Vietnam and Turkey are also worth mentioning here. The National Disaster Risk Reduction and Management Plan (NDRRMP) of Philippines [40] provides the legal basis for policies, plans and programs to deal with disaster thematic areas. Legal agencies are also specifically assigned to properly address each thematic area: disaster prevention and mitigation, disaster preparedness, disaster response and disaster rehabilitation and recovery. NDRRMP has three timeline i.e. short, medium and long-term implementation target. The goal, objective and target outcomes are also defined for each timeline and according to each thematic area. Alignment of Philippines’ National DRM policies with SFDRR are also highlighted in this policy documents. In addition, the progress evaluation of DRM policy documents is also appreciable. For example, the Disaster Risk Reduction report [48] provides a snapshot of the latest DRR progress of the Philippines achieved under the four priorities of SF. It also highlights some of the key challenges surrounding the issue of creating coherence among the key global frameworks at the country level as well as local level. Coherence with SDG and Paris Agreement also being monitored [48]. Similarly, Turkey has also prepared national progress report on the implementation of the Hyogo Framework For Action (2013–1015) to evaluate the nations’ performance in implementing DRR and to figuring out the scope of further strengthening it [9]. As earthquake is the most deadly and costly disaster for Turkey, The Earthquake Advisory Board (EAB), part of the Disaster and Emergency Management Presidency of Turkey (AFAD), resolved in 2010 to launch an “Earthquake Strategy Development Exercise” with the objective of identifying activities that must be undertaken to create the policies and establish priorities for protection from earthquakes and reduce their detrimental effects, suggest policies to be followed in the post-earthquake phase and earthquake-related research. As part of this decision the Working Commissions have been formed with the participation of EAB members as well as external experts [2]. Bangladesh may follow a similar comprehensive approach separately in managing Cyclone disaster.

Regarding the COVID-19 transmission containment, the initiative of Turkey and Vietnam is globally appreciated. Preparedness for the pandemic in Turkey has been ongoing before the first case was detected on March 17, 2020. The Pandemic Influenza National Preparedness Plan was available after being updated in light of experiences gained during 2009 Influenza Pandemic. Accordingly, Pandemic Coordination Board and Operation Centers have been established on the national and provincial level. This was an adaptable plan to the Novel Coronavirus Disease (COVID-19) [8]. Positive outcomes seen in Vietnam could be attributable to the strict precautions taken by the government in the battle against COVID-19. Nevertheless, national level responses to the COVID-19 pandemic vary greatly among countries, depending on each's socio-economic background, health care capacity and political system [42]. With local transmission halted in April, the Government of Viet Nam began to ease physical distancing measures and to focus on socio-economic recovery.

5. Conclusion and recommendation

Among the seven global targets of SFDRR, substantially increase the number of countries with national and local disaster risk reduction strategies by 2030 act as the basis for conducting this study. This study has critically reviewed the national DRR policy instruments, tried to highlight the gaps and provide suggestions to addressing it. Nine out of seventeen sustainable development goals are closely linked with disaster risk reduction. However, global action to meet the SDGs is not advancing at the speed nor scale required to deliver the goals by 2030. This prompted UN Secretary-General to mark 2020 as the beginning of the ‘Decade of Action’ that calls for accelerating sustainable solutions to all the world’s biggest challenges. Progress in meeting the global goals and outcomes of the Sendai Framework, the 2030 Agenda and the Paris Agreement has been subjected to a further slow down by the COVID-19 pandemic. Therefore, this study also brought the national policy initiatives altogether and also highlighted suggestions for the life in new normal situations. Moreover, a few best practices of India, Nepal, Philippines, Vietnam, Japan and Turkey have also brought in the context of DRR. Based on the review study, concrete recommendations could be outlined in the following manner:

• Direct national policy documents like NPDM, SOD etc. are more aligned with SFDRR especially recently formulated documents are based on the priority areas. Most of the National Policy documents have specific timeline. Nevertheless, new challenges might be emerged within this interval and the way out could be added as the annexure of the respective documents.

• Most of the DRR policy is single hazard focused. Scenario planning addressing multi-hazards and associated risk is lacking. Especially Health policies did not take into account extended humanitarian crisis/extreme event scenarios.

• Special research grants allocation for disaster science and climate resilience studies are necessary for effective DRR.

• The use of technology by the stakeholders especially involved in anticipatory/impact-based assessment at local level should be practiced in greater extent.
DRR is everybody's business. The GO/NGOs will not be able to address recent revised SOD has indicated that the DM committees at all levels are not only responsible for preparedness and response but also responsible for the successful execution of DRR initiatives. National resilience program is working on leadership development so that each sector becomes enabling to the execution of risk informed planning. DMD is also started program to train up DM committees at all levels so that they understand their respective role and responsibilities fully. Focal point/person from each ministry should be trained up in this case to ensure continuity and these trained people should act as focal point even if they are transferred from their current organizations. Accountability and coordination need to be addressed seriously.

DRR is everybody's business. The GO/NGOs will not be able to address all issues. People's participation is also necessary in this context. Dengue outbreak in 2020 was effectively managed by social protest by the people of all groups. Social organizations and club played a vital role then. Similarly, all the citizens of Bangladesh don't seem to be fully aware of COVID-19 risk. Especially, the social disasters like drug addiction could be managed by initiating more social initiatives. Polarization in civil group is harming accountability. How is risk perception influenced by political ideology and/or political influences, especially in highly polarized political environments? - is also a major concern that needs further attention.

Bangladesh has a strong institutional arrangement, legal frameworks, civil society, full time cluster mechanism, very strong UN system and highly adaptive community. However, the capacity building of local authority is necessary. Local authority should be strengthened legally, technically and financially. In Pakistan, the government understand the DRR policies almost fully. Philippines has district level contingency plan which is still under process here in Bangladesh. Voice of the affected people reaches to the policy makers in two ways: localization working group and through CwC working group (BBC media action). There should be a much effective system to listen to the voice of the affected people.

In the context of National DRR fund development, a national steering committee could be formed to maintain bilateral/multilateral donor agency coordination targeting fund raising following a defined guideline. The fund might be raised from each DRR projects be it supported nationa or through development agencies.

Anticipatory forecast based financing mechanism should be developed for sustainable built back better

Although Government's initiative to tackle first wave was effective, the long-term relaxed lockdown strategy without confirming proper & timely vaccination due to failure of collecting the required vaccines has put the Government's initiative in question especially during the 2nd and 3rd wave of COVID-19 outbreak.

Author contribution

The corresponding author has conceptualized the research problem. The first author has conducted the research as her Master's thesis. She has also performed data curation, formal analysis and visualization. The 3rd author has provided guidance in identifying the research gaps and suggesting further scope of development of national DRR strategy. The corresponding author and the first author have then further improved the study. All authors have contributed in writing the first and revised manuscript.

Funding

This study is being carried out with the financial support of Dhaka Ahsania Mission under the ELNHA project. The ELNHA project is a five-year initiative started in 2016, implemented by Oxfam Novib and Oxfam Great Britain, with funding from the IKEA foundation. The primary purpose of the ELNHA project is to contribute to increasing the role of local and national humanitarian actors (LNHAs) in preparing for and responding to disasters. The objective of the ELNHA project is that local and national actors can deliver faster, more effective and quality assistance if their general influence and access to decision-making and coordination were increased through a range of localisation initiatives.

Declaration of Competing Interest

Authors declare no conflicts of interest.

Acknowledgement

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References

[1] Asian Development Bank. The rise of natural disasters in Asia and the Pacific: learning from ADB’s experience. https://www.adb.org/sites/default/files/evaluation-document/36114/files/rise-natural-disasters-asia-pacific.pdf. 2013.
[2] AFAD. National earthquake strategy and action plan. https://www.preventionsweb.net/files/26236_eqstrategyturkeymall.pdf. 2012.
[3] Ahmed P, Biswas R. Disaster risk reduction measures in Bangladesh. World conurbation conference 2012 – global challenges in conurbation industry June ; 2012: 209–20 http://eprints.hud.ac.uk/.
[4] Behlert B, Diekjobst R, Felgentreff C, Manandhar T, Mucke P, Pries L, et al. WorldRiskReport 2020, focus: forced displacement and migration. https://reliefweb.int/sites/reliefweb.int/files/resources/WorldRiskReport-2020.pdf; 2020.
[5] Rezaeza QA. A study on disaster management policy of Bangladesh: Institutional capacity enhancement (unpublished master’s thesis). North South University; 2016.
[6] Cheema AR, Mehmood A, Inran M. Learning from the past: analysis of disaster management structures, policies and institutions in Pakistan. Disaster Prev Manag. 2016;25(4):449-63. https://doi.org/10.1108/DPM-10.2015-0243.
[7] Department of Disaster Management. Contingency plan of DDM in response to pandemic COVID 19 (unpublished draft report). Ministry of Disaster Management and Relief, Government of the People’s Republic of Bangladesh; 2020.
[8] Demirbilek Y, Pehlivanaz G, Orgeldi ZO, Mege EALP. Covid-19 outbreak control, example of ministry of health of Turkey. Turkish J Med Sci. 2020;50(SI-1):489–94. https://doi.org/10.3906/sag-2004-187.
[9] Disaster Management Authority. National progress report on the implementation of the Hyogo Framework for Action (2009–2011). 2015.
[10] Disaster Management Act, No. 34. https://reliefweb.int/sites/reliefweb.int/files/resources/disaster-mgt-act-2012-english.pdf; 2012.
[11] Eckstein, Kunzel, Schafer. Global climate risk index 2021. https://www.garmatchan.org/sites/default/files/Globe%20Climate%20Risk%20Index%202021%2D2_pdf. 2021.
[12] ESCAP. Disasters in Asia and the Pacific : 2015 Year in Review, (October). https://www.unescap.org/sites/default/files/knowledge-products/2015_Yr%20Rev%20Review_final_EN.pdf. 2015.
[13] Gaillard JC, Mercer J. From knowledge to action: bridging gaps in disaster risk reduction. Progress Human Geogr. 2013;37(1):93–114. https://doi.org/10.1177/ 0309132512466717.
[14] General Economic Division. Bangladesh delta plan 2100. http://www.plancomm.gov.bd/sites/default/files/planncomm_portal.pdf. 2015. https://www.garmatchan.org/sites/default/files/Globe%20Climate%20Risk%20Index%202021%2D2_pdf. 2021.
[15] General Economic Division. Seventh-five year plan FY2016-FY2020. http://nda.erd.gov.bd/files/1/Publications/CC%20Policy%20Documents/7FP_after-NEC_11_11_2015.pdf. 2015.
[16] Haraguchi M. Disaster preparedness and complex adaptive systems: A government continuity plan for a self-organizing community; 2019; 1-27.
[17] Health Services Division. Bangladesh preparedness and response plan for COVID-19. 2020 (January 25, 2021 from file:///C:/Users/USER/AppData/Local/Temp/COVID%20Single%20Plan_Approved.pdf).
[18] HCTT. HCTT contingency plan 2020 for climate-related disasters in the COVID-19 pandemic context. Retrieved from https://www.who.int/hrh/toolkit/id=839217; 2020.
Ministry of Disaster Management and Relief. National disaster management plan (NDMP). Government policy; 2016; 1–192. http://ndma.gov.in/images/policyplan/dmpplan/ NationalDisasterManagementPlanMay2016.pdf.

[21] Japan, C. O. of. Disaster management in Japan, 59(1); 2016; 27–30. http://www.bousai. go.jp/kysyu/parl/pnd/WPID2016_Summary.pdf.

[22] KPMG. Bangladesh: Government and institution measures in response to COVID-19. November, Retrieved January 15, 2021 from https://home.kpmg/xx/en/home/ insights/2020/04/bangladesh-government-and-institution-measures-in-response-to-covid.html; 2020.

[23] Loidl-Jones T. Mind the gap! Post-disaster reconstruction and the transition from humanitarian relief. RICS, University of Westminster; 2006; 1–105 June. (Retrieved from www.rics.org).

[24] Ministry of Disaster Management and Relief. Disaster management (fund management) rules 2021. https://modmr.gov.bd/sites/default/files/modmr.portal.gov.bd/ lav/454be668_9edc_448e_9845_fe52b7f6980/dfm6202019%20_English_FINAL.pdf; 2019.

[25] Ministry of Disaster Management and Relief. National plan for disaster management (2021–2025). https://modmr.portal.gov.bd/sites/default/files/files/modmr.portal.gov.bd/page/7c20b4e1_e3f4_4e3f_3c63_5c74653e6d05/%5FDFM%20Plan%20%202025%20Draft.pdf; 2020.

[26] Ministry of Health & Family Welfare. Bangladesh preparedness and response plan for Covid-19. http://www.mohfw.gov.bd/index.php?option=com_docman
tasking=doc_download&gid=23359&Itemid=14. https://doi.org/10.1016/S0305-750X(03) 00699-X.

[27] Ministry of Disaster Management and Relief. Standing orders on disaster 2019. Government of the People’s Republic of Bangladesh. Ministry of Disaster Management and Relief.; 2020; 1–105. Retrieved from https://modmr.gov.bd/site/page/237930f9-7cb4-4d8b-bd9f/91f13d05; 2014.

[28] Ministry of Disaster Management and Relief. National disaster management policy. https://modmr.gov.bd/site/page/237930f9-7cb4-4d8b-bd9f/91f13d05; 2014.

[29] Ministry of Disaster Management and Relief. Standing orders on disaster 2019. Government of the People’s Republic of Bangladesh. Ministry of Disaster Management and Relief.; 2020; 1–105. Retrieved from https://modmr.gov.bd/site/page/237930f9-7cb4-4d8b-bd9f/91f13d05; 2014.

[30] Ministry of Disaster Management and Relief. Cyclone shelter construction, maintenance and management guideline 2011. https://modmr.portal.gov.bd/sites/default/files/ files/modmr.portal.gov.bd/policies/689b5850_4308_4c11_5f48_db459319f9a0/Cyclone%20Shelter%20Construction%20Maintenance%20and%20Management%Policy%202011.pdf; 2012.

[31] Ministry of Health and Family Welfare. National health policy 2011. http://www.mohfw.gov.bd/index.php?option=com_content&view=article&id=74%3A2011.& Itemid=2603%2A2014-06-29-10-23-48&catid=38%3Ahealth&Itemid=1&lang=en; 2020.

[32] Report, F. Hyogo framework for action (HFA) Progress monitoring and review through a multi stakeholder engagement process, (January 2013); 2015.

[33] Reza A, Islam T, Tasnuva A, Islam T, Haque R. Management approach to disaster scenario in Bangladesh: an overview. Int J Sci Res Publ. 2014;4(3):1–7. http://www.ijrsp. org/research-paper-0314/ijsrp-p27122.pdf.

[34] WHO. Considerations for implementing and adjusting public health and social measures in the context of COVID-19: interim guidance, 4 November, Retrieved January 15, 2021 from https://home.kpmg/xx/en/home/ insights/2020/04/bangladesh-government-and-institution-measures-in-response-to-covid.html; 2020.

[35] UNDRR. Global assessment report 2019. https://gar.undrr.org/sites/default/ reports/2019-05/full_gar_report.pdf; 2019.

[36] UNICEF. Plan of action on disaster risk reduction for resilience; 2013; 168. U NECE. United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific; 2019. https://unsdr.org/files/68265/682308philippinesdmstratereport.pdf.

[37] UNDRR. Global assessment report 2019. https://gar.undrr.org/sites/default/files/ reports/2019-05/full_gar_report.pdf; 2019.

[38] UNESCO. Enhancing regional economic cooperation and integration. https://www. unesco.org/sites/default/files/documents/RECIRepport ebook-Final 13Nov2017.pdf; 2017.

[39] UNOCHA. Bangladesh emergency response preparedness plan 2014. https://www. humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/ files/bgbkgd_emerg.resp.plan.2014.0.pdf; 2014.

[40] WHO. Considerations for implementing and adjusting public health and social measures in the context of COVID-19: interim guidance, 4 November 2020; 2020 (November), 13 p.

[41] WHO. COVID-19 diagnostic testing in the context of international travel. World Health Organization; 2020; 1–4 December.

[42] Zafar MA. Disaster management : Bangladesh perspective; 2010; 1–105. Retrieved from www.mohfw.gov.bd/index.php?option=com_content&view=article&id=74%3A2011.& Itemid=2603%2A2014-06-29-10-23-48&catid=38%3Ahealth&Itemid=1&lang=en; 2020.