



**Private Sector Engagement in Disaster Risk Reduction: A Study on
Corporate Organizations in Dhaka**

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Declaration

It is hereby declared that this dissertation titled “Private Sector Engagement in DRR: A Study on Selected Corporate Organizations in Dhaka” is being submitted to the Institute of Disaster Management and Vulnerability Studies, University of Dhaka, in partial fulfillment of the requirement for the degree of Master in Disaster Management.

The thesis report has not been submitted to elsewhere. The thesis is the result of my own investigation. Secondary sources were acknowledged by giving proper citations. I can assure that I have maintained all the ethical considerations in completing this thesis.

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Abstract

The ever-growing disaster risk is a major concern for the business community on multiple levels. It becomes imperative for the private sector to initiate and incorporate disaster risk reduction strategies into all aspects of their business operations and functions to protect business investments and assets and build community resilience. The private sector is one of the key actors in disaster risk reduction and its importance has been recognized more formally with the adoption of the Sendai Framework for Disaster Risk Reduction in 2015. Although private sector participation in emergency response is quite obvious, the extent of such involvement in disaster risk reduction (DRR) is very limited in Bangladesh. Traditionally, most of the private sector involvement in disaster management has been philanthropic and ad-hoc. Although more companies are interested in supporting and contributing to disaster management, there is no structured form of such engagement, particularly in DRR. Not much work has been done at the policy level on increasing and optimizing the private sector's engagement in disaster risk reduction. Therefore, this study attempts to understand the current state of private sector engagement in DRR by conducting a survey of several corporate organizations and collecting the views of relevant stakeholders. Key findings of the study suggest: a) a high level of risk awareness prevails in the private sector despite minimal actions being taken; b) fire is the most likely and risky hazard against which most of the preparedness measures are taken; c) fear of hazard-related business disruptions could be the gateway to address disaster risks; d) preparedness levels vary among organizations depending on the individual preparedness measures and the business category; e) private sector involvements with the community are philanthropic and one-time interventions that mostly consist of donations or in-kind assistance; f) key gaps related to private sector involvement in DRR range from a lack of institutional mechanisms to a lack of government regulations. Considering the major gaps in private sector engagement in DRR, the study has come up with several recommendations for policymakers and implementation body of the government to promote the involvement of the private sector in disaster risk reduction in Bangladesh.

Keywords: Disaster Risk Reduction, Private Sector, Disaster Preparedness, Business Continuity, Corporate Social Responsibility.

Acronyms

SFDRR	Sendai Framework for Disaster Risk Reduction
HFA	Hyogo Framework for Action
ADRC	Asian Disaster Reduction Center
USD	United States Dollar
BCP	Business Continuity Plan
WEF	World Economic Forum
APEC	Asia-Pacific Economic Cooperation
SME	Small and Medium Enterprise
DRR	Disaster Risk Reduction
DRM	Disaster Risk Management
CSR	Corporate Social Responsibility
UNISDR	United Nations International Strategy for Disaster Reduction
UNDRR	United Nations Office for Disaster Risk Reduction
GFDRR	Global Facility for Disaster Risk Reduction
PPP	Public Private Partnership
NGO	Non-governmental Organization
NPDM	National Plan for Disaster Management
BCM	Business Continuity Management
ISO	International Organization for Standardization
KII	Key Informant Interview
IDI	In-depth Interview
SPSS	Statistical Package for the Social Sciences
GDP	Gross Domestic Product
BNBC	Bangladesh National Building Code
CCA	Climate Change Adaptation
CCDMC	City Corporation Disaster Management Committee
DNCC	Dhaka North City Corporation
UDD	Urban Development Directorate
CRI	Climate-induced Risk Insurance
CDMP	Comprehensive Disaster Management Programme

List of Figures

Figure 2.1	The Stakeholder Approach to CSR
Figure 2.2	Concept of business continuity
Figure 2.3	Conceptual framework
Figure 3.1	Location map of Dhaka city
Figure 3.2	Procedures of the study
Figure 3.3	Sampling methods used in the study
Figure 4.1	Location map of the study organizations
Figure 4.2	Hazard-induced business disruptions
Figure 4.3	Hazard awareness initiatives
Figure 4.4	Potential hazards and threats
Figure 4.5	Vulnerability of business elements
Figure 4.6	Incorporation of DRR into organizational policies and assessment of employee's risk perception
Figure 4.7	In-house preparedness measures for employees
Figure 4.8	In-house facilities for emergency management
Figure 4.9	BCP development status
Figure 4.10	Reasons for having a BCP
Figure 4.11	Business approach to hazards and risks
Figure 4.12	Types of CSR activities in disaster management
Figure 4.13	Types of CSR partnerships in DRR
Figure 4.14	Types of private sector stakeholders in DRM
Figure 4.15	Key elements in selecting partner organizations
Figure 4.16	Corporate involvement in DRM phases
Figure 4.17	Challenges in implementing community-level DRM activities
Figure 4.18	Duration of corporate initiatives in DRR
Figure 4.19	Importance of involvement with the local community
Figure 4.20	Sources of financial aid for disaster recovery
Figure 4.21	Perceived risks of investing in DRR
Figure 4.22	Advocacy for DRM measures at national level
Figure 4.23	Private investment in CCA activities
Figure 4.24	Sources of climate financing by the private sector
Figure 4.25	Perception of climate-induced risk insurance
Figure 4.26	Reasons for not having climate-induced risk insurance
Figure 4.27	Types of insurance products
Figure 4.28	Challenges of introducing climate-induced risk insurance

List of Tables

Table 3.1	An overview of the study methodologies
Table 4.1	Profile of the study organizations
Table 4.2	Profile of respondents
Table 4.3	Vision behind business involvement in DRR
Table 4.4	Disaster preparedness measures undertaken by corporate organizations
Table 4.5	Pearson chi-square test between business category by product types and individual disaster preparedness measures
Table 4.6	BCP development status by the company type
Table 4.7	CSR partnership type by the company type
Table 4.8	Correlation between the duration of corporate interventions and the employee number

Table of Contents

Abstract.....	iv
Acronyms.....	v
List of Figures.....	vi
List of Tables.....	vii
Chapter One: Introduction and Background.....	1
1.1 Introduction.....	1
1.2 Background of the Study.....	2
1.3 Statement of the Problem.....	3
1.4 Objective of the Study.....	4
1.5 Research Questions.....	4
1.6 Justification of the Study.....	4
1.7 Limitations of the Study.....	5
1.8 Definitions of the Terms.....	5
1.9 Organization of the Study.....	6
Chapter Two: Literature Review.....	7
2.1 Introduction.....	7
2.2 Theoretical Framework: Stakeholder Theory.....	7
2.3 Importance of Private Sector in Disaster Risk Reduction.....	9
2.4 Justification for Private Sector Involvement in Disaster Risk Reduction.....	10
2.5 Drivers for Private Sector Investment in Disaster Risk Management.....	13
2.6 Approaches of Private Sector Engagement in DRR.....	14
2.7 Role of Business Continuity Management (BCM) in DRR.....	15
2.8 Corporate Social Responsibility in Disaster Management.....	16
2.9 Corporate Engagement in Disaster Management in Bangladesh.....	17
2.10 Conceptual Framework.....	18
2.11 An Overview of Disasters and DRR Initiatives in Dhaka City.....	20
2.11.1 Earthquake.....	20
2.11.2 Flood.....	21
2.11.3 Fire.....	22
2.11.4 Impacts of Climate Change.....	23
2.11.5 DRR Initiatives of Government.....	24
2.11.6 Challenges in Undertaking Urban DRR Initiatives.....	26
Chapter Three: Methodology and Sources of Data.....	28
3.1 Introduction.....	28

3.2 Study Area	28
3.2.1 Geographical Settings of Dhaka	28
3.2.2 Socio-Economic Overview	29
3.3 Research Design.....	30
3.4 Research Method	31
3.5 Sources of Data	31
3.6 Population, Sample and Sampling of the Study.....	31
3.7 Data Collection Methods	32
3.7.1 Quantitative Data Collection Methods.....	32
3.7.2 Qualitative Data Collection Methods.....	33
3.8 Data Analysis	33
3.8.1 Quantitative Analysis.....	34
3.8.2 Qualitative Analysis.....	34
Chapter Four: Results and Findings.....	35
4.1 Introduction.....	35
4.2 Background Information of the Corporate Organizations	35
4.3 Disaster Risk Perception of the Organizations	37
4.3.1 Disruptions of business enterprises due to sudden hazards and disasters.....	37
4.3.2 Hazard awareness initiatives.....	38
4.3.3 Potential hazards and vulnerability of business elements.....	38
4.3.4 Incorporation of disaster risks into organizational policies	40
4.4 Disaster Preparedness Activities of the Organizations	41
4.4.1 Disaster preparedness measures implemented by the organizations	41
4.4.2 In-house preparedness measures for employees	42
4.4.3 In-house preparedness facilities for emergency management	42
4.4.4 Test of association between business category and preparedness measures	43
4.4.5 Status of the business continuity plan (BCP).....	44
4.4.6 Business approach to hazards and risks	45
4.5 Private Sector’s Contributions to DRR at Community Level.....	46
4.5.1 CSR interventions in disaster management	46
4.5.2 Types of CSR partnerships in DRR	46
4.5.3 Role of different private sector stakeholders in Disaster Risk Management.....	48
4.5.4 Key elements in partner selection and development.....	48
4.5.5 Involvement in DRM phases at the community level.....	49
4.5.6 Challenges in implementing community-based DRM activities	50

4.5.7 Duration of corporate interventions	50
4.5.8 Importance of involvement with the community	51
4.5.9 Sources of financial aid for disaster recovery	52
4.5.10 Perceived risks of investing in DRR.....	52
4.5.11 Advocacy for Disaster Risk Management measures:	53
4.5.12 Investment in Climate Change Adaptation (CCA) Initiatives	54
4.5.13 Sources of Climate Financing by Private Sector	55
4.6 Disaster Risk Transfer Mechanism: Insurance	55
4.6.1 Perception of climate induced risk insurance (CRI).....	55
4.6.2 Reasons for not having climate-induced risk insurance	56
4.6.3 Types of Insurance	56
4.6.4 Challenges of introducing climate-induced risk insurance.....	57
Chapter Five: Discussion, Policy Recommendations and Conclusions.....	58
5.1 Introduction.....	58
5.2 Discussion	58
5.3 Recommendations.....	61
5.4 Conclusions.....	63
6. References.....	64
7. Appendix.....	78

Chapter One: Introduction and Background

1.1 Introduction

The frequency and magnitude of natural disasters have increased in recent times, leading to widespread human and economic losses. The growing risks from natural hazards are not only physical but also economic and social. Natural hazards have far-reaching impacts on economic sectors around the world. It is estimated that over the last four decades, the economic cost of natural hazards has increased from USD 10 billion to around USD 400 billion annually (PwC, 2013). This indicates that the cost of the disaster-related losses is increasing by the decade. Moreover, it is anticipated that the increasing trend of climate change will substantially alter the frequency, intensity and geographical dispersion of extreme weather incidents. There exist significant disparities among nations in terms of the impacts of disasters and climate change that in particular, are experienced severely by the low-income countries. As per the estimation, climate-related risks in some countries might cost up to 19% of annual GDP by 2030, causing setbacks in the years of economic growth (ECA, 2009). According to UN's latest estimation, disaster-related economic losses have amounted to over USD 2 trillion since 1992 and are expected to double by 2030 (UNDRR, 2013a).

Asia, one of the world's most disaster-prone zones, is highly exposed to hydro-meteorological or climate-related hazards. Between 2003 and 2013, Asia experienced 156 disaster events on average annually, accounting for 49% of worldwide damages. Both low- and high-income Asian countries were hit by seven out of ten catastrophic events in 2013 (Guha-sapir et al., 2014, cited in Chatterjee & Shaw, 2015). In Asia, economic losses from natural disasters amounted to USD 689.42 billion from 2004 to 2014 which was higher than any other continent including combined amount of USD 616.38 billion of North and South America (Chatterjee & Shaw, 2015). The evidence of past disasters suggests that indirect losses have a clear influence on private sector, such as business actions being disrupted, revenues declining, unemployment rising and volatile markets. Population growth and increased investments in hazard-prone locations are main causes of this (SAARC, 2014). Disasters and climate-related impacts are expected to be felt beyond national borders due to the growing global economic interdependency. For example, Thailand floods in 2011 had subsequent impacts on the Asian market, particularly on the high-tech and automobile sectors. The Thai Floods affected more than 1,000 factories and insurance claims subsequently amounted to USD 20 billion (Chongvilaivan, 2012). The corporate sector is inherently concerned about safety in its operations and threatening the environmental health of the operational region since faces such disaster risk. Even if the mobility of global capital remains high, disasters are becoming an alarming issue as multinational firms are expanding their operations and investments in risk-prone developing nations (Twigg, 2001). Therefore, it is essential that the corporate sector whether international or domestic, takes the appropriate measures to mitigate disaster risks.

The private sector plays a key role in economic development both at domestic and international levels. The contribution of domestic and multinational companies to national GDPs in terms of providing economic value is of great importance. However, the private sector has rarely received significant attention in the discussion of disaster risk management. Considering 70-85% of all new investments generated by the private sector, collaborations related to disaster risk reduction are important. It is evident that only public sector initiatives will not be adequate to gain desired results, particularly reducing economic losses. Therefore, it is essential to develop the operational frameworks, goals and initiatives for potential public-private collaborations in addressing the challenges of both natural and human-induced disasters (Johnson & Abe, 2015).

1.2 Background of the Study

Bangladesh is vulnerable to a number of natural disasters as it lies in the delta of the second-largest basin in the world. It is one of the world's most climate-vulnerable countries, having a high incidence of various hydro-meteorological and geophysical hazards, including cyclones, storm surges, floods, droughts, and lightning. Bangladesh's distinctive geographical characteristics make it one of the most earthquake-prone nations in the world as it lies on the structural Himalayan belt. As the country is mainly dependent on agriculture and natural resources, Bangladesh is also at risk of climate change and is classified as 7th among the most impacted countries between 1998-2007 on the Climate Risk Index (Baum, 2018). In addition to these natural hazards, the people of this country are also vulnerable to human-induced hazards like fire, chemical explosions, and infrastructure collapses, which occur mostly in urban areas. For instance, the Rana Plaza incident in 2013 is one of the most tragic incidents in the country's history that costs the lives of more than 1100 garment workers. Such human-induced and natural hazards put huge pressure on the country's economy, particularly on the private sector. According to a study, the urban industrial sector was found to be the most adversely impacted sector, accounting for 83% of the total loss following the floods of 1998 (Nishat, 2000).

As part of the Sendai Framework for Disaster Risk Reduction, the year 2015 experienced a significant shift toward an even more structured private sector contribution. UNISDR highlighted the significance of developing a corporate case for disaster risk reduction and emphasized that economic losses from natural disasters can be minimized by building a successful partnership with the private sector (Alam et al., 2013). However, it is also indicated that corporate investments to increase competition and productivity may contribute to high disaster risks. (Ingirige et al., 2014). Although the private sector's participation in emergency response is obvious, its engagement in disaster risk reduction is limited in Bangladesh (Ferdous, 2006). Furthermore, the sector appears to be significantly less prepared to respond to the demands of a broad, long-term plan for natural disaster mitigation (Matin et al., 2002). Therefore, it is imperative that the corporate sector in Bangladesh initiates and

incorporates disaster risk reduction initiatives in the various aspects of their business operations and functions with the aim of protecting business investments and assets as well as building community resilience.

1.3 Statement of the Problem

When a disaster occurs, the general notion is that governments hold the key responsibility for tackling it. Although the government takes the lead in an emergency, the private sector also provides post-disaster assistance. Crises like natural disasters can interrupt regular business activities, incur physical damage to premises, disrupt supply chains, and more importantly cause harm to human resources. Businesses, being key members of the society in which they operate, often turn out to be the first responders after a disaster and play a significant role in a localized response. Despite its instrumental contributions, it is considered that the private sector's role in disaster management has only been confined to disaster response and relief operations. However, according to Rajib Shaw (2018), the role of the private sector varies, ranging from corporate social responsibility (CSR) initiatives and establishing a corporate community interface to making sure that innovative technological solutions for disaster risk reduction are a core business. Compared to other sectors, the level of knowledge concerning disaster risk reduction in the corporate sector is relatively low. A survey conducted in the US found that just 50% of the organizations surveyed had operational business continuity plans (BCP), and just 37% of respondents thought their businesses were ready for a catastrophic crisis (Emergency Preparedness Institute, 2007). In addition to DRR issues, a study revealed that the distribution of private-sector financing is inconsistent between nations and industries and that it frequently does not correspond to the most urgent requirements of emerging nations (Atteridge, 2011). This study also indicated that it should not be taken for granted that the private sector will succeed in tackling climate change adaptation challenges.

With a long history of managing and adapting to natural disasters, Bangladesh has already developed an institutional management system that acknowledges various stakeholders' roles. Despite attempts to promote collaboration between the government and NGO sectors as reflected in the Standing Orders on Disaster, the notion of public-private partnership has been largely unexplored. There is a lack of actual effort from the government in developing a partnership with businesses. The evidence of partnerships involving the private sector in disaster mitigation tends to be limited to short-term or dependent on one-off funding (Matin et al., 2002). In terms of private sector participation in disaster risk reduction, there is a knowledge gap on the forms of engagement that could already exist and how it can be better facilitated. Furthermore, there appears to be a lack of interest and accountability within the corporate sector in the requirements of a long-term disaster risk reduction program. While there are many examples of private sector involvement in pro bono, charitable, and non-profit projects after a disaster, it is unclear how the private sector might get engaged in disaster risk reduction efforts in the context of global protocol and local policy options and implications.

This study, therefore, maps the current state of private sector involvement in response to extreme hazards by supporting disaster risk reduction as a first step toward bridging that gap.

1.4 Objective of the Study

The main purpose of the study is to understand the present scenario of private sector engagement in disaster risk reduction (DRR) by conducting an exploratory survey among several corporate organizations in Dhaka, Bangladesh, exploring their risk perception, level of disaster preparedness and contributions to community-level DRR efforts. More specifically, this study seeks the following:

- To understand the risk perception of the private sector concerning disaster risks
- To identify the level of disaster preparedness measures adopted by the private sector
- To explore private sector's contributions to community-level DRR by identifying their CSR interventions
- To identify gaps in engaging the private sector and mechanisms to enable private sector involvement in DRR.

1.5 Research Questions

The present study attempts to address these research questions:

- What is the private sector's level of understanding of disaster risk reduction?
- What kinds of disaster preparedness measures has been adopted by corporate organizations in Bangladesh?
- What are the main gaps of private sector engagement in DRR at national level?
- What mechanisms can be devised for private sector engagement in the national DRR strategy?

1.6 Justification of the Study

Private sector is one of the main stakeholders in disaster risk reduction often responding first to the immediate impact of disasters. Increasing disaster risks, coupled with those of climate change represent an emerging issue for the corporate community at different levels. Although the significance of the private sector's involvement in disaster risk reduction has been emphasized globally, the specification of the private sector's role and the significance of private investment have not been highlighted in Bangladesh's disaster risk management mechanisms. Talks are ongoing for strengthening and highlighting the roles and responsibilities of the private sector in the National Plan for Disaster Management (NPDM) 2021-2025. There has been hardly any involvement from the private sector in disaster risk reduction as part of corporate activities. It is imperative for the private sector to shift their focus to pre-disaster activities from traditional response efforts. This study will provide new insights into the private sector's involvement in disaster risk reduction in Bangladesh by exploring their DRR practices, in particular, disaster preparedness measures within institutions and their CSR initiatives directed toward local communities. Furthermore, this study will contribute to providing a corporate perception of disaster risk reduction and

exploring current risk reduction interventions of the private sector in urban Bangladesh and thus helping policymakers in their efforts toward building resilient communities.

1.7 Limitations of the Study

This study has encountered several methodological limitations. The snowball sampling technique employed to collect survey data may have generated bias in the sample selection. Besides, getting information from the private sector was difficult because it was uncommon to provide information other than business purposes and non-financial information was not properly preserved. In terms of research participants, some respondents hesitated or declined to take part in the survey because their companies did not practice any disaster risk reduction activities. Moreover, respondents from participating organizations also hesitated to respond to the policy-related questions due to internal compliance issues. There were also some challenges in terms of scheduling interviews with corporate sector individuals. As the corporate people tended to be engaged, it was difficult for top-management or senior officials to make time for interviews. In some cases, interviews were conducted with junior-level officials assigned by their senior ones. Although junior officials tried their best to cooperate, they sometimes lacked in-depth knowledge of business operations to respond to the survey questions. In other instances, respondents thought that the main theme of the study was not relevant to their daily business activities. Survey responses collected through email were dependent on respondent's self-evaluation that may have created bias or inconsistency in data. The study was based on small-scale data gathered from multiple business sectors, consequently limiting the generalizations of the findings. There is a lack of materials regarding DRR and the private sector in Bangladesh, which was found to be a major challenge in conducting the study. Although the informal sector forms an important part of the private sector in Dhaka, the scope of the study limits the inclusion of this sector.

1.8 Definitions of the Terms

The key terms used in this study are defined as follows:

Disaster: Disaster refers to sudden events, both natural and man-made, that results in destruction of lives and properties.

Private Sector: The term 'private sector', used in this study, refers to only profit-driven organizations. Therefore, organization types such as NGOs and business foundations haven't been considered in this study. In most parts of the study, terms such as businesses, corporations, organizations, and companies are used in place of the private sector.

Disaster Risk Reduction: Disaster Risk Reduction is “ the concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of the land and the environment, and improve preparedness for the adverse events” (UNISDR, 2009).

1.9 Organization of the Study

There are five chapters in the study. Chapter one consists of introduction of the study which includes the background of the study, the statement of the problem, objectives and research questions, justification of the study and limitations of the study. The chapter provides insights into the research topic and justifies the reason for the study to be carried out. Chapter two constitutes reviews of the relevant literature conducted on private sector and disaster risk reduction. This chapter presents key findings in accordance with the research objective to provide a comprehensive understanding of the importance of the private sector in DRR and justification for private sector involvement in DRR; a preview of drivers for private sector investment in DRR and approaches of private sector engagement in DRR; explanation on the role of business continuity management in DRR and the evidence of corporate engagement in disaster management. Chapter three provides an overview of the study area and explains the research method applied in the data collection and data analysis of the study. Chapter four presents the results and findings of the quantitative part of data analysis. In this chapter, the results of the survey were presented under five sections namely, 1) background information; 2) disaster risk perception of the study organizations; 3) disaster preparedness activities of the study organizations; 4) private sector contributions to DRR at the community level and 5) insurance as a disaster risk transfer mechanism. Chapter five contains the discussion of key findings of the study in accordance with evidence found from the literature. It concludes the study by giving policy recommendations and highlighting the contributions of the study.

Chapter Two: Literature Review

2.1 Introduction

The literature review includes a critical analysis of key findings from secondary sources by addressing research questions, research gaps and key concepts. This chapter will provide a detailed overview of knowledge and ideas extracted from published articles and research papers related to private sector and disaster risk reduction. The following objectives help to achieve the aim of these section:

- Critically analyze published sources regarding why private sector engagement is important in DRR; explanation on why it is justified for the private sector to engage in DRR; exploration on how underlying key drivers could facilitate private-sector investment in DRM; identification of key approaches that act as the gateways for private sector involvement in DRR and description on how business continuity management plays a critical role in the private sector's DRR agenda.
- Highlight and discuss about CSR practices in disaster management and also further explores the current state of corporate engagement in disaster management in Bangladesh.
- Provide detailed overview of hazards in Dhaka city; explore existing DRR initiatives taken by the government to minimize disaster risks of urban population and highlight the gaps in urban DRR.

2.2 Theoretical Framework: Stakeholder Theory

Stakeholder theory, originally detailed by Freeman (1984), "is a theory of organizational management and business ethics that addresses morals and values in managing an organization". Freeman stated that the aim of stakeholder management was to develop strategies for strategically managing numerous groups and interactions. According to the stakeholder theory, an organization's welfare is maximized by effectively addressing the needs of its key stakeholders. Stakeholders hold an interest in the operations of an organization and they can influence it or can be influenced by the achievement of the organization's goals (Freeman, 1984; Savage et al., 1991). Donaldson and Preston (1995) asserted that stakeholders encountered or expected encountering an organization's negative and positive outcomes. They also suggested that the corporation will avoid the pressures created by the stakeholders if they act responsibly. The stakeholder theory perceives that corporations have responsibilities toward society and its affiliated members. The responsibilities of businesses went past the typical fiduciary actions towards shareholders and extended to other groups, including customers, employees, suppliers and neighboring communities (Jones, 1980).

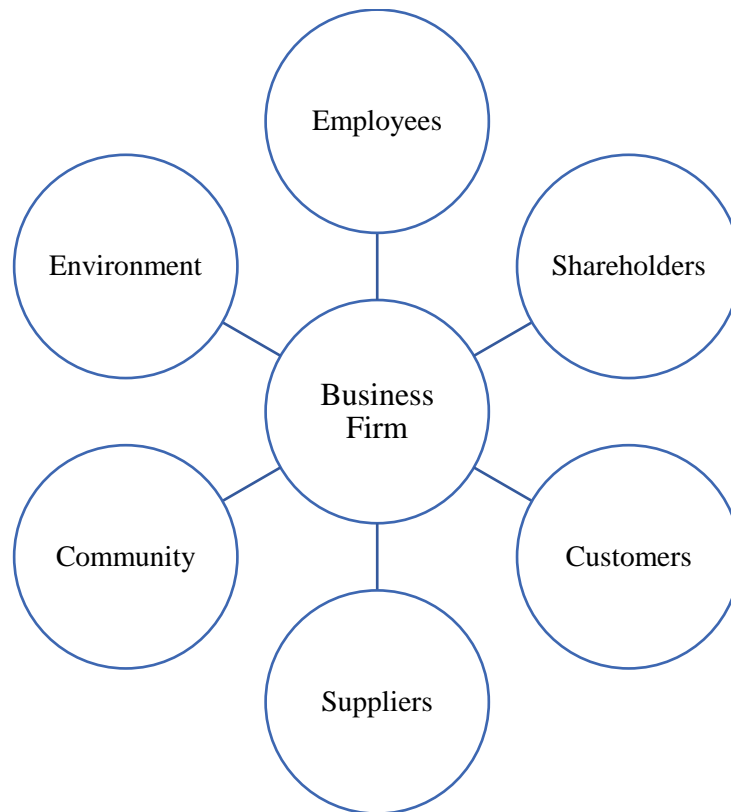


Figure 2.1: The stakeholder approach to CSR (Adopted from Freeman, 1984)

According to Jones (1980), an organization must incorporate CSR into its decision-making systems. After revisiting their stakeholder theory, Freeman et al. (2006) emphasized that CSR aims to add value to stakeholders, especially the local community. (Figure 2.1). In the area of CSR practices, organizations usually tend to create value for particular stakeholders, like shareholders, and give less attention to other stakeholders like staff, local community and the natural setting. As employees of corporate organizations are increasingly becoming vulnerable to industrial hazards, organizations have greater responsibilities toward their employees in terms of taking precautionary measures and ensuring overall safety and security. Through this stakeholder theory, organizations will also try to extend their responsibilities to the nearby community and environment in the form of CSR, going beyond the responsibilities that they owe to shareholders. This value-oriented stakeholder approach will increase financial value for shareholders, creating social as well as ecological values. Therefore, this framework is relevant to analyze the CSR activities of businesses in Bangladesh.

2.3 Importance of Private Sector in Disaster Risk Reduction

Assuring business continuity before and after disasters and preparing for various disruptions before their occurrence are the key incentives for the private sector to participate in disaster management (Izumi & Shaw, 2015). A firm's priority is to mitigate its risks in responding to a disaster, and it is very challenging to make businesses engage in issues beyond their direct operations (Coopers, 2013). A survey conducted by ADRC on the private sector's BCP status among the APEC economies revealed that the percentage of SMEs having a written plan is only 15.9% compared to 52% of respondents from large companies (Ono, 2012). In addition, 46.9% of SME respondents do not know about BCP compared to 16.5% of large-scale respondents. Davies (2011) highlighted the incentives for private businesses to engage in development efforts, which could vary from managing risk to pursuing business opportunities. Exploring business opportunities is driven by innovations that address societal needs and new demands to assure sustainability. Davies also presented development challenges as a business opportunity for businesses, although these organizations' profit-centric motives frequently need to align with development goals. It is also emphasized that the private sector's contributions to the development process become more sustainable if a company's core business strategy incorporates them.

In addition to national and international bodies, business and economic forums and institutions also acknowledged the significance of the involvement of the corporate sector in DRR. After gathering best cases on successful private sector involvement in disaster resilience building across APEC economies, APEC (2013) grouped them into six categories, including: 1) Resilience efforts at the economy level; 2) Partnerships for improved community resilience; 3) Business contributions to reducing risk through recovery (Building Back Better); 4) Collaborative efforts to enhance business resilience; 5) Collaborative efforts to enhance infrastructure resilience; and 6) Partnerships for pre-disaster risk financing through agricultural insurance. These domains of best practices demonstrate probable opportunities for collaborations between government, business and non-profit agencies to build resilience of communities, industries and crucial infrastructure and services. However, the selected case studies in the APEC report only provide singular cases of successful public-private collaborations in building disaster resilience that stems from creative thinking and leadership of dedicated individuals, singular institutions, or businesses rather than from collective effort at the government level.

A report by CSR Asia (2013) also asserted the importance of private sector engagement in DRR in terms of community resilience. A significant portion of the business sector's community investment initiatives includes building a community's disaster preparedness. Business engagement in community preparedness facilitates the development of new partnerships and networks, allowing private businesses to explore markets and opportunities for new businesses. Creating business opportunities through disaster preparedness initiatives is one of the key incentives for the private sector to engage in DRR efforts.

PwC (2013a) highlighted the existence of business prospects to develop unique and creating products targeting business resilience that could provide financial benefits through economic growth and jobs and contribute to vulnerability reduction within the markets. Developing these ideas and products requires businesses to understand the market opportunity, investment risk and the return on investment to develop and maximize these solutions. PwC also presented some of the key business drivers along with best practice examples for penetrating the resilience marketplace:

1. Development and distribution of new products and services
2. New, expanded markets for products and services
3. Cost savings
4. Collaboration through supply chain
5. Reputation and brand value

According to PwC (2013a), the perception of resilience as the public sector's responsibility limits the prospects for expanding public-private collaboration on resilience building. The World Economic Forum (WEF) (2008) developed a framework to elaborate activities for the private sector in building resilience and presented four areas of opportunity to create a more systematic approach to building resilience:

1. Monitoring hazards and communicating risks
2. Socio-political strengthening
3. Sharing financial risks
4. Disaster preparedness

The forum also set out priority actions for four industry communities that have been the most active in resilience building, including insurers and reinsurers, engineering and construction, ICT and Telecom, and Utilities and Transportation (WEF 2008). In addition to the industry-specific priority actions, the dialogues by WEF highlighted the necessity for accelerating the integration of the private sector into existing platforms and activities and for facilitating the creation of an enabling circumstance for policy rectification, business leadership and innovation. Moreover, establishing a forum in the form of a national platform or a business association for exchanging experiences and knowledge between industries or other stakeholders could be important in supporting private sector contributions to building resilience (Izumi & Shaw, 2015).

2.4 Justification for Private Sector Involvement in Disaster Risk Reduction

Disasters have significant impacts on the private sector. The occurrence of major disasters in Thailand and Japan in 2011 and in the USA in 2012 revealed the direct and indirect effects of disasters on businesses. A disaster can affect businesses in many ways depending on the time scale. Business activities can be disrupted following the immediate impact of a disaster or they can also be affected by a disaster's lengthy recovery process (Ingirige et al., 2014). According to PwC (2013a), a company can be directly affected by the impacts of natural hazards and climate change through its own operations or indirectly through its value chain.

Direct effects include the destruction of physical assets, reduced operational performance and staff and workplace disruption. Indirect impacts include increased commodity or input prices, supply chain or distribution network disruption, changing market demand, or reputational issues. These indirect impacts increase losses that go beyond the individual operations of business, extending along the whole value chain. The globalization of value chains and markets makes companies, sectors and countries feel these indirect impacts unanimously. UNISDR (2015) also highlighted the indirect impacts of disasters on businesses in the form of supply chain disruptions. Furthermore, major disasters can have macroeconomic impacts such as higher interest rates, loss of market share, competitive disadvantages, labor shortages, reduced customer demands and total economic depression. Cochrane (2004) also suggested considering indirect losses in estimating disaster losses. Indirect loss from inter-industry effects emerges from value chain interruption of business sectors in the disaster area or its surrounding area. The bottleneck effects from disasters could extend beyond the affected region resulting in systematic financial repercussions. However, the financial effects following a disaster, such as bank losses, insurance company failures and decline in equity balance, mainly reflect direct damage.

In addition to destroying vital business infrastructure, disasters can affect the entire value chain, where the collapse of one business partner is linked to the decline of the whole supply system. For example, disaster impacts on businesses in Japan in 2011 had subsequent effects in the United States (Mavrodieva & Shaw, 2019). Tierney (2007) also discussed how disaster-induced business disruption produces direct and indirect losses and economic ripple effects. Moreover, business disruption and damage can affect communities through lost tax revenues and undermine the viability of business and commercial zones. PwC (2013b) stresses that the subsequent impact of disasters can be devastating for entire industries, particularly when manufacturers and suppliers in one industry are heavily concentrated in a single area. For example, several global electronics companies experienced supply disruption of hard-disk drives and components during the 2011 Thai floods. Such global disruption highlights the degree of potential exposure for globalized companies. Therefore, broad collaboration with supply chain partners, local governments and disaster response agencies is essential to reduce these impacts. In addition to causing damage to facilities as well as simultaneously interrupting business operations, the adverse effects of disasters on the public sector's infrastructure and facilities will eventually affect businesses because of their heavy dependence on these facilities (UNDRR, 2013b). The rapid globalization of businesses and economies generates the necessity to inspect disaster risks that could affect enterprises and communities in emerging and developed countries simultaneously. Business disruptions induced by both natural and human-induced disasters have can significantly impact the economy of a nation and can delay the growth of economies. Therefore, emphasis should be placed on the protection of companies from business downfall (Ismail et al., 2015).

The rationale for private sector involvement in DRR stems from more than just the consequences of disasters on businesses and the world economy. Due to the global economy's transformation over the last forty years, a sharp rise in disaster risk have been observed in low, medium and high-income regions. While increasing disaster risks represent a growing concern for the economic and business community, business investments to strengthen competitiveness and productivity may have inadvertently contributed to increasing risk (UNDRR, 2013b). According to Sarmiento et al. (2015), the association between private investments and disaster risks has two sides. While private investments can be affected by disasters through direct or indirect losses, they can also create or increase disaster risks. Private investments can generate these risks in two distinct ways: directly, through business operations such as the construction of unsafe facilities and/or in risk-prone areas; degradation or environmental pollution; and production, use, storage and distribution of hazardous materials; and indirectly, where increased risk exposure prevails in their own production processes and supply chain and distribution, as well as in the generation of productive activities that can lead to the relocation of workers to risk-prone areas. Nelson (2010) also discussed how the private sector's actions could harm development by causing degradation of the environment, corruption, tax avoidance, low labor standards, and human rights violations. CSR Asia (2013) also recognized the tendency of business investments to aggravate the disaster risk exposure of enterprises, their supply chains and their surrounding communities. Thus, the private sector is accountable for contributing to reducing disaster risks through their involvement in building both business and community resilience.

The private sector possesses necessary resources, knowledge and expertise to contribute to disaster risk management and increase the efficiency of humanitarian response. According to Ballesteros et al. (2017), private companies have greater capacities than traditional aid providers, enabling them to identify priority areas after a disaster, capitalize on response opportunities and rearrange resources for rapid and effective relief activities. Izumi and Shaw (2015) emphasized that the capacities and expertise of this sector should be mobilized for collective endeavors toward DRR. Although the private sector mostly contributed to disaster management by donating private resources, this sector can potentially play a more significant role being a solution provider by innovating new items that could be useful DRR and development. GFDRR (2020) also highlighted the private sector's role in reducing the likelihood of disruption caused by disasters by using innovative technologies, research and data to build back better. Furthermore, governments can ensure high levels of asset functionality by leveraging the strengths of the private sector. UNISDR (2013) called for private-sector partnerships in disaster risk reduction and climate change adaptation to safeguard development. The private sector's direct participation in disaster risk reduction reduces uncertainty, strengthens confidence, enable cost savings, and paves the way for creating values.

2.5 Drivers for Private Sector Investment in Disaster Risk Management

Disaster management has gone through a paradigm shift from a response-based approach to a more proactive, inclusive approach that attempts to reduce the occurrence of disaster risks and mitigate the adverse effects on human lives and economic operations. The overall goal of DRR is to reduce damage and losses from disasters by increasing society's resilience, which could only be possible by making all the parties resilient, including the business sector. The private sector's role in promoting the resilient continuation of local business and early recovery of local industry is vital. However, despite being highly prone to disaster risks, the private sector has yet to be targeted as a key player in DRR (Ingirige et al., 2014).

The traditional view of risk management as the sole responsibility of the government is changing gradually. Without undermining governments' central and non-delegable responsibility, essential co-responsibilities of private sector, civil society and individuals who belong to the society should be recognized in addressing risks (Sarmiento et al., 2015). Business engagement in humanitarian activities, including disaster risk management and civil society protection, promotes corporate social responsibility (CSR) and can be a worthwhile investment for their bottom line. The convergence of these humanitarian and business trends has opened up new possibilities for public-private collaboration in the humanitarian and disaster risk management fields (Hoxtell et al., 2015).

Ingirige et al. (2014) explored key factors of private-sector investment in DRM and highlighted private-sector strategies to achieve a high return on investment in DRR:

- The perception of disaster risk reduction as an opportunity and a value-creating activity is a suitable starting point for exploring the key incentives driving private sector involvement in DRR.
- The bidirectional nature of DRR implies that companies' risk management should concentrate on both organizational risk reduction and prevention of new risks for the community that could result from risk-insensitive investing choices or other risk-increasing reckless actions.
- Investments in DRM has proven to generate economic benefits such as high reputation and brand value and the freedom of operation. DRM investments can also create a favorable financing method through increased disaster resilience.
- Investments in DRM helps corporations to be more competitive in every phase of a disaster by increasing reputation, preparedness and resilience.
- Finally, making DRM investments can lead to new business prospects both inside and outside the DRM context. The current drivers and approaches enabling private sector investments in DRM are interconnected, and some remain integrated. For example, DRM investments with initial profit-making interest and legal compliance might result in large-scale changes in the processes of each business that could uncover new business possibilities and markets and provide long-term and sustainable benefits from increased reputation (Ingirige et al., 2014).

2.6 Approaches of Private Sector Engagement in DRR

The private sector makes enormous contributions to a country's economy, particularly in developing, developed and newly industrialized countries. For example, in a developing country like Bangladesh, the private sector contributes almost 78% of total investment. In contrast, the revenue generated by the private sector in the UK is 92% (BIS, 2012; Ministry of Finance, 2012). Ingrige et al. (2014) recognized the significant contribution of the private sector to economies around the world and highlighted its potential to make communities safer and more resilient by:

1. Setting standards and quality assurance criteria for critical infrastructure in urban areas
2. Contributing investment funding for programs or individual country and community risk reduction efforts
3. Providing expertise to help with its technical areas of work, for example, administration and internal business processes, as well as external disaster risk assessments
4. Acting as a funding source and provider for socially responsible volunteers and funding.

In consideration of DRR, the private sector's association with DRR falls into three categories: advocacy and awareness-raising projects, social investment and philanthropy partnerships, and core business partnerships (UNISDR, 2008). According to La et al. (2012), the private sector's actions to engage in DRR can be categorized into three approaches: (i) corporate social responsibility (CSR); (ii) public-private partnership (PPP) and (iii) business model approaches.

According to Shaw and Izumi (2015), To promote private sector participation in disaster management, a balanced approach of legislation, incentive mechanism and engagement process are needed to increase the private sector's involvement. Corporate Social Responsibility, Business Continuity Plan and Public Private Partnership are the key legislation issues, while business development remains the key incentive mechanism and roles of other stakeholders (civil society, academia, media) becomes significant in the engagement process. They also categorized different roles of private sector into three phases of disaster: Response (during disaster), recovery (post-disaster) and preparedness (pre-disaster risk reduction). While business continuity is the key to response phase, risk reduction innovations become essential in recovery phase and development investment remains integral in the preparedness activities.

2.7 Role of Business Continuity Management (BCM) in DRR

BCM is a part of the greater risk management process adopted by businesses. All risks do not represent disastrous events that cause business interruption or suspension. BCM addresses only those risks that pose threats to the continuity of fundamental business actions. ISO 22301 (2020) defines business continuity as an organization's capability to continue delivering goods or services at acceptable predetermined capacities after a disruption. Business continuity can effectively deal with sudden disruptions (e.g., explosions) and gradual ones (e.g., pandemics). It also enables an organization to identify what is to be done to protect its resources (e.g., people, premises, technology, information), supply chain, interested parties and reputation prior to the occurrence of a disruption. Establishing a business continuity management system (BCMS) beforehand, rather than responding in an ad-hoc manner after a disruption, will enable the organizations to continue operations before unacceptable levels of impact emerge.

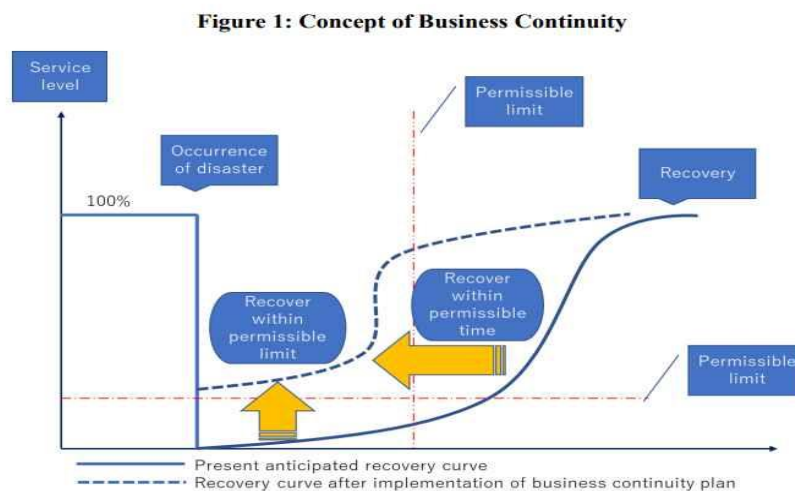


Figure 2.2: Concept of business continuity (Ono & Anbumozhi, 2020)

An organization should approach business continuity management and its documented information depending on its context (e.g., operating environment, complexity, needs, resources). A BCP serves as documented information that guides an organization to respond to disruption and resume, recover and restore the delivery of goods and services consistent with its business continuity objectives (ISO 22301, 2019). A BCP identifies an organization's fundamental operational functions and the possible impacts of a threat before its occurrence. Developing a BCP helps an organization identify necessary preparedness measures prior to a disaster to secure its staff, properties, information communication technology systems, and information, as well as its reputation. Additionally, it specifies effective ways of responding and fast recovery measures to ensure the continuation of business operations at acceptable levels and avoid disruptions for a specific period. Figure 2.2 demonstrates the business

continuity and recovery curve of an organization's service level in each disaster phase (Ono & Anbumozhi, 2020).

2.8 Corporate Social Responsibility in Disaster Management

Corporate Social Responsibility is a broad term that has grown into a multifaceted concept over the past few years. Although the notion of CSR has been mostly practiced in the context of developed countries, it is also gaining growing interest among developing countries. From a global company's perspective, CSR is related to corporate risk management in two ways: by providing intelligence about the risks and offering an effective means to respond to them. The key to both requires effective management of stakeholder relationships (Kytle & Ruggie, 2005). CSR is not similar to altruism. Although the community can be benefitted from CSR, its ultimate goal is to help the company. According to Twigg (2001), the main business advantages related to CSR involve:

- increasing employee morale and motivation, and helping employees to acquire new skills and experience, all leading to a more committed and productive workforce
- enhancing company brand or reputation
- strengthening relationships with clients and local and national communities

Michael (2003) highlighted firms' various delivery mechanisms to achieve their CSR objectives. First, companies may conduct CSR activities independently by sponsoring or engaging in different programs or activities. Second, companies can undertake CSR initiatives through partnerships with NGOs based on social needs. The last category represents corporations' partnerships with governments. For instance, an organization may engage with governmental authorities and various agencies regarding customer welfare, staff safety, community reinvestment and environmental safeguarding issues.

Corporate engagement in disaster management in the form of CSR has been broadly recognized and no longer belongs to a particular category of activities. However, most of the CSR activities in disaster management tended to focus on post-disaster measures such as response and recovery activities. Discussions of CSR and sustainable development have hardly ever addressed disaster planning and mitigation (Twigg, 2001). According to Miyaguchi and Shaw (2005), CSR interventions in disaster management have three common characteristics: (1) one-off intervention; (2) responsive action and (3) non-involvement of community. First, most of the CSR activities in this field are short-term, one-off interventions and rarely exceed one year in duration. Second, the private sector tends to focus more on post-disaster activities that attract media and international attention, providing a good opportunity to build the company's brand reputation. In their study, Kanji and Agrawal (2020) also pointed out that business opportunity, fame, reputation and increased brand value are the immediate enablers for a company to invest in CSR activities. Third, while developing CSR activities, companies often overlook the involvement of the local community.

Through the content analysis of CSR reports from Fortune 100 companies, Johnson et al. (2011) found that most organizations engaged in disaster-related activities for instrumental and ethical reasons. Corporate initiatives directed toward disaster relief and recovery efforts were mostly reactive and episodic-based in the case of domestic and international disasters. Most of these post-disaster measures were voluntary, indirect and one-time, including financial and in-kind or pro bono initiatives to employee and customer stakeholder groups. It is also found that companies engaged in partnerships with NGOs to address domestic and international natural disasters immediately. Additionally, firms were found to contribute to the long-term planning and mitigation of disasters through the allocation of internal resources such as firms' employees, technologies and existing logistic-related skills in disaster management. However, most corporate interventions focus on disaster relief efforts in immediate-onset disasters, particularly in developing countries where existing government infrastructure may remain susceptible to the large-scale impact of disasters (Bhatt, 2002). Therefore, long-term planning and mitigation of both 'rapid' and 'slow-onset disasters' should be incorporated into the corporate policy for effective disaster response and management activities.

According to Twigg (2001), CSR activities related to disaster relief efforts might encourage the private sector to become involved in disaster preparedness and long-term mitigation measures. Another study found that most companies who do not engage in DRR because of company policy or guidelines initially engaged in DRR through ad-hoc CSR activities. Therefore, CSR might be a starting point for businesses to engage in DRR (Mercy Corps Indonesia and R3ADY Asia-Pacific, 2016). Sarmiento et al. (2015) pointed out several CSR activities related to DRR, including the protection of employees and operations in hazardous zones; social justice measures in the workplace; advocacy for long-term business relationships with suppliers; partnerships with other institutions to leverage their financial and human resources; and advocacy with governmental, non-governmental and civil society organizations to improve DRR awareness at levels.

2.9 Corporate Engagement in Disaster Management in Bangladesh

Disaster risk management entails all activities, programs and measures undertaken before, during and after a disaster to avoid a disaster, reduce its impact or recover from its losses (Khan et al., 2008). The government of Bangladesh emphasizes three broad-based strategies in the National Plan for Disaster Management (NPDM) for a comprehensive disaster risk management approach: (1) inclusion of prevention, emergency response and post-disaster recovery in the management of both risks and consequences of disasters; (2) community involvement for preparedness program for saving lives and properties and (3) non-structural mitigation measures such as community disaster preparedness training, advocacy and public awareness (Gob, 2010a). The corporate sector in Bangladesh tends to take initiatives for disaster management under their CSR activities. However, CSR practices in Bangladesh is still in the infancy stage. Bangladeshi companies tempt to adopt CSR not only for improving

corporate governance, labor rights, equal treatment of employees, community development and environment management but also for industrialization and ensuring global market penetration (Alam et al., 2010). Despite the need for a clear understanding of CSR in Bangladesh, the number of philanthropic activities is enormous and businesses are willing to adopt CSR initiatives (Sobhan, 2006).

In Bangladesh, most private sector interventions in disaster management were found to be charitable, one-off and driven by people's humanistic nature. Most activities of CSR in disaster mitigation fall into the category of charitable or philanthropic activities and typically include grants and donations, either in cash or in-kind. For example, donating one day's salary during floods or other natural events is common in Bangladesh (Matin et al., 2002). A study on corporate social responsibility of Bangladeshi private commercial banks in DRM found that most (80%) banks engaged in only relief-based disaster response compared to 10% in the recovery phase and 5% in the preparedness phase (Sattar, 2017). However, banks did not initiate any activities under the mitigation phase to reduce the vulnerability of the community and society. The findings of the study revealed that disaster management activities under the CSR initiatives of commercial banks are confined to relief activities such as donations to the prime minister's relief fund for disaster-affected people and blanket donations for cold-affected people. Banks do not have any long-term strategies for pre-disaster risk management that may lead to the reduction of post-disaster consequences. This highlights the culture of private-sector response to disasters as short-term and reactive rather than long-term and proactive. Matin et al. (2002) also points out that the private sector lacks incentives to fund long-term disaster mitigation initiatives and seems satisfied to leave the responsibility to the public sector and international aid funding through the NGOs. Findings by Izumi and Shaw (2014) reveal that disaster preparedness is not incorporated into the private sector's safety and security strategy in Bangladesh. A partnership approach with NGOs, governments and other institutions involved in building communities' disaster preparedness may potentially enhance the private sector's disaster preparedness capacity.

2.10 Conceptual Framework

A framework has been conceptualized and drawn based on the review of existing work on the private sector and disaster risk reduction (Figure 2.3). The framework demonstrates the existing motivations for the private sector and the key gaps in enabling private sector engagement in DRR that cross-collaboration among different actors could address to build a resilient community.

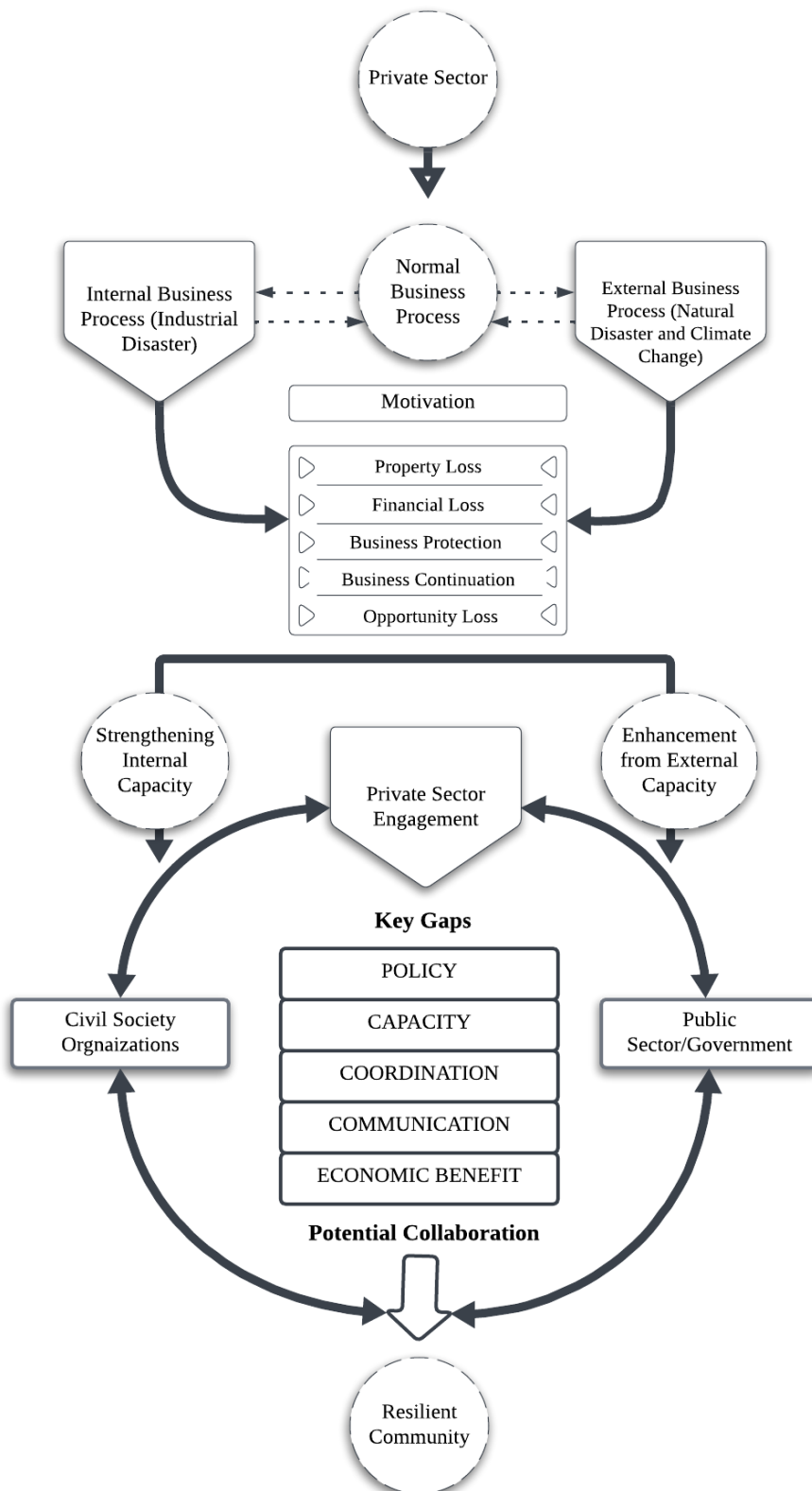


Figure 2.3: Conceptual framework

2.11 An Overview of Disasters and DRR Initiatives in Dhaka City

Dhaka holds distinct supremacy in the national hierarchy of Bangladesh regarding population share, economic contribution, administration, politics, trade and commerce, and environmental degradation. The trend of rapid urbanization in Dhaka city generates increasing demands for urban infrastructure and services and leads to unplanned and irregular urban growth. The inadequate provision of urban services and a lack of good governance in delivering those services has led to a critical situation. The city and its surrounding environment always remain under pressure due to the increasing number of populations. The multifaceted challenges of Dhaka have emerged from informal urbanization and have been further aggravated by natural and man-made disasters (Swapan et al., 2017). Dhaka is highly vulnerable to climate-related disaster risks exacerbated by unregulated and rapid urbanization. A comparative analysis conducted on vulnerabilities of 50 different cities regarding hazard exposure demonstrates Dhaka's high-risk status in case of earthquake, flood and tropical cyclone. Further estimation predicts a one-meter sea level rise will threaten Dhaka and many other megacities (Dankelman, 2008). As the administrative, economic, political and cultural hub, Dhaka has wide-ranging national implications due to its high disaster risks.

2.11.1 Earthquake

Bangladesh is susceptible to high seismic risk, as denoted by its historical seismicity and high frequency of recent shocks. Vulnerability to earthquakes has been further increased with the present trend of urban growth and unplanned urbanization process. Experts suspect that a major earthquake equal to 7.0 magnitude in large cities in Bangladesh will cause massive human tragedy because of the structural failure of many buildings (Paul & Bhuiyan, 2010). According to Bangladesh National Building Code 2020, the country is divided into four seismic zones with zone coefficient Z equal to 0.12 (Zone 1), 0.2 (Zone 2), 0.28 (Zone 3) and 0.36 (Zone 4). The seismic zone coefficient for each zone represents the PGA value on rock or very stiff soil sites. Here, Zone 1 is the least earthquake-prone region, whereas Zone 4 is the most severe earthquake-prone zone. The capital, Dhaka, is located in the moderate intensity earthquake zone with a seismic zone coefficient of 0.20, which implies $PGA = 0.2 g$ at the rock site for Maximum Credible Earthquake (Al-Hussaini et al., 2012).

The analysis of the location of urban areas in the seismic map shows that the northeast region that includes the Sylhet division is the most vulnerable earthquake zone in the country. However, Dhaka, the most important city in Bangladesh, is exposed to high levels of earthquake risks despite its position in Zone 2. As per the estimation of UN IDNDR-RADIUS initiatives, Dhaka and Tehran are the cities with the highest relative earthquake risks in the world (Jahan et al., 2011). In addition, the Earthquake Risk Index (EDRI) for Dhaka is positioned top among the 20 high-risk cities in the world. Between 1885 and 2005, more than 70 earthquakes with magnitude four or above happened within a 200-kilometer radius of Dhaka (Khan & Hossain, 2005). These frequent earthquakes of low magnitude carry

the danger of a future major earthquake in the proximity of Dhaka while several faults are located across the city. Dhaka was affected by the Bengal earthquake in 1885 and the Srimangal earthquake in 1918, with their epicenters in the country (Shah et al., 2010, cited in Shah & Murao, 2011). In 1897, the Great Indian Earthquake struck Dhaka with a magnitude of 8.7 and caused massive destruction to masonry structures (Al-Hussaini, 2003). Dhaka's inherent vulnerability of building structures, high population density, unplanned development, lack of preparedness at the community level, and poor emergency response and recovery capacity contribute to its high-risk status of earthquake disaster (Al-Hussaini, 2003; Jahan et al., 2011). Rapid urbanization is taking place in Dhaka following extensive real estate development and building construction in an unregulated manner without considering the building construction code, proper plan, approved design and appropriate materials. Moreover, it is also found that there is a big gap between the knowledge and implementation of the building code. Therefore, residents' knowledge of the building code is necessary to reduce the level of structural vulnerability of residential buildings (Shah & Murao, 2011). Bangladesh National Building Code has been developed with detailed guidelines for earthquake-resistant concrete and steel structures design, but it is not officially enforced. Without an effective enforcement mechanism, most new buildings do not have adequate provisions to be seismically resistant. As a result, the number of people residing in unsafe structures is growing in Dhaka (Paul & Bhuiyan, 2010). These prevailing conditions have made Dhaka one of the top cities in the world with the highest relative earthquake risks.

2.11.2 Flood

In addition to the various environmental challenges and problems, frequent natural disasters, particularly annual flooding, are one of the most pressing issues in Dhaka. Flooding has become one of the most devastating incidents in recent times, and its severity is increasing day by day. Dhaka city is bounded by rivers along with 43 canals. During the rainy season, the city becomes water-logged and experiences frequent flash floods. Between 1954 and 2007, the city experienced significant flooding at least 10 times (1954, 1955, 1970, 1994, 1980, 1987, 1988, 1998, 2004, 2007), of which the last four floods were catastrophic (M. Alam & Rabbani, 2012).

Remote sensing-based flood estimation for the three greatest flood events in Dhaka showed that 47.1% of areas were flooded in 1988, while in 1998 and 2004, inundation areas were 53% and 43%, respectively (Dewan & Yamaguchi, 2008). Further analysis by Dewan and Yamaguchi revealed that the rapid changes in land cover play an important role in intensifying the flooding process. The flood risk is further aggravated by the inappropriate physical planning of the city (Mohit & Akther, 2002). A geographic information system (GIS) based 1998 flood hazard map indicated that more than 55% of Dhaka city is located within the high hazard zone (Dewan et al., 2006). Additionally, the structural measures of flood protection have increased the flood risk in the city area (e.g., flood embankments and

dykes contributing to food duration) and caused extreme water-logging, particularly during the monsoon period (M. Alam & Rabbani, 2012; Chowdhury, 2003).

According to Dewan (2013), a number of factors are responsible for the increase in flood vulnerability of Dhaka, including high population density, intense inequality in resource distribution and a dilapidated drainage system. Between 1998 and 2008, about 33 percent of canals and ponds and 53 percent of low-lying flood zones were filled up (Brammer, 2010). Canals can no longer support the drainage system due to heavy encroachment and siltation (Islam et al., 2010). Several factors are responsible for the encroachment process of the canal, including unauthorized landfilling, illegal construction over the canal, expansion of slums, solid waste dumping and lack of awareness of local people as well as government bodies (Ishtiaque et al., 2014). As the demand for affordable land is increasing, the traditional flood protection zones, such as the productive agricultural lands and wetlands, are getting converted to residential and industrial plots for development (Islam, 2017; Rahman et al., 2018) Bangladesh Atomic Energy Commission and SWMC (Cited in Ishtiaque et al., 2014) conducted a study on Ashulia flood plain area to identify the impact of landfilling on the nearby hydrology. According to the finding of the study, the land development process will increase the river's water level, eventually causing drainage problems in the areas with an increase in the flow velocity of the river. In addition, vigorous landfilling will hinder the natural flow of water, consequently contributing to waterlogging and flooding in the city.

2.11.3 Fire

Fire hazard has become a very common phenomenon in Dhaka city in recent times. The risk of fire hazards is extremely high due to the city's high-density built-up nature. The reported fire incidences from 2014 to 2016 in Bangladesh were 16213, 17488, and 16858, respectively, whereas the number of cases in Dhaka city was 2397, 1977 and 2953 accordingly (Islam & Hossain, 2018). A report by Bangladesh Fire Service and Civil Defense (2019) states that there were 19672 fire incidents all over the country in 2018, of which 6208 incidents occurred in Dhaka city. Dhaka often experiences fire hazards due to its dense building concentrations, congested roads, flammable building materials, old water supply and electrical wire, existence of chemical factories in residential areas as well as the lack of preparedness and response skills among local individuals and fire authority (Rahman et al., 2015). Moreover, in comparison with other urban centers, the annual financial loss from fire incidents is very high in Dhaka city due to its involvement in the highest concentration of economic activities (Islam & Adri, 2008). The average annual economic loss or damage to property due to fire hazards in Dhaka is estimated at around BDT 4000 million (Islam & Hossain, 2018). Urban fires often result from anthropogenic activity rather than natural causes. The causes of fire hazards in Dhaka city are manifold, including electric short circuits, gas line leakage, mosquito coil, cigarette, leaked electric cable, chemical explosion, stove, sabotage, etc. (Shaw et al., 2013; Stott & Nadiruzzaman, 2014).

The risk factors for fire hazards are high population density, unplanned urbanization and industrialization, and lack of building code enforcement (CFE-DM, 2015). The growing number of ready-made garments industries in Dhaka attracts a lot of skilled and unskilled labor from different parts of the country and, consequently, increases the number of fire incidents (Tishi & Islam, 2019). It is also observed that the political economy of Dhaka is one of the major factors contributing to increased risks, greater damage and heightened challenges for the future mitigation of fire hazards (Stott & Nadiruzzaman, 2014). According to Islam and Hossain (2018), the main reasons behind the ineffectiveness of fire mitigation measures include the distance location of fire stations, locked and narrow emergency exit points, panicky situations, lack of light or inadequate light in stairways, lack of constant supply of electricity, suffocation and lack of awareness. The nature, origin and casualty of fire hazards are related to the nature of land use, with Old Dhaka having a higher fire hazard risk than new areas (Chisty & Rahman, 2020). Several tragic fire incidents have occurred in Old Dhaka over the last decade. For example, the Nimtali Fire Tragedy claimed the lives of 117 people, with another 150 suffering critical burns. The fire accident occurred due to a chemical explosion from the ground floor warehouse of a residential building. It is estimated that 80% of old Dhaka's residential units have accommodated unauthorized factories and warehouses (Imam, 2010). The recent fire incidents in Chawkbazar and Banani also exemplify the uncontrolled land use of Dhaka city. In 2019, about 78 people were killed in the Chawkbazar fire incident due to the explosion of gas cylinders and chemicals stored in residential buildings. Emergency response activities were hindered by narrow streets and a lack of water sources (BBC, 2019). Another fire incident in March 2019 broke out in a high-storied commercial building of Banani that claimed 25 lives and injured around 100 people. The risk factors behind fire hazards in Dhaka's high-rise buildings include cramped structures, narrow pathways, lack of fire security kits and inadequate fire exits (The Daily Star, 2019).

2.11.4 Impacts of Climate Change

More than 90% of all urban areas are coastal, placing most cities of the world in danger of floods from rising sea levels and stronger and more frequent storms. Dhaka is no exception in terms of climate change vulnerability (Swapan et al., 2017). Dhaka is located in elevations between 2 and 13 meters above sea level, indicating that a minimum rise in sea level would potentially submerge large parts of the city (Un-Habitat, 2008). Dhaka is likely to be affected by climate change severely through flooding, water congestion and heat stress (M. Alam & Rabbani, 2012). The main vulnerable sectors in Dhaka, in the face of climate change, would include agriculture and fisheries, infrastructure like housing and transportation, utility services like water supply and sanitation, power supply, and trade and business industries, which will have massive impacts on the overall economic activities as well as public health and well-being (Alam & Rabbani, 2012; Rahman & Mallick, 2008).

The most vulnerable population of society to the impacts of climate change are those with no or limited access to proper healthcare, water and sanitation. It is found that drought will increase in particular areas of the country due to the dwindling trend of precipitation patterns induced by climate change (MoEF, 2012). It is also observed that the average temperature in Dhaka has increased by 0.50 degree Celsius over the last century, and it is expected to rise by another 1.5-2 degrees in the next 50 years (RAJUK, 2015). The old people and children will be particularly exposed to the urban heat island effect, which will intensify due to increasing global temperature. Additionally, climate change will provoke high distribution of infectious disease vectors and some allergenic pollen species, which will have severe impacts on local health and well-being (Swapan et al., 2017).

Dhaka has experienced the indirect impacts of climate change, mostly through climate-induced displacement and migration. Every year a large number of people migrate to Dhaka and settle in the slums. It is estimated that about 70% of the slum people in Dhaka are affected by some form of environmental shock and climate change, particularly floods (McPherson, 2015). The frequency of climate-induced heat and cold waves has been observed in Dhaka city in recent times. These events have an adverse impact on the human body. For example, heat stroke affects both individual's health and economic productivity, particularly day laborers. Observations also found that seasonal precipitation in Dhaka during the monsoon (June-August) and winter (December-February) has a decreasing trend, whereas irregular heavy rainfall is becoming more frequent. Due to climate change, excessive rainfall becomes a serious issue in many parts of the city that can lead to inundation for several days due to drainage clogging and insufficient pumping facilities (Rabbani et al., 2011).

2.11.5 DRR Initiatives of Government

The presence of diverse institutional actors and the complex interactions among those actors make the landscaping of DRR and CCA a challenging task in an urban context. Many of the government agencies in Bangladesh have overlapping as well as unclear roles and responsibilities regarding DRR and CCA. Government agencies tend to involve in infrastructural development planning, the development and implementation of contingency plans and interventions in emergency response, relief and recovery, following the Standing Order on Disaster (Stott & Nadiruzzaman, 2014). This section highlights some of the important initiatives the Government of Bangladesh adopted toward disaster risk reduction in the urban setting.

2.11.5.1 City Corporation Disaster Management Committee (CCDMC)

DNCC is the governing body of Dhaka's CCDMC that seeks to coordinate, review and implement disaster management activities inside Dhaka. In preparation for disasters, the committee follows the contingency plans devised within the Comprehensive Disaster Management Programme (CDMP). However, there are gaps in the current DRR awareness and preparedness pattern, as highlighted by DNCC, due to a lack of coordination between various government levels and departments. Moreover, contingency plans are not

comprehensive as no plans for fire, flood or other disasters, except earthquakes. There is also a knowledge gap between researchers and other stakeholders regarding the actions of external organizations in the case of a disaster. It is suggested that with a broader scope, DRR training should range beyond the involvement of central organizations, which will facilitate the integration of prevailing physical, social and economic vulnerabilities of Dhaka's dwellers into contingency plans (Stott & Nadiruzzaman, 2014).

2.11.5.2 Comprehensive Disaster Management Programme

The Comprehensive Disaster Management Program is a landmark initiative of the Ministry of Disaster Management and Relief, Government of Bangladesh and UNDP in cooperation with other international humanitarian organizations. CDMP involves a proactive approach to addressing disasters, shifting the focus from relief and rehabilitation to risk reduction (Gob, 2010b). During Phase One (2004-2009) of this groundbreaking project, CDMP laid the foundation for institutionalizing the risk reduction approach and framework. Phase II (2010-2014) is developed to scale up further and mainstream DRR and CCA into all sectors. The key agenda of CDMP II seeks to strengthen the national disaster management capacities in risk reduction and improving response and recovery through a comprehensive approach. As a successor of the first phase, CDMP II has significant impacts at the policy and community levels. The risk information derived from seismic hazard assessments and mapping has contributed to land use and city physical planning in the urban setting. Municipal risk reductions are entering the governance by involving more than 140 municipal mayors in the 'Safer Cities' global campaign and training in self-assessment tools. The urban risk reduction has been strengthened by training more than 1200 professional responders and is complemented by 15,000 urban community volunteers. Moreover, earthquake risk maps and ward-based contingency plans have been developed in targeted nine major cities, including Dhaka. Additionally, densely populated locations have undergone pilot urban risk reduction interventions in the nine targeted cities (Gob, 2010b).

2.11.5.3 Urban Development Directorate (UDD)

Urban Development Directorate is a government agency working under the Ministry of Housing and Public Works. UDD contributes to the development of the master plan or land use plan for towns and cities and is responsible for urban planning and management. Between 1984 and 2004, this directorate designed over 400 urban areas with funding support from UNDP and World Bank. Though UDD is not directly linked to the government's institutional disaster management structure, it collaborates with multiple stakeholders, including the CDMP, UN-Habitat and Upazila Parishads, to contribute to DRR interventions. For example, a Memorandum of Understanding (MoU) has been signed between CDMP II of the Ministry of Disaster Management and Relief and UDD to develop the plan, incorporating the urban plan with disaster mitigation to expedite future town-centred disaster preparedness and vulnerability reduction program. CDMP has been developing disaster-centered risk and vulnerability maps and relevant response-related plans. However, disaster-related data has not

been incorporated into UDD's plans yet. The first step to disaster vulnerability reduction can be fulfilled by incorporating these maps and data into land use or infrastructure planning of UDD. Considering this objective, CDMP II has launched extensive training programs to enrich the technical knowledge of UDD's all town planners. Following this training facilitated by national or internationally recognized trainers, disaster-related data will be incorporated into the land use plans of all municipalities of Bangladesh with proper arrangements for the implementation program (Gob, 2014).

2.11.5.4 Earthquake Contingency Plan for Dhaka City

The Comprehensive Disaster Management Program under the Ministry of Disaster Management and Relief formulated an earthquake contingency plan at national level. The ultimate goal of this earthquake contingency plan is to minimize the adverse effects of potential earthquakes in Bangladesh by establishing and implementing a system of preparedness activities through an efficient and effective contingency planning process. In 2010, an earthquake contingency plan was developed for Dhaka City by CDMP. The main responsibilities of Dhaka's city corporations regarding earthquake contingency planning encompass ensuring a quick and efficient management system, which would enable fast recovery of the city's normal functions following any earthquake incident. However, the plan is yet to be operationalized.

2.11.6 Challenges in Undertaking Urban DRR Initiatives

Despite increasing urban disaster risks and the absence of a comprehensive approach to dealing with these risks, very few studies attempt to explore urban disaster risk reduction and its associated challenges, going beyond the narrow perspective of approaches focusing merely on technical solutions. Urban contexts are unique in many ways, and thus, disaster discourses need to be contextualized for urban disaster risk management and responses (Sharmin & Saadi, 2010). Apart from technical issues, there are several challenges that impede the implementation of disaster risk reduction in the urban context.

In their study, Stott and Nadiruzzaman (2014) highlighted several urban DRR gaps in seven central areas identified by the academic and NGO community, which include hazard awareness, urban planning, knowledge and awareness, training and capacity, collaboration and coordination, policy and governance, and urban services. These focused areas highlight key barriers to achieving effective urban DRR and CCA and indicate gaps in the institutional landscape. There is a huge gap in identifying urban hazards, and citizen-level hazard assessment remains undermined due to a lack of awareness of urban hazards. DRR and CCA are not incorporated into urban planning, and unplanned urban development increases in-migration rates through improper land use. There is a lack of knowledge-sharing platforms for urban issues at the organizational level, and urban citizens tend to lack social awareness. There is also a lack of training and mock drills for emergency response at the institutional and individual levels. There is a lack of collaboration both within and between organizations, including government agencies, private companies and NGOs. There is also a lack of policy

and governance in terms of urban planning and long-term visionary plans in urban settings as well as problematic behavior and attitudes among leaders and policymakers. Finally, urban infrastructure lacks resilience with inadequate urban slum services, absence of contingency plans, irregular operation of existing infrastructures and insufficient drainage systems. By addressing these barriers in unison, the DRR and CCA actor can achieve a comprehensive approach to reducing the risks of hazards in Dhaka.

Chapter Three: Methodology and Sources of Data

3.1 Introduction

This chapter includes the relevant research methodology that has been followed to systematically carry out the study. It begins with an overview of the study area and outlines the research method followed in the study, mentions sources of data, explains the population and sampling of the study, describes data collection methods used in the study and ends with describing data analysis. The selected methodology is explained further and steps to achieve the objectives are presented in this chapter.

3.2 Study Area

Dhaka was chosen as the study area as it is Bangladesh's principal economic center and is vulnerable to different natural and human-induced disasters. The city has appeared as the most rapidly expanding megacity lately, with an annual growth rate of 4.4 % per year (UN, 2016). Dhaka, the country's capital, is situated in South Asia and is the world's fourth-biggest megacity (Jegade, 2022). As per the World Population Review, Dhaka's metro area has now 22, 478, 116 residents (2022 estimation) with a density of 23, 234 persons per km². Accommodating this large number of populations, Dhaka is now world's fourth most densely inhabited metropolis in the world (Dhaka Tribune, 2022).

3.2.1 Geographical Settings of Dhaka

Geographically, the core area of Dhaka city (belonging to both Dhaka City Corporations-North and South) is located between 23.69° and 23.89° north latitudes and 90.33° and 90.44° east longitudes (Dewan & Corner, 2013). The center of the city covers 306 km² and has a population of more than 10.2 million people. The Dhaka Metropolitan Development Plan, on the other hand, covers a greater area of 1528 km² (termed Dhaka Megacity), with growth spilling over into six neighboring municipalities (Kadamrasul, Gazipur, Narayanganj, Siddirganj, Savar, and Tongi) to develop the megacity (Swapan et al., 2017). For major river routes border Dhaka city namely Buriganga, Turag, Tongi Khal, Balu and Shitalakhya. In addition to receiving spills from three powerful rivers that cross the nation, including the Ganges, Brahmaputra, and Meghna, through their tributaries and distributaries during the monsoon, these neighbouring rivers of Dhaka also receive water from regional precipitation (Taleb, 2012). Topographically, the area around Dhaka is plain and located mainly on an alluvial terrace, popularly known as the Modhupur terrace of the Pleistocene era (Miah & Bazlee, 1968). Dhaka's surface elevation spans from 1 to 14 m, whereas most built-up areas are situated at elevations of 6 to 8 m (FAP 8A, 1991). Dhaka is located in the humid subtropical monsoon zone, with an average rainfall of 2000 mm per year, with over 80% falling during the monsoon period (July-October). (Dewan et al., 2012).

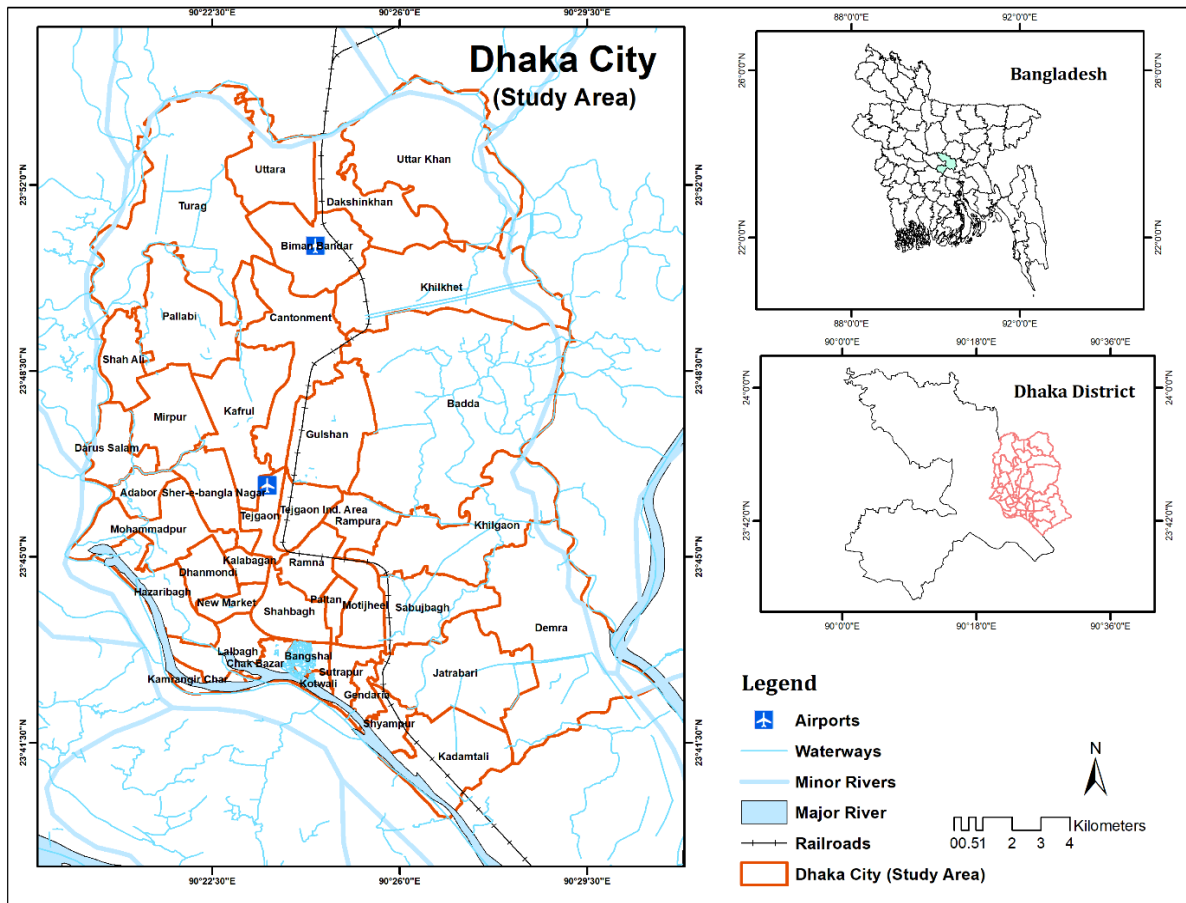


Figure 3.1: Location map of Dhaka city

3.2.2 Socio-Economic Overview

In Bangladesh the urban sector drives the economy, accounting for over sixty percent of the GDP (Choe & Roberts, 2011). Dhaka is the country's main metropolitan agglomeration and economic center, with a present GDP of USD10 billion (2017 estimation). The capital city alone contributes to 36% of the GDP and 43.6% of the country's all formal employment, comprising corporate employment, commercial and production sectors (RAJUK, 2015). However, despite its dense population, Dhaka is still to achieve significant economic growth due to its dependence on low-productive service industries and the predominance of the informal sector. The service sector remains top in terms of job creation, followed by agriculture and allied sectors. The manufacturing sector generates only one-tenth of the total employment in the capital. A heavy reliance on only limited sectors, combined with the rise of low-productive service sectors, makes it very challenging for Dhaka's economic growth in the context of the city's increasing demographic growth (Roy et al., 2019). According to the World Bank (2012), Dhaka's top five industries are textiles, furniture, food and beverage, plastic products and leather. The development of an export-focused garments industry in the late 20th century has added another milestone to the city's economic status.

In Dhaka, extreme disparity exists between rich and poor residents. Only 3% of the population is made up of rich cohorts, whereas the rest belongs to middle- or lower-middle

class families. According to Dewan and Corner (2013), 45% of the population of the city is considered to be urban poor, of which 25% falls into the category of extreme poor. The urban poor are mainly accommodated in slum regions which have a deteriorated physical environment and poor sanitation. Slums provide accommodation for geographically displaced persons and rural migrants (Swapan et al., 2017).

3.3 Research Design

This study is a cross-sectional study, with a mix of data collection methods. The methodology involves collecting data from representatives of corporate organizations operating in Bangladesh's economic hub and capital, Dhaka. Multiple steps were followed to complete the assessment (Figure 3.2). At first, a thorough review of existing literature was carried out to identify relevant information related to corporate involvement in disaster risk reduction. The literature review also helped to select the study title and narrow down the target population and study area selection. Then, a pilot study was conducted with members of corporate organizations in the study area to gather evidence and information and identify the nature of activities in disaster risk reduction.

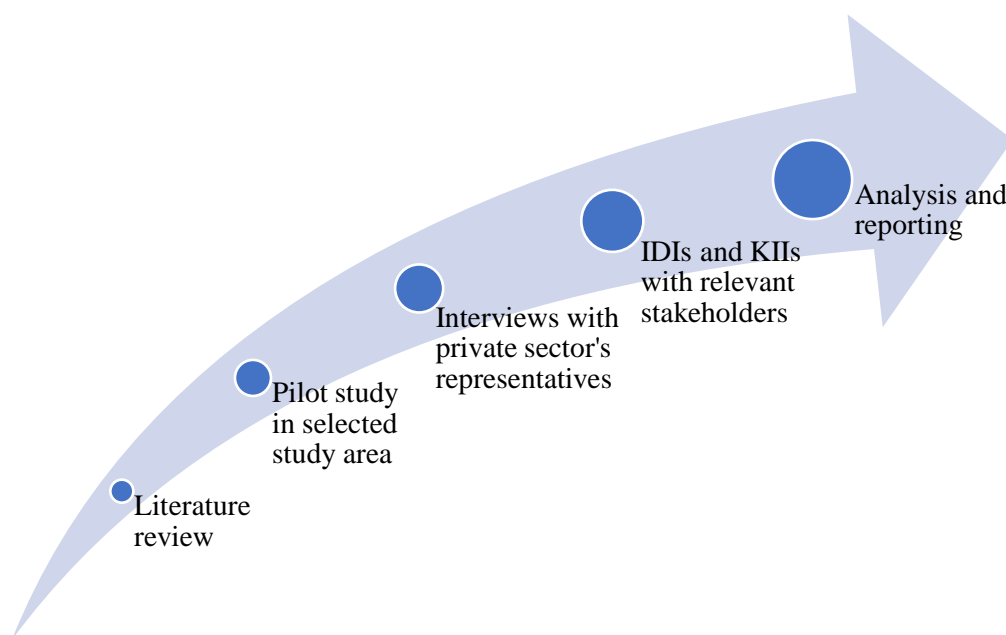


Figure 3.2: Procedures of the study

After this initial screening, a structured questionnaire for interviews with private sector representatives and a checklist for key-informant interviews (KIIs) and in-depth interviews (IDIs) was developed and followed. Finally, the collected data were systematically analyzed and presented based on the context, meaning, words, frequency and intensity of the responses provided by the participants.

3.4 Research Method

The study employs an exploratory mixed-method approach to get statistical, quantitative results from a sample and then follow up with discussions held with key individuals to delve deeper into those results. The mixed-method approach is used to analyze two objectives in this study and involves collecting, analyzing and integrating quantitative and qualitative data. The method has provided a comprehensive understanding of the research problem under investigation by integrating both qualitative and quantitative data.

3.5 Sources of Data

The study used both primary and secondary data sources. Primary data were collected through structured interviews, KIIs and IDIs. In addition to using primary sources for data collection, a number of relevant documents, including published literature, books, articles, journals, newspapers, relevant national plans and strategies, annual reports and websites of the study organizations, were reviewed and used to gather information as well as to validate the data. Annual reports of 2022 were analyzed because these were the latest reports available in the public domain. Additionally, the official websites of companies were also reviewed, as some companies used this platform to showcase the fields of CSR activities.

3.6 Population, Sample and Sampling of the Study

The study is carried out targeting corporate organizations operating in Dhaka city (Appendix 7.2). Thus, a single corporate entity is considered as the study experimental unit. The size of the organizations studied ranged from 200 to more than 10,000 employees. In this study, two types of sampling methods were applied to select participants, namely snowball sampling and purposive sampling (Figure 3.3).

The study employs a snowball sampling technique for conducting structured interviews with representatives from the private sector. Accessing corporate individuals for interviews was difficult as they tended to be busy and often declined their participation due to internal compliance issues. Therefore, snowball sampling was used to get access to these individuals based on the referrals from previous participants. Moreover, using this sampling technique, the target populations were accessed on time while considering ethical issues, such as maintaining their privacy and assuring confidentiality. This method also helped ensure the participation of top-management and executive-level management of the study organizations.

Purposive sampling is used in the study to conduct KIIs and IDIs with relevant stakeholders and private sector professionals, respectively, who have some level of understanding of disaster risk reduction. Before conducting these interviews and discussions, a list of potential respondents was developed by aligning with the research objectives.

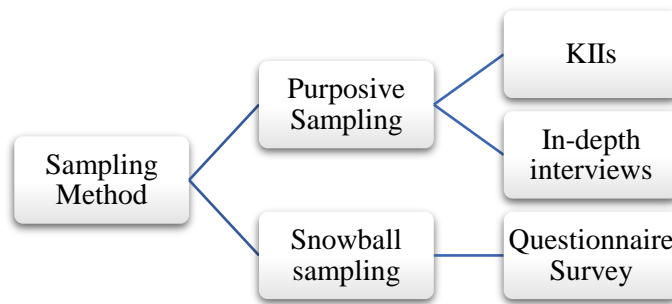


Figure 3.3: Sampling method used in the study

3.7 Data Collection Methods

As this study is a cross-sectional study, primary data were collected by conducting interviews at a single time. Surveys, KIIs and in-depth interviews were conducted between May and June 2023. Both on-site and off-site interviews were carried out to address the research questions. Telephone interviews as well as social media-based platforms were used for collecting the data. At the same time, off-site data were collected from secondary sources. Before starting each interview, verbal consent was taken from interviewees on the continuation of the interviews. The main purpose of the study was clearly explained to participants and they were also assured about the privacy and confidentiality of their responses. Before starting each interview, the participants of the study were clearly informed about the main purpose of the study and they were also assured about the confidentiality of their responses.

3.7.1 Quantitative Data Collection Methods

A structured questionnaire was prepared and handed out to representatives of participating corporate organizations in Dhaka City (Appendix 7.1). Survey data were collected through a self-administered questionnaire that had four main parts: General information about the Organizations and the Respondents; Disaster Risk Perception of Businesses; Disaster Preparedness Measures, and Business Contributions to DRR at the Local Level. A fifth section titled 'Disaster Risk Transfer Mechanism' was added for the insurance companies to assess their knowledge of disaster risk insurance, institutional capacity and overall challenges related to such insurance schemes in Bangladesh. The questionnaire comprised a total of 36 questions, of which thirty-one were close-ended, and five were open-ended. The open-ended responses were categorized and primarily used to comprehend structured responses precisely. The survey received 52 responses in total from various business industries (Table 3.1). Forty responses were obtained on-site, with the remaining responses being gathered through online platforms. The survey data were collected from three groups of responders: top-management, executive-level and mid-level managers of companies. Since the characteristics of the

participating companies differ among business industries, the size and ownership type of the study organizations also vary, respectively.

3.7.2 Qualitative Data Collection Methods

This study used KIIs, in-depth interviews and observation for gather qualitative data (Table 3.1). A checklist was developed to conduct the interviews with key informants who have been involved in disaster risk reduction or are knowledgeable about it (Appendix 7.3). Each KII was conducted one on one and lasted for at least an hour. Five KIIs were conducted in this study that generated responses regarding key incentives and mechanisms required for creating an enabling condition for enhanced DRR-related private sector engagement (Appendix 7.3.1).

In-depth interviews were conducted with corporate officials who had a comprehensive understanding of private sector engagement in DRR activities. Ten in-person interviews were carried out that generated an in-depth understanding of current trends in private sector engagement in disaster risk reduction (Appendix 7.3.2). Each interview lasted for at least one hour.

Practical observations were made to collect some background information on the participating organizations and assess the presence of institutional DRR initiatives in these organizations. The statements made by the respondents regarding DRR activities were cross-verified through on-site observations.

Table 3.1: An overview of the study methodologies

Types of Data	Data Collection Methods	Data Collection Tools	Respondents	Total Number
Quantitative data	Survey	Structured questionnaire	Corporate official	52
Qualitative data	Key Informant Interview	Checklist	Relevant policy stakeholder	05
	In-depth Interview	Checklist	Corporate official	10

3.8 Data Analysis

Data analysis involves classifying and interpreting data collected from the field or secondary sources. Field editing was done during data collection to check errors and omissions in the raw data, and made corrections when possible. In addition, a final desk editing was done before coding and input of the data. A number of diagrams, graphs and tables were used in this paper to analyze quantitative data and interpret certain concepts more specifically. The

qualitative data were categorized and analyzed descriptively to gain in-depth information and a deep understanding of results generated from quantitative data.

3.8.1 Quantitative Analysis

For the quantification of data, survey data were converted in numerical form into the code sheets and categorized based on the total response value of the answers. For data analysis and graphical presentations, statistical software such as SPSS version 26 (IBM) and MS Excel were used in the study. Descriptive statistics like crosstabs and frequencies of the variables were mainly used for statistical analysis. Pearson chi-square test was carried out to examine the association between categorical variables. Significance for 'p' value was fixed at $p < 0.05$. Pearson correlation test was run to assess the correlation of selected variables. The significance level for correlation was fixed at $p < 0.05$.

3.8.2 Qualitative Analysis

Data collected using the qualitative approach was analyzed descriptively. This involves analyzing data collected from KIIs and in-depth interviews. Interview data were recorded and transcribed to comprehend them fully. The aim was to understand how key individuals with knowledge of DRR interpret their opinions relating to the research objectives. Besides, in-depth knowledge of the quantitative results was achieved by gathering and analyzing qualitative data.

Chapter Four: Results and Findings

4.1 Introduction

This chapter will attempt to present the corporate perception of disaster risks and DRR practices in the private sector in Bangladesh. The chapter is classified into five sections, with the first section representing the background information of the study organizations. The following section demonstrates findings on the risk perception of the corporate organizations and the third section presents the findings on disaster preparedness activities practiced by corporate organizations. The fourth section provides a detailed analysis of the private sector contributions to community-level DRR, highlighting the results drawn from their CSR activities. It also discusses the nature of partnerships in DRR, key drivers in partner selection, types of corporate stakeholders in disaster risk management and corporate perception of investing in DRR and CCA. The last section analyzes the insurance sector’s perception of climate-induced disaster risk insurance.

4.2 Background Information of the Corporate Organizations

As presented in Table 4.1, of the total of 52 corporate organizations, the four most surveyed industries were conglomerates (21.2%), insurance (21.2%), banking (13.5%), and ready-made garments (9.6%), respectively. In the industry segment, the category ‘other’ (11.5%) comprised six organizations surveyed from six sectors: iron and steel, consumer electronics, real estate, agriculture mechanization, leather product, and financial service.

Table 4.1: Profile of the study organizations

Item		Number	Percentage (%)
Industry segment/business Sector	Conglomerates	11	21.2
	Banking	7	13.5
	Insurance	11	21.2
	Pharmaceuticals	4	7.7
	RMG	5	9.6
	Food and Beverage	3	5.8
	Consumer Products	3	5.8
	Telecommunication	2	3.8
	Others	6	11.5
Type of company	Public Limited Company	30	57.7
	Private Limited Company	22	42.3
Business category by the product type	Product-based Company	30	57.7
	Service-based Company	22	42.3
Number of employees	Less than 1000	20	38.5
	1000 to 3000	9	17.3

	3001 to 5000	6	11.5
	5001 to 10000	10	19.2
	More than 10,000	7	13.5
Location of companies in Dhaka	Motijheel Commercial Area	11	21.2
	Tejgaon Industrial Area	12	23.1
	Gulshan 1 & 2	17	32.7
	Others	12	23.1

a. Percentage represents valid percentage without any missing value, (n=52)

Regarding ownership, more than half of the organizations surveyed were public limited companies (57.7%), while 42.3% were private limited companies. As for the number of employees, most of the organizations surveyed had less than 1000 employees (38.5%), followed by 5001-10000 employees (19.2%), 1000-3000 employees (17.3%), more than 10000 employees (13.5%), and 3001-5000 employees (11.5%). In terms of the location of the organizations' corporate offices in Dhaka, 32.7% were in the Gulshan area, 23.1% in Tejgaon industrial area, 21.2% in Motijheel region and 23.1% in other locations within Dhaka city (Figure 4.1).

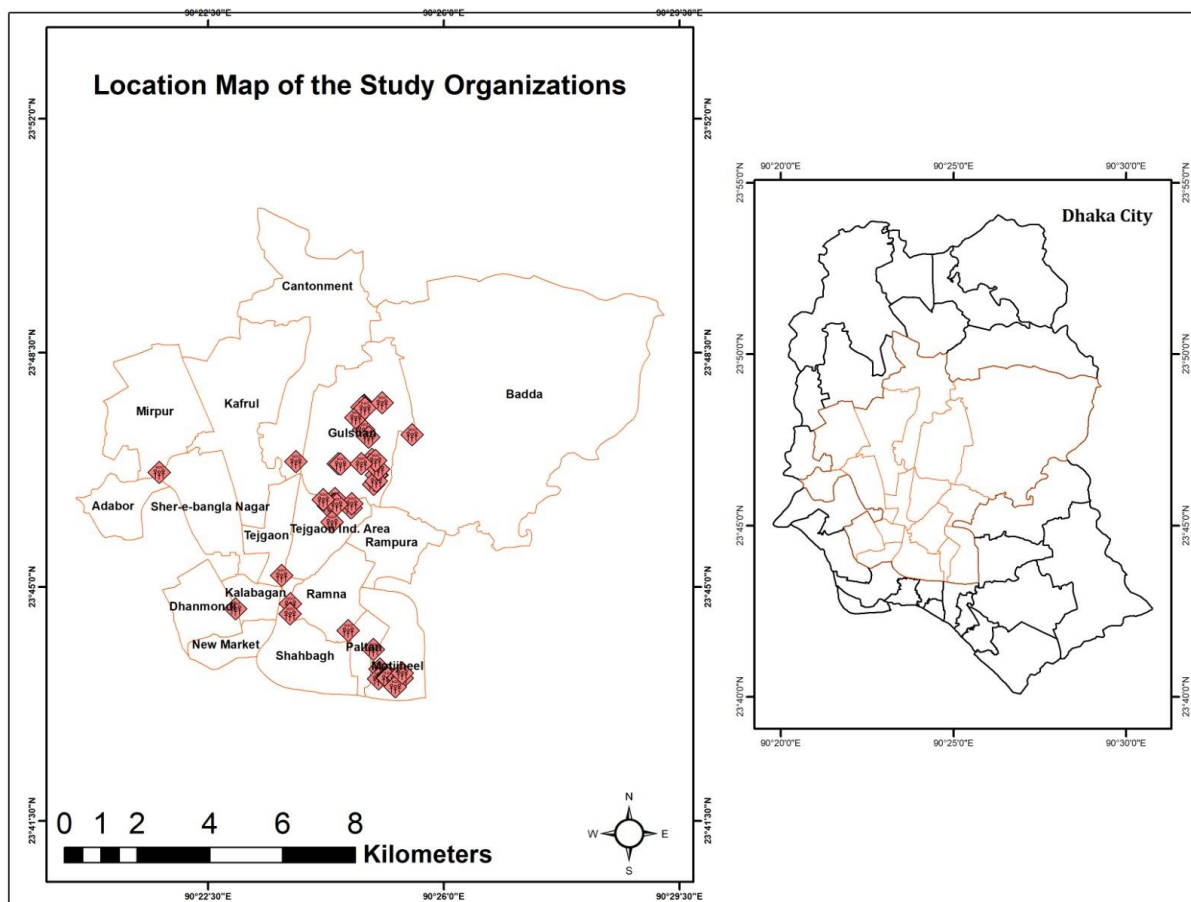


Figure 4.1: Location map of the study organizations

The survey respondents were divided into three categories by their designation. Among all respondents, 53.8% were mid-level or lower-level managers, followed by executive-level managers (36.5%) and top management (9.6%) (Table 4.2).

Table 4.2: Profile of the survey participants, (n= 52)

Item	Number	Percentage (%)
Top Management	5	9.6
Executive Level	19	36.5
Mid-level or lower-level	28	53.8

4.3 Disaster Risk Perception of the Organizations

4.3.1 Disruptions of business enterprises due to sudden hazards and disasters

With regard to the analysis of hazard-related business disruptions over the last five years (2018-2022), a good number of respondents indicated supply chain disruptions (32.7%), followed by utility outages (21.2%) and fire induced losses (19.2%). In addition, a combined 28.9% of all surveyed respondents reported damaged facilities or equipment and environmental incidents as major disruptions, while bad debts were listed as disruptions by only 5.8%. Besides, 15.4% of the respondents stated to have experienced other sorts of business disruptions, including workplace safety incidents, injury or death of employees, factory damages, damaged documents and loss of information. However, a total of 25% of the respondents reported that their business had not experienced any hazard-induced disruptions in the last five years (Figure 4.2). Most supply chain disruptions were reported to be occurred due to the COVID-19 pandemic. In addition, the escalation of Russia-Ukraine war in the 2022 also contributed to the supply chain disruptions of large companies. In the case of utility outages, power blackouts were most prevalent, which caused production damages, particularly in manufacturing industries.

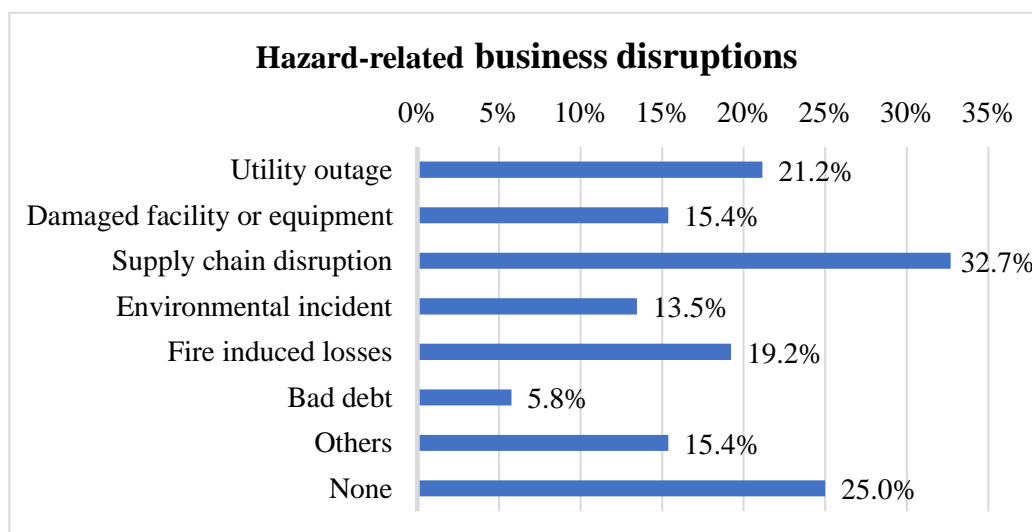


Figure 4.2: Hazard-induced business disruptions (multiple responses, n=77)

4.3.2 Hazard awareness initiatives

Corporate organizations have adopted several hazard awareness initiatives over the last five years (Figure 4.3). The most frequently conducted activities were simulation and drills (73.1%), employee training in emergency procedures (67.3%), and public awareness campaigns (51.9%). In addition, about 19.2%, 17.3%, and 13.5% of the sample respondents reported that their businesses respectively adopted initiatives of hazard maps, informational websites, and distribution of printed materials. Of all respondents, only 11.5% selected the category other with regard to hazard awareness initiatives. It was found that most of these initiatives were conducted inside the organizations except public awareness campaigns and distribution of printed materials. Companies conducted these two initiatives at the community level, particularly during the pandemic. According to respondents, conducting simulation and drills as well as employee training was part of their organizations' compliance.

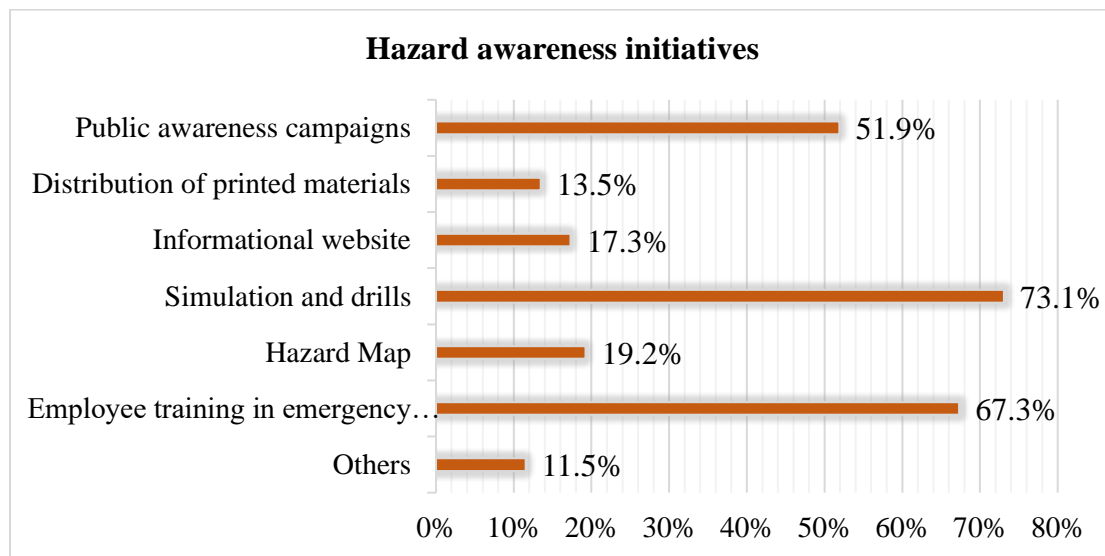


Figure 4.3: Hazard awareness initiatives (multiple responses, n=132)

4.3.3 Potential hazards and vulnerability of business elements

In terms of potential hazards and threats, fire (65.4%) represents the most threatening hazard (Figure 4.4). Besides, higher percentages of respondents, respectively, 44.2% and 42.3%, indicated earthquakes and pandemics as the top concern for their businesses. About 36.5% of respondents stated that climate change-induced disasters pose great threats to their businesses, while building collapse was the top concern for 15.4% of respondents. Companies, operating in rented houses, were found to be concerned of building collapse as the safety issues of building construction were out of their control. In addition to these potential hazards, 13.5% of respondents cited other hazards and threats with potentially damaging effects on businesses, including cyber security threats, power outages, and water-logging. Banking and insurance companies particularly expressed concerns regarding cyber security due to their computerized nature of data and services.

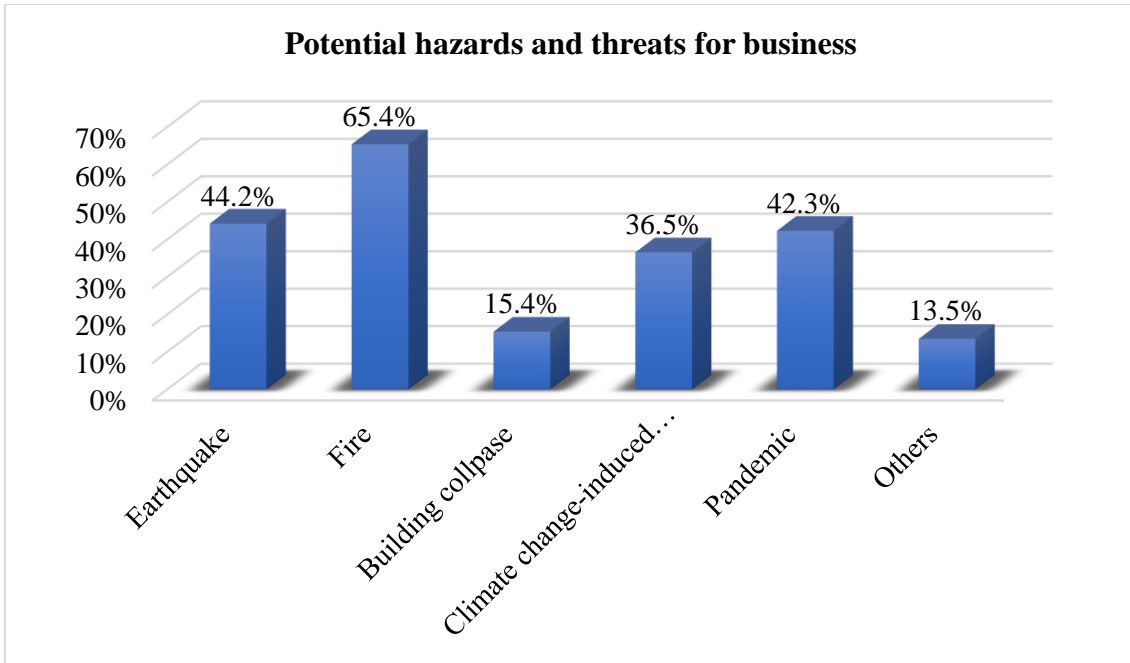


Figure 4.4: Potential hazards and threats (multiple responses, n=113)

Figure 4.5 shows the elements of the business process that are considered vulnerable to disasters. As high as 42.6% of the respondents mentioned raw materials as the most vulnerable element of the business to disasters, followed by products or services (44.2%), utility services (38.5%), and supply chains (36.5%). Among all respondents, 25% considered machinery at risk of hazards, while information systems and capital were identified as the least vulnerable by 19.2% and 15.4%. Apart from these, only 5.8% of the respondents marked the category other in identifying vulnerable business elements to disasters.

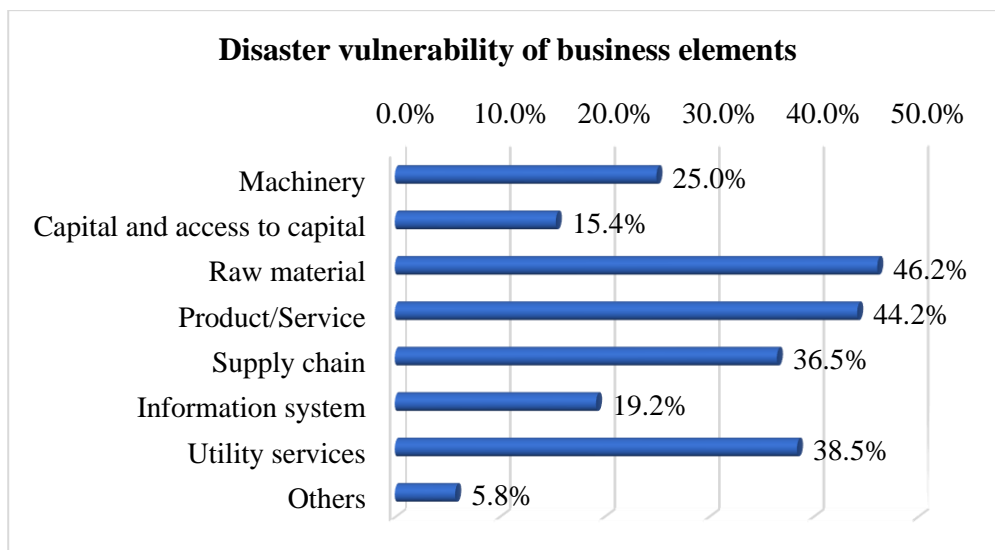


Figure 4.5: Vulnerability of business elements (multiple responses, n=120)

4.3.4 Incorporation of disaster risks into organizational policies

The research questions under this section revealed the status of the corporate sector’s organizational policy in terms of incorporating disaster risk reduction activities along with the vision behind business involvement in such activities. Most respondents (69.2%) asserted that their businesses had policy measures to address disaster risks (Figure 4.6). However, about 15.4% of the respondents cited that their businesses have not internalized disaster risk reduction into organizational policies, and another 15.4% reported to be unaware of incorporating disaster risk reduction into their organizational policies.

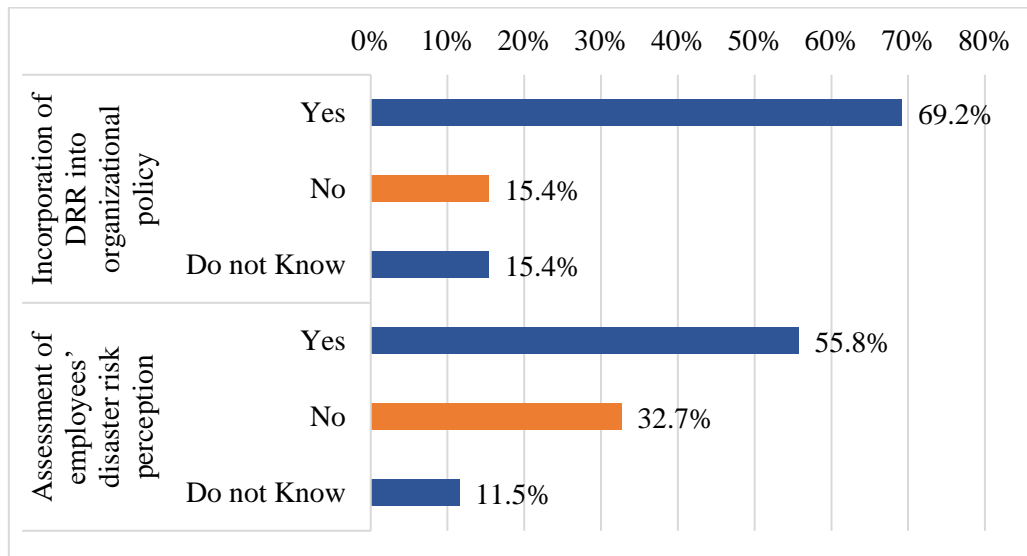


Figure 4.6: Incorporation of DRR into organizational policies and assessment of employees’ disaster risk perception (single responses, n=52)

In terms of assessing the level of disaster risk perception among employees, over half of the respondents (55.8%) reported that their organizations had assessed the risk knowledge of their employees (Figure 4.6). Approximately 32.7% of respondents reported that their organizations did not have any assessment procedures for examining risk awareness levels of employees, while 11.5% were unaware of such assessment procedures in their organizations.

Of the respondents who indicated having DRR incorporated into their business policies, the majority (61.1%) cited that their organizations’ vision behind DRR involvement primarily stemmed from their moral obligations to the society (Table 4.3). Besides, about 52.8% of the respondents considered meeting public demands as the motive behind business involvement in disaster reduction activities. On the other hand, from the business perspective, disaster induced business disruptions, increased reputation, and long-term profit gain were cited as the important factors of business involvement in DRR by 33.3%, 25%, and 19.4% of the respondents, respectively.

Table 4.3: Vision behind business involvement in DRR (multiple responses, n=76)

Item	Number	Percentage (%)
To meet public needs	19	52.8
To meet moral obligations	22	61.1
To achieve long-term profits	7	19.4
Business disruptions due to disasters	12	33.3
To increase reputation	9	25.0
Others	7	19.4

4.4 Disaster Preparedness Activities of the Organizations

4.4.1 Disaster preparedness measures implemented by the organizations

The frequency and percentage breakdowns of preparedness measures adopted by businesses are presented in Table 4.4. As per the highest frequency of responses, business organizations seemed to undertake the more common types of preparedness measures. For example, “made contact list of emergency responders” was the most frequent practice (98.1%) among the preparedness measures of businesses. Besides, a relatively high percentage of corporate organizations (71.2%) had developed an emergency plan, an equal number (51.9%) had arranged internal workshops on disasters and at least held discussions on disasters in organizational meetings, and about 48.1% had their corporate houses assessed by engineers. On the other side, a relatively lower number of organizations (26.9%) had arranged site visits by experts or consultants, and very few organizations had arrangements to store office supplies (17.3%).

Table 4.4: Disaster preparedness measures undertaken by the organizations (multiple responses, n=196)

Item	Number	Percentage of cases (%)
Developed an emergency plan	37	71.2
Arranged internal workshops on disasters	27	51.9
Discussion on disasters in organizational meetings	27	51.9
Assessed building by an engineer	25	48.1
Arranged site visits by experts	14	26.9
Stored office supplies	9	17.3
Made contact lists of emergency responders	51	98.1
Others	6	11.5

4.4.2 In-house preparedness measures for employees

With regard to in-house preparedness activities for employees, safety drills or simulations (80.8%) rank the highest among the preparedness measures adopted for employees (Figure 4.7). Additionally, the larger percentage of respondents, respectively, 71.2% and 57.7%, indicated insurance coverage and safety kits as the major preparedness activities adopted by their businesses for employees. Magazine distribution (17.3%) and storage of sufficient food (1.9%) were the least selected categories by respondents in identifying their organizations' existing preparedness activities toward employees.

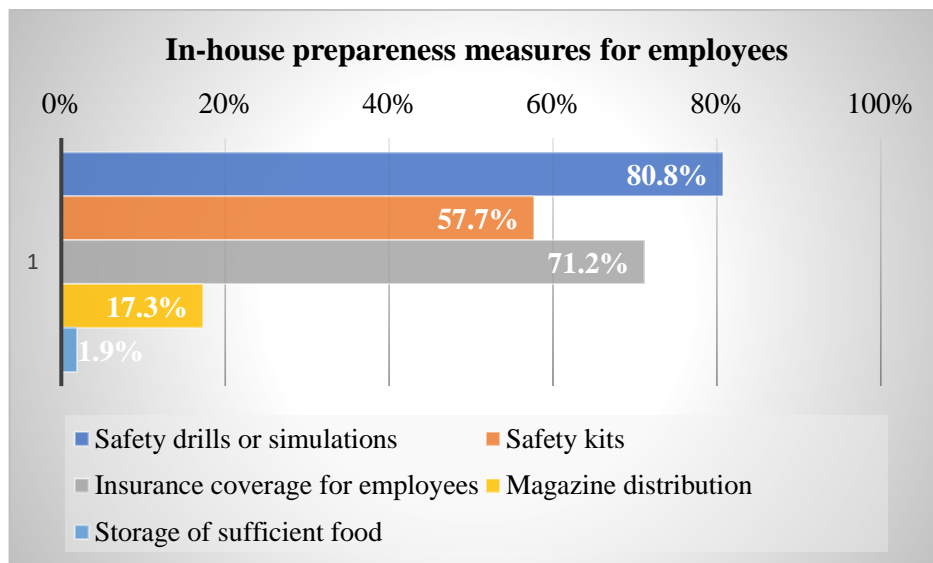


Figure 4.7: In-house preparedness measures for employees (multiple responses, n=122)

4.4.3 In-house preparedness facilities for emergency management

Several in-house facilities were assessed regarding emergency management of the corporate organizations. Figure 4.8 shows that fire-fighting equipment with hundred percent responses was present in all the surveyed organizations. In addition, the most frequently selected facilities include fire and emergency alarm (94.2%), health corner and first aid (88.5%), emergency exit route (84.6%), and emergency generator (75%). Approximately, 61.5% of respondents cited that their organizations appointed a safety officer to better respond to emergencies. A proportionally small percentage of respondents indicated (23.1%) that their business premises had been equipped with other safety facilities for emergency management, including fire sprinklers, smoke detectors, back-up power supplies, etc.

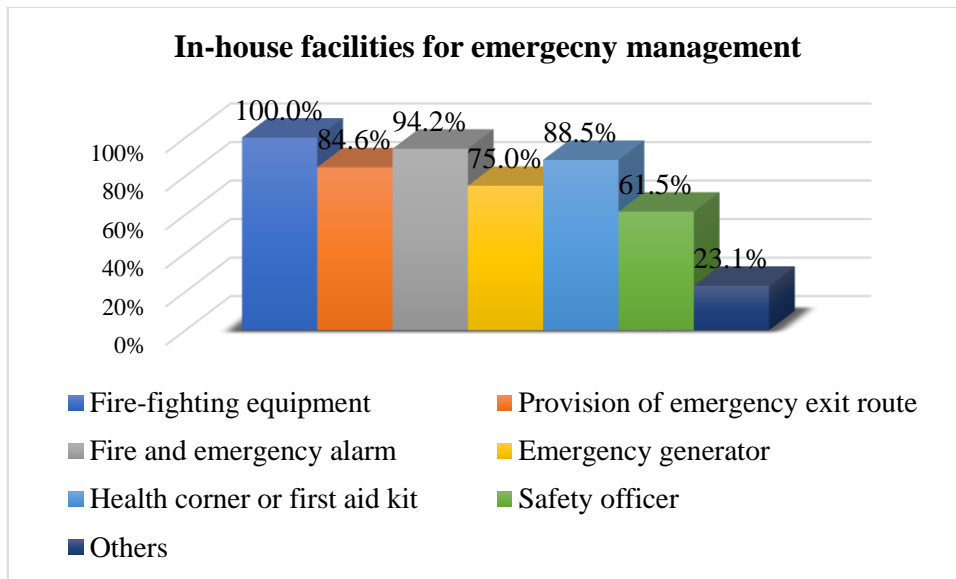


Figure 4.8: In-house facilities for emergency management (multiple responses, n=274)

4.4.4 Test of association between business category and preparedness measures

Chi-square statistics with $\alpha= 0.05$ were carried out to examine the association between business category and individual disaster preparedness measures. From Pearson chi-square test (Table 4.5), it can be said that there are statistically significant associations between the business category and the implementation of individual preparedness measures such as emergency plan development, provision of safety kits, insurance coverage for employees and provision of safety officers (5.125, $p<0.05$; 10.459, $p<0.05$; 4.289, $p<0.05$ and 6.857, $p<0.05$, respectively).

Table 4.5: Pearson chi-square test between business category by product types and individual disaster preparedness measures (Yes/No), (n= 52):

Variables		Value	df	Sig. (2 sided)
Business category and emergency plan development (Yes/No)	Pearson Chi-Square	5.125	1	.024
Business category and safety kit (Yes/No)	Pearson Chi-Square	10.459	1	.001
Business category and insurance coverage for employees (Yes/No)	Pearson Chi-Square	4.298	1	.038
Business category and safety officer (Yes/No)	Pearson Chi-Square	6.857	1	.009

a. 0 cells (0.0%) have expected count less than 5, df (Degree of Freedom)

4.4.5 Status of the business continuity plan (BCP)

In terms of having a BCP within the organization, about 61.5% of companies surveyed had a written plan in place (Figure 4.9). Fewer than one-quarter of the respondents (19.2%) reported that their organizations had no written document related to business continuity management. The remaining respondents (19.2%) stated that their companies were in the initial stages of preparing the plans.

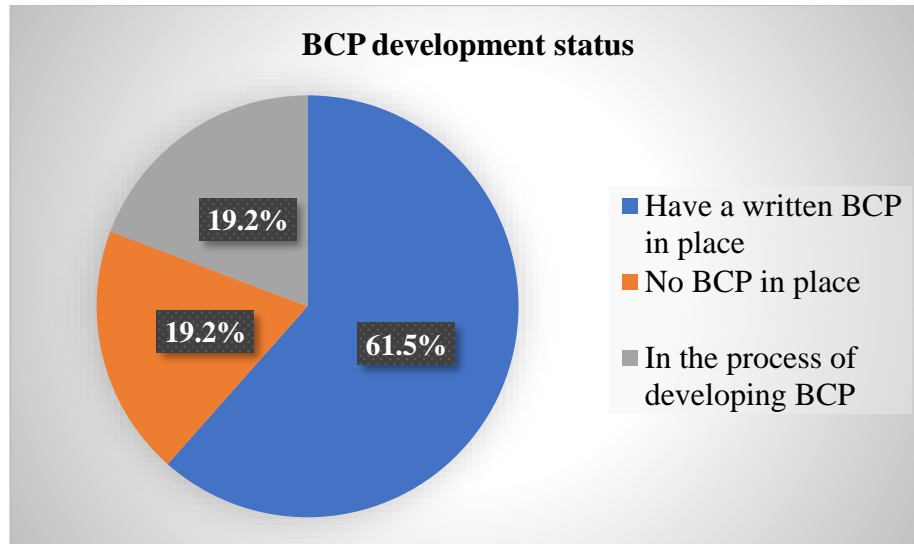


Figure 4.9: BCP development status (single responses, n=52)

5.4.5.1 Association between BCP development and company type

The study examined the differences in BCP development status in terms of company type (Table 4.6). A higher percentage of respondents from private companies (63.6%) indicated a written plan in place, compared to public limited companies (60%). On the other hand, about 23.3% of respondents from public limited companies reported that they didn't have a plan. In comparison, comparatively only 13.6% of respondents from private limited companies stated not having a plan. Among all respondents, about 22.7% from private limited companies noted that their organizations were in the planning stages of developing a BCP compared to public limited companies (16.7%).

Table 4.6: BCP development status by company type

	Have a written BCP in place	No BCP in place	In the process of developing BCP
Public limited company	60%	23.3%	16.7%
Private limited company	63.6%	13.6%	22.7%

5.4.5.2 Reasons for having a business continuity plan

Among respondents who stated to have a plan within their businesses, the reason frequently mentioned for having a BCP was established internal policy (81.3%). Maintaining continuity

of business operations was cited as the second most important reason by a good percentage of respondents (68.8%). Besides, a number of respondents also indicated industry standard (31.3%), competitive advantage (25%), government regulations (21.9%), and audit findings (18.8%) as the important reasons for having an established BCP in place (Figure 4.10).

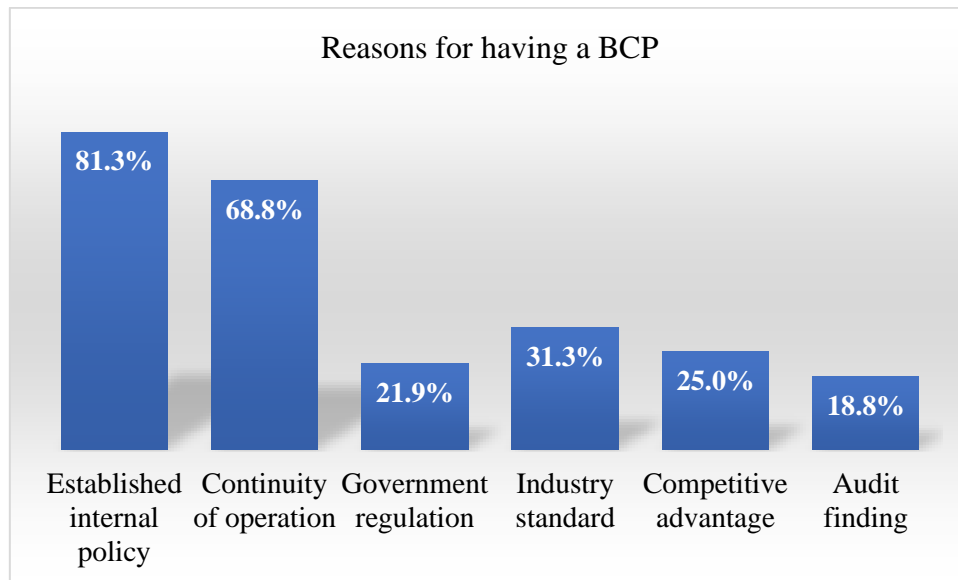


Figure 4.10: Reasons for having BCP (multiple responses, n=79)

4.4.6 Business approach to hazards and risks

Companies adopted several measures to manage potential hazards and risks in terms of risk management. Five relevant risk management approaches were assessed. As shown in Figure 4.11, the most frequently conducted risk mitigation activities include risk training and drills (80.8%), risk assessment (69.2%), and insurance coverage for fire and earthquake (53.8%). Among all respondents, about 46.2% stated that their companies conducted business impact analysis, compared to the percentage of respondents indicating the appointment of a risk manager or officer (38.5%) as a risk management initiative by their respective organizations.

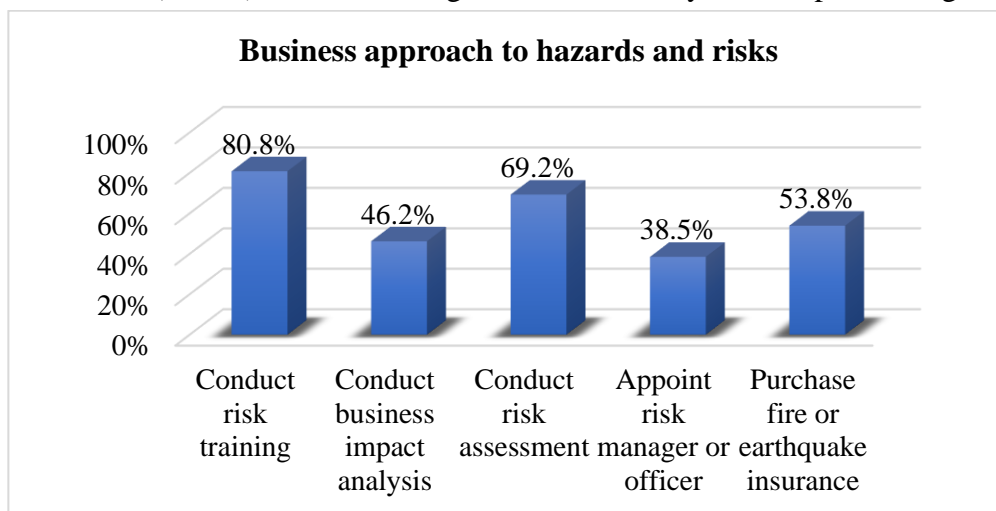


Figure 4.11: Business approach to hazards and risks (multiple responses, n=150)

4.5 Private Sector's Contributions to DRR at Community Level

4.5.1 CSR interventions in disaster management

Figure 4.12 depicts a quantitative assessment of CSR interventions in disaster management. The aspect of CSR contributions to disaster management most cited by respondents was cash donations or in-kind assistance (80.8%), followed by environment preservation (61.5%). Public awareness campaigns (53.8%) were reported to be the third most commonly used form of CSR initiative by companies. Besides, about 40.4% of the respondents cited building capacity through training, and an equal number of respondents (25%) selected disseminating early warning messages and providing assistance through foundations as the ways in which their organizational policies encouraged CSR with regard to disaster management. A comparatively lower percentage of respondents (13.5%) stated that their organizations had built disaster-resilient infrastructures such as shelters, bridges, disability centers, and roads, whereas providing jobs in disaster-prone areas was the least selected category of CSR intervention by the respondents.

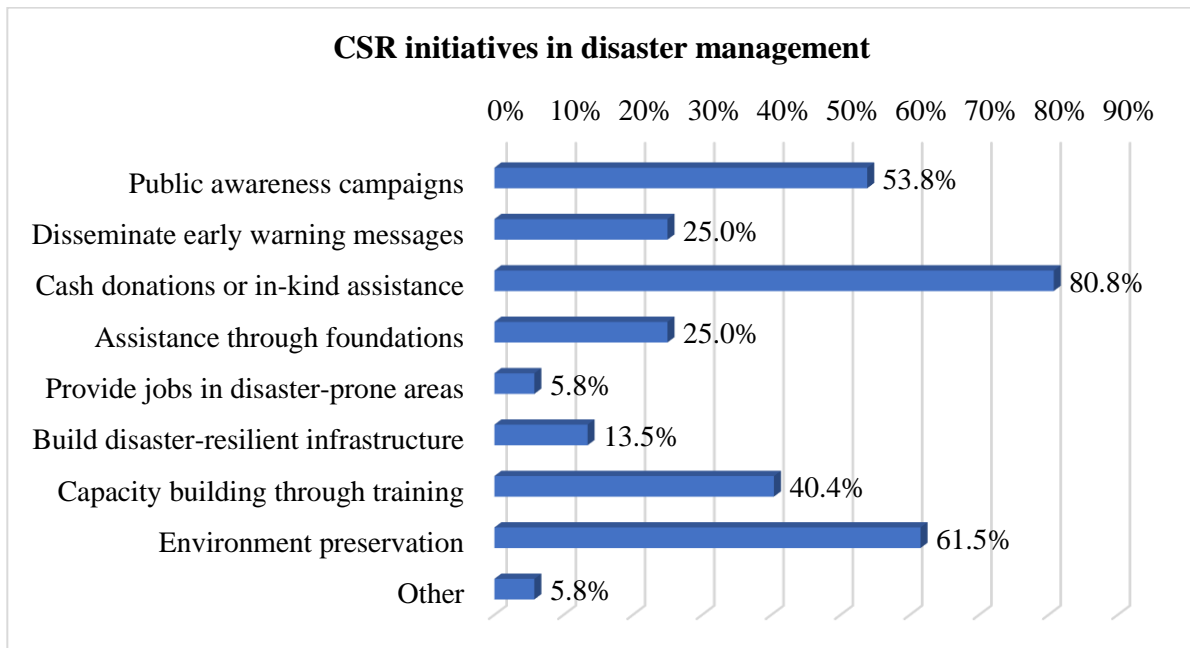


Figure 4.12: Different kind of CSR activities in disaster management (multiple responses, n=162)

4.5.2 Types of CSR partnerships in DRR

The study assessed the private sector's DRR-related CSR partnerships and classified them into three types: philanthropic or charitable, contractual or sponsorship, and collaborative. This typology of CSR in DRR activities is adopted from the global overview paper. Although Twigg (2001) categorized five types of CSR involvement in his study, the three categories above had been identified in the context Bangladesh's private sector. As presented in Figure 4.13, the highest concentration was on philanthropic or charitable partnerships (82.7%). The

second most selected category was sponsorship (38.5%), while collaborative was the least practiced type of CSR partnership in DRR (25%).



Figure 4.13: Types of CSR partnerships in DRR (multiple responses, n=76)

4.5.2.1 Association between CSR partnership type and company type

The study also examined the differences in the types of CSR partnerships in DRR that might exist in terms of company type (Table 4.7). While contributing to DRR through CSR, a comparatively higher percentage of respondents from public limited companies (83.3%) noted that their organizations were involved in philanthropic or charitable partnerships compared to private limited companies (81.8%). However, as high as 45.5% of respondents from private limited companies indicated their CSR involvements through sponsorship, while fewer respondents from public limited companies (33.3%) indicated their organization’s involvement in sponsorship. On the other hand, the percentage of collaborative partnerships was higher in public limited companies (26.7%) compared to private limited companies (22.7%).

Table 4.7: CSR partnership type by company type

	Philanthropic or charitable	Sponsorship	Collaborative
Public limited company	83.3%	33.3%	26.7%
Private limited company	81.8%	45.5%	22.7%

4.5.3 Role of different private sector stakeholders in Disaster Risk Management

Figure 4.14 depicts the range of private sector stakeholders engaged in disaster risk management process. As expected, governments (71.2%) were cited as the main partner in disaster risk management, particularly in disaster response and recovery efforts. NGOs (28.8%) were identified as the second most chosen partners for disaster relief efforts. Business institutions (26.9%) represent the third most selected category of partners with their involvement in disaster preparedness and advocacy. With 23.1% of overall responses, international organizations were chosen as one of the important partners for their involvement in risk identification through risk-sensitive business investment. Community-based organizations and other social organizations like foundations, trusts, religious forums, and educational institutions followed with a percentage of 23.1% and 19.2%, respectively.



Figure 4.14: Types of private sector stakeholders in DRM
(Multiple responses, n=104)

4.5.4 Key elements in partner selection and development

When analyzing key enablers in partner selection and partnership development, a majority of the respondents (73.1%) noted that their companies made decisions regarding the selection of partners and partnership development based on the specialization of partners in disaster management (Figure 4.15). Additionally, an equal number of respondents (36.5%) cited infrastructure and network, while 23.1% considered funding an important factor in partner selection and partnership development. However, the remaining respondents (11.5%) expressed that they were not sure how these key elements influence the decisions of their companies related to partnership development in disaster risk management.

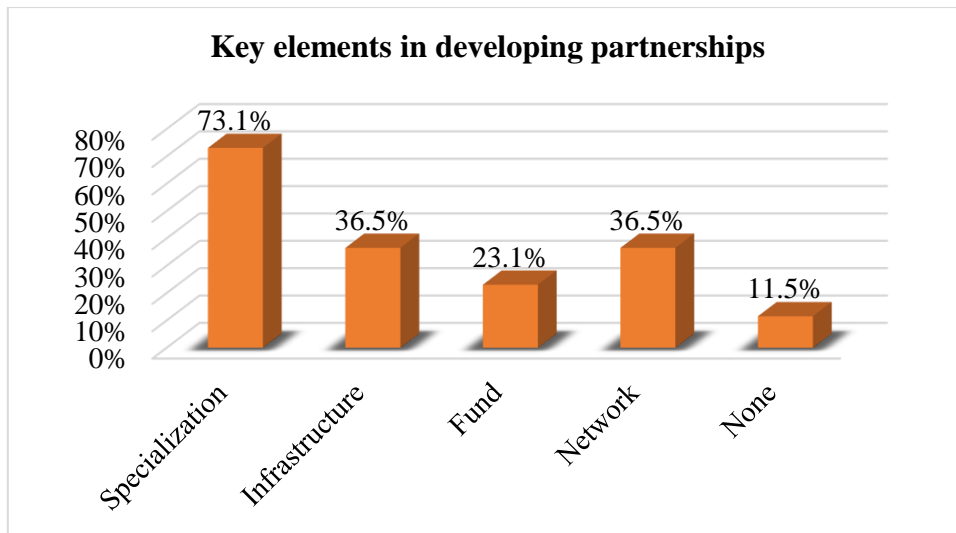


Figure 4.15: Key elements in selecting partner organizations (multiple responses, n=94)

4.5.5 Involvement in DRM phases at the community level

In terms of the business sector’s involvement in different phases of disaster risk management at the community level, Figure 4.16 shows that the majority of initiatives taken by companies were during the response phase (71.2%). A comparatively sizeable percentage of companies adopted initiatives during the preparedness phase (53.9%). Recovery was the third most selected phase (28.8%) in which companies assisted in rehabilitation and reconstruction. However, companies addressing mitigation measures gathered only 15.4% of overall responses. On the other hand, about 9.6% of respondents indicated that their companies had not undertaken any community-based disaster risk management initiatives. Therefore, findings suggest that corporate initiatives at the community level placed less emphasis on disaster mitigation and more on disaster response and short-term preparedness.

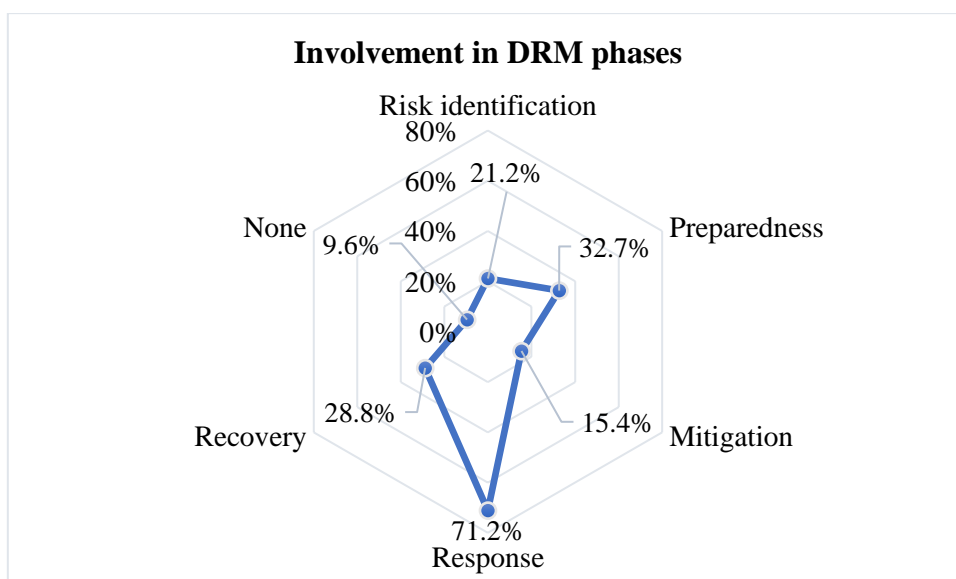


Figure 4.16: Corporate involvement in DRM phases (multiple responses, n=93)

4.5.6 Challenges in implementing community-based DRM activities

It is imperative to note that companies faced several challenges in implementing their community level initiatives regarding disaster risk management. As seen from Figure 4.17, in most cases, geographical conditions (30.8%) and lack of skilled human resources (30.8%) were the main challenges in implementing corporate initiatives. Additionally, a lack of coordination with the local community created major problems in the implementation of initiatives taken by companies, according to 28.8% of respondents. About 21.2% of respondents noted that inadequate funding was a major obstacle for their companies in undertaking such initiatives, while 15.4% selected the category 'other' in terms of the challenges companies face in implementing community-focused disaster risk management activities. Challenges due to local influential groups or politicians who were supposed to facilitate these initiatives were also visible, as cited by 7.7% of the respondents.

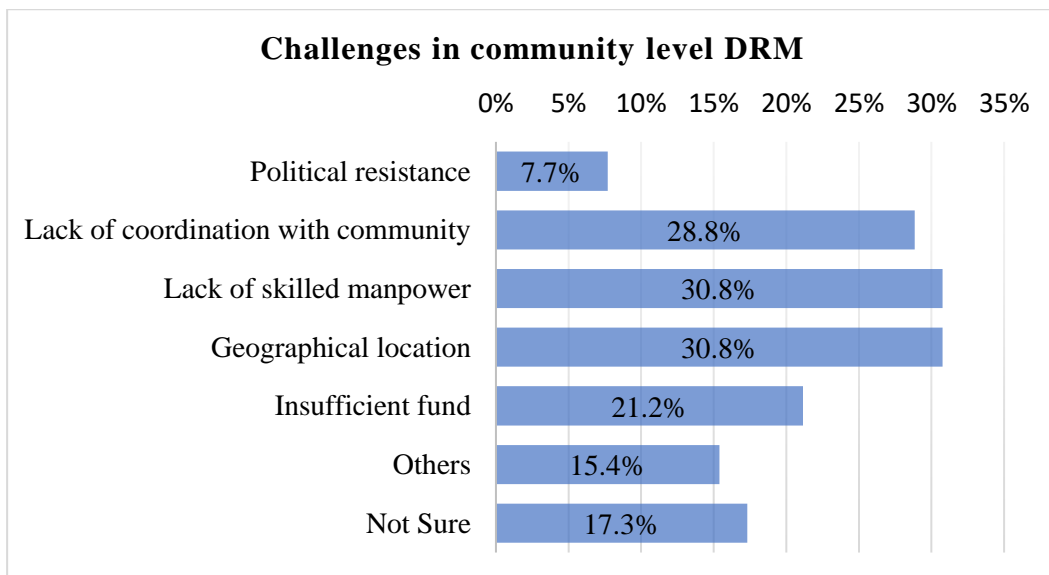


Figure 4.17: Challenges in implementing community-level DRM activities
(Multiple responses, n=79)

4.5.7 Duration of corporate interventions

With regard to the duration of corporate intervention, as expected, more than half (55.8%) of the DRR initiatives taken by companies for the community were one-time in nature (Figure 4.18). An equal number of respondents (13.5%) indicated that community-centered intervention of their companies was short-term, lasting at least six months, and long-term with a duration of at least one year. Besides, some companies were reported to initiate two interventions simultaneously, both one-time and long-term (17.3%).

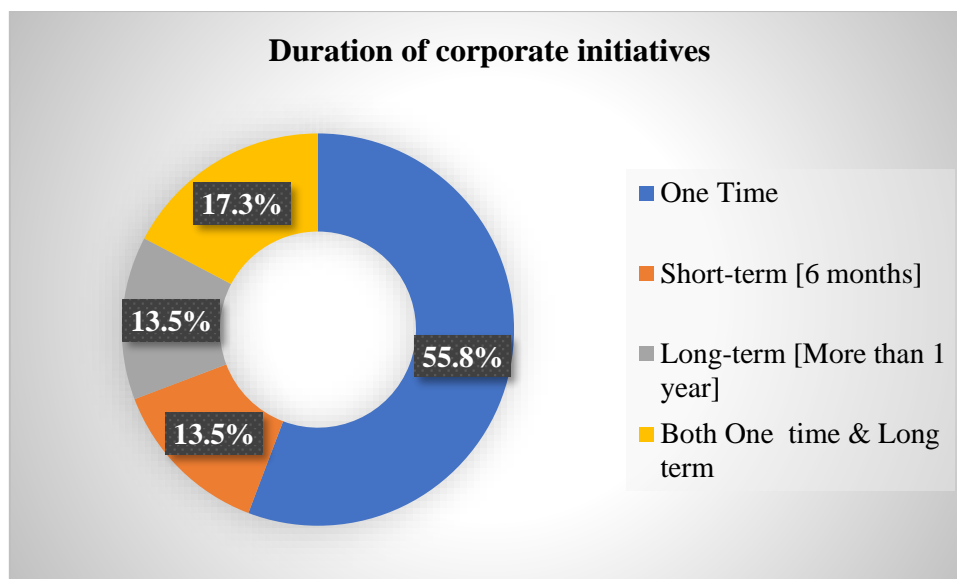


Figure 4.18: Duration of corporate initiatives in DRR (single responses, n=52)

4.5.7.1 Correlation between duration of interventions and employee number

The duration of corporate interventions in DRR and the number of employees were found to be significantly and positively correlated (Pearson correlation= .32; $P < 0.05$) (Table 4.8). This indicates that larger companies are more likely to adopt long-term DRR initiatives at the community level.

Table 4.8: Correlation between duration of corporate interventions and employee number, (n=52):

	Duration of interventions	Number of employees
Duration of interventions	-	
Number of employees	.32**	-

**Correlation is significant at the 0.05 level (2-tailed)

4.5.8 Importance of involvement with the community

On a five-point scale ranging from highly important to not important, respondents were asked to rank the significance of corporate involvement with the local communities in one of the survey questions. Of all respondents, a majority (65.4%) indicated that it is highly important to engage the community and develop mutual relationships in the implementation of DRR activities (Figure 4.19). Besides, a good percentage of respondents (30.8%) stated community involvement by the corporate sector as important, while only two among all respondents marked somewhat important (3.8%). Respondents who did not mark the involvement with local communities as highly important belonged to the sectors of highly trained or skilled labors in which interaction with the locals might not be relevant to their activities.

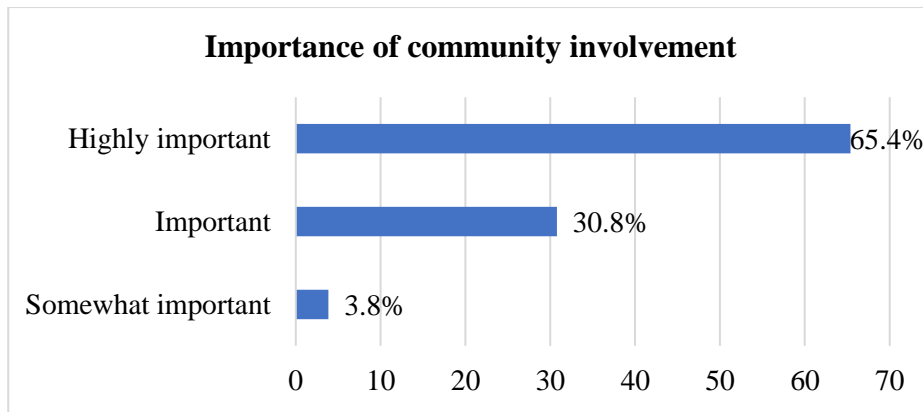


Figure 4.19: Importance of involvement with the local community
(Single responses, n=52)

4.5.9 Sources of financial aid for disaster recovery

The study assessed three main sources of financial aid addressed by the corporate sector for disaster recovery: self-funding, insurance and subsidized loans (Figure 4.20). With regard to sources of disaster recovery funds, the most chosen option by all respondents was self-funding (90.4%). Additionally, a proportionally higher percentage of respondents noted that their companies obtained disaster recovery funds from insurance (40.4%). However, among all the respondents, only two stated to receive recovery funding through subsidized loans (3.8%). Findings suggest that companies tend to rely on their own fund for disaster recovery with receiving little financial assistance from external sources.

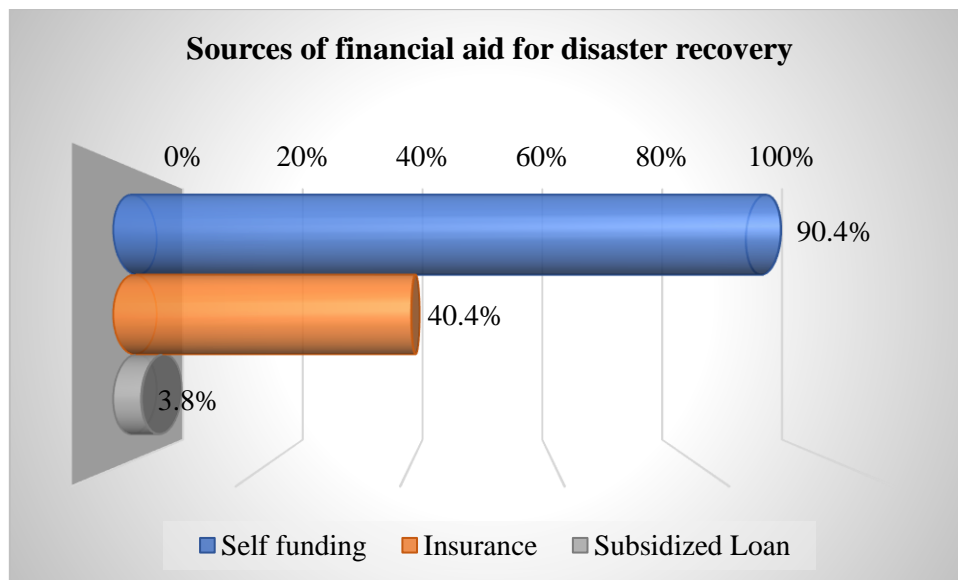


Figure 4.20: Sources of financial aid for disaster recovery
(Multiple responses, n=70)

4.5.10 Perceived risks of investing in DRR

When analyzing the perceived risks of investing in DRR, the highest number of respondents (41.5%) indicated a lack of expertise as the main risk factor for their organizations (Figure 4.21). They stated that the lack of proper DRR knowledge hinders private investments in this

field. An equal number of respondents (31.7%) considered the absence of institutional mechanisms and the frequency of disasters as major risks of investing in DRR. Besides, about 24.4% of those surveyed noted that making this kind of investment would be dangerous since it would result in greater cost than anticipated benefits in terms of huge losses due to disasters. The remaining respondents cited other risk factors related to business investment in DRR (12.2%).

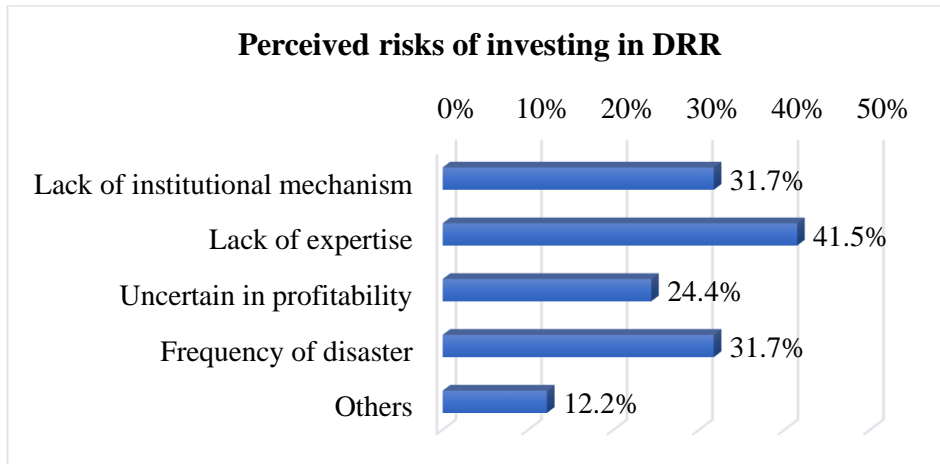


Figure 4.21: Perceived risks of investing in DRR (multiple responses, n=58)

4.5.11 Advocacy for Disaster Risk Management measures:

The corporate sector plays a very small part in terms of advocating for DRM measures at the domestic level. As demonstrated in Figure 4.22, the majority of respondents (42.3%) stated that their companies supported media awareness campaigns as part of advocacy for DRM measures. It is surprising to note that the second most chosen option across all respondents was ‘none’ (32.7%) indicating that no advocacy measures were taken by their companies. However, a good number of respondents reported that their companies co-financed public investment in community efforts (30.8%), while 25% advocated for the empowerment of the local community by introducing various community-driven initiatives. It is also worth of noting that 21.2% of respondents who indicated that their companies have collaborated with the international community in implementing DRM measures.

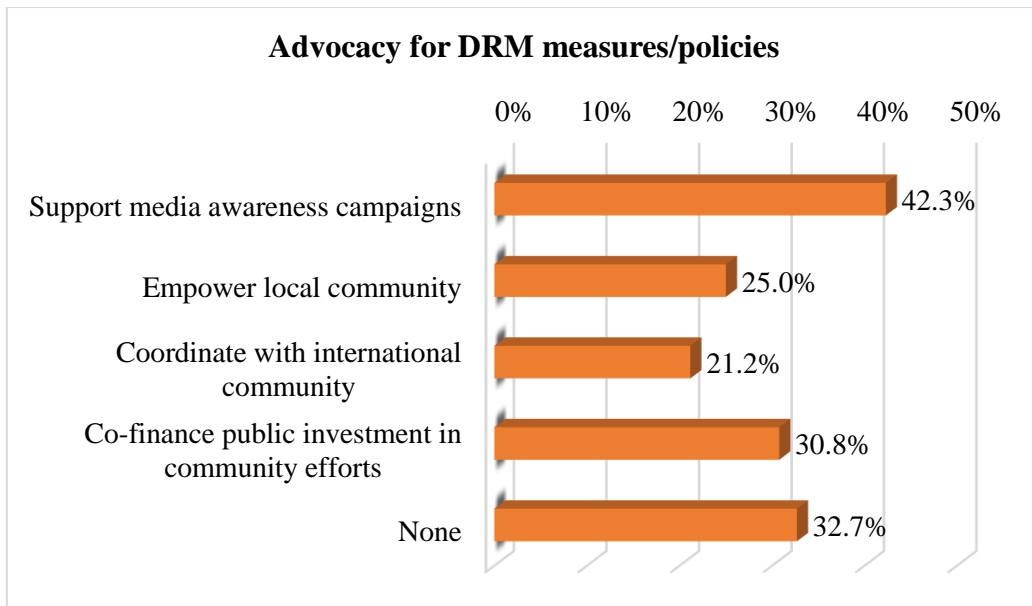


Figure 4.22: Advocacy for DRM measures at national level
(Multiple responses, n=79)

4.5.12 Investment in Climate Change Adaptation (CCA) Initiatives

The private sector in Bangladesh is gradually becoming aware of the risks and possibilities brought on by climate change. Companies actively contribute to emission reduction, energy consumption, resource use efficiency and other related activities. However, the corporate sector has not yet widely practiced investment in different adaptation initiatives. As presented in Figure 4.23, less than half of respondents (42.3%) noted that their organizations invested in different adaptation initiatives, while more than one-third (34.6%) indicated that no investment decisions were made by their organizations regarding climate change adaptation. The remaining respondents (23.1%) expressed that they did not know whether their companies made any investment in climate change adaptation initiatives.

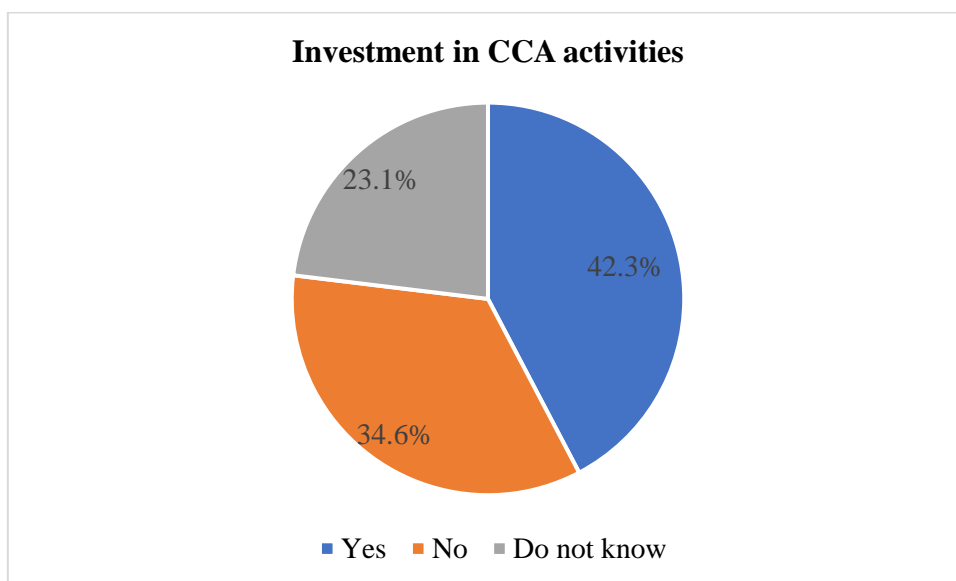


Figure 4.23: Private investment in CCA activities (single responses, n=52)

4.5.13 Sources of Climate Financing by Private Sector

Considering private sector's vulnerability to climate change, climate financing becomes a top priority due to its compounding influence on existing risks and objectives of businesses. The corporate sector would require a large amount of financing to invest in climate change adaptation and low-carbon development activities. With regard to the private sector's climate finance, the top source of climate financing was found to be own capital (86.4%) (Figure 4.24). Besides, about 27.3% of respondents noted that their companies received special funds for investing in different adaptation initiatives, followed by grants (9.1%) and subsidized or soft loans (4.5%). Findings of the study show that the corporate houses in Bangladesh tend to invest from their own capital to combat the threats and seize the opportunities of global climate change. This indicates a positive attitude of the corporate sector towards climate finance.

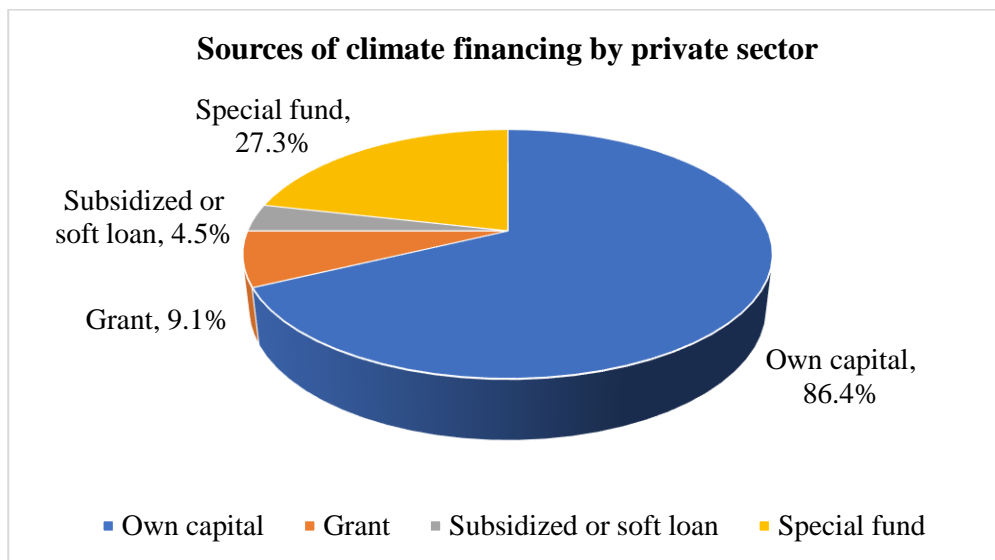


Figure 4.24: Sources of climate financing by private sector (multiple responses, n=28)

4.6 Disaster Risk Transfer Mechanism: Insurance

4.6.1 Perception of climate induced risk insurance (CRI)

Insurance is one of the most essential disaster risk transfer mechanisms, with individuals and organizations all over the world relying on it. It is found that despite several national plans and initiatives addressing the significance of insurance for transferring risks of natural catastrophes, disaster risk insurance in Bangladesh is still in the early stages (Rahman et al., 2018). Considering this gap, a separate section was added to the questionnaire targeting the insurance companies to assess their understanding of climate-induced risk insurance, institutional capacity and overall challenges in introducing such insurance schemes in the context of Bangladesh. Figure 4.25 shows that among all respondents from the insurance sector, seven stated that they are well aware of climate-induced risk insurance, while four had partial knowledge of this risk transfer tool.

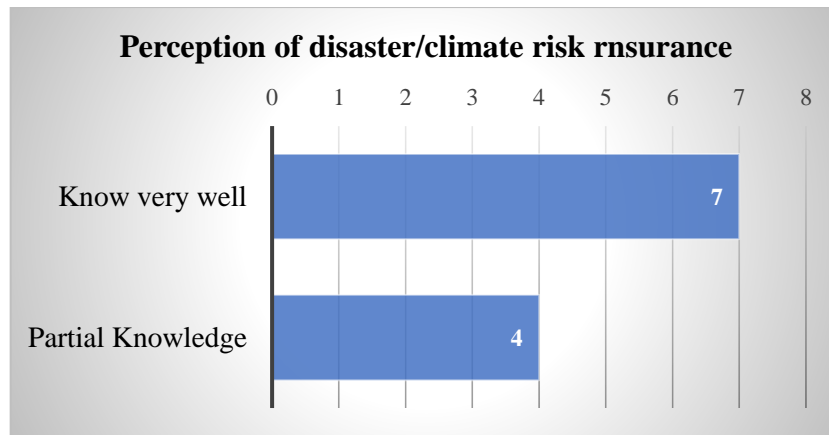


Figure 4.25: Perception of climate-induced risk insurance (single responses, n=11)

4.6.2 Reasons for not having climate-induced risk insurance

As shown in Figure 4.26, in the majority of the cases, lack of proper government directives (54.5%) was found to be the major reason for not having this type of insurance. Besides, an equal number of respondents (45.5%) considered a lack of proper institutional mechanisms and uncertainty of profit gains as the important reasons for the absence of climate risk insurance. The remaining respondents (36.4%) indicated a lack of understanding of this insurance program as a major cause for the unavailability of climate-induced risk insurance.

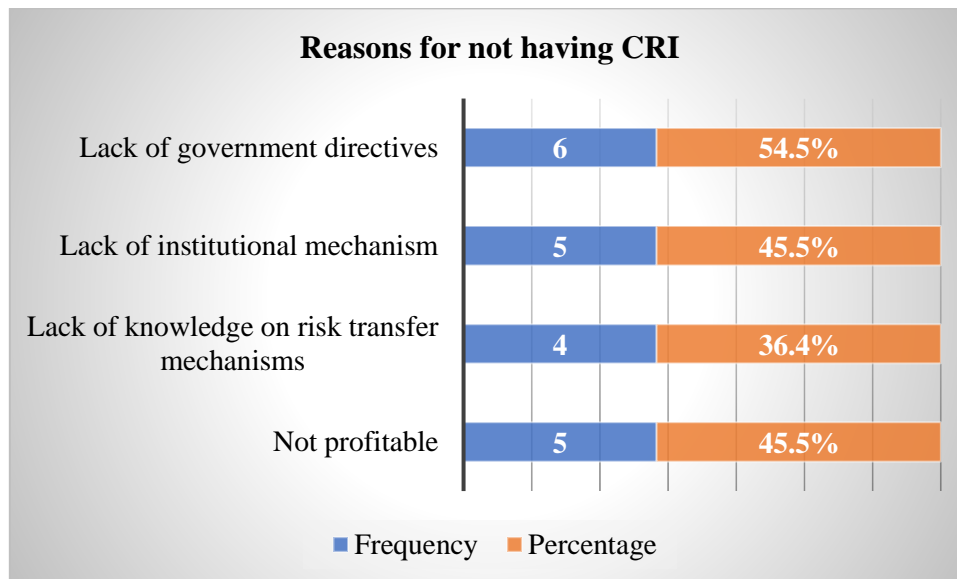


Figure 4.26: Reasons for not having climate-induced risk insurance (Multiple responses, n=20)

4.6.3 Types of Insurance

In terms of currently practiced insurance products in Bangladesh, the highest concentration was found on traditional disaster risk transfer insurance (Figure 4.27). However, these insurance products are not placed to compensate for extensive losses and damages induced by disasters like floods, cyclones, earthquakes etc. Of the eight insurers who claimed to have disaster risk transfer insurance, they stated that they only provided claims for fire hazards. However, in case of an earthquake-induced fire incident, it is reported that they would not

provide any insurance coverage. Of all respondents, six indicated to have traditional insurance products, while three of them stated that they were conducting a pilot study in terms of piloting weather-index-based insurance products. Only one of the surveyed insurers reported having cattle and livestock insurance.

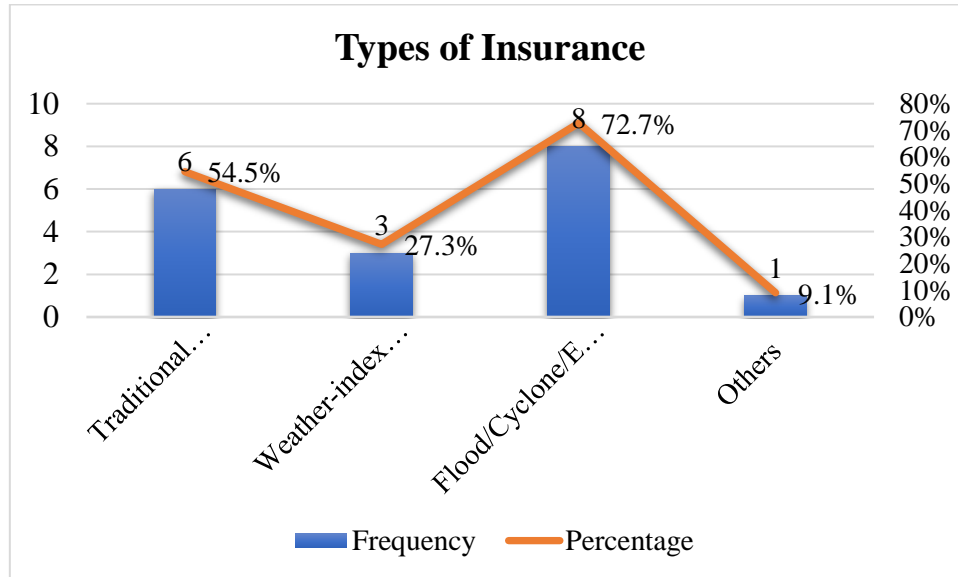


Figure 4.27: Types of insurance products (multiple responses, n=18)

4.6.4 Challenges of introducing climate-induced risk insurance

With regard to challenges preventing the introduction of climate-induced risk insurance into the insurance industry, a greater number of respondents (81.8%) indicated a lack of awareness and information (72.7%) as the main obstacles to having this insurance product (Figure 4.28). Additionally, some of the respondents stated policy gap (63.6%) was a major barrier to introducing this type of insurance, while a fewer number of respondents considered the collaboration gap (45.5%) hindering the introduction of climate risk insurance.

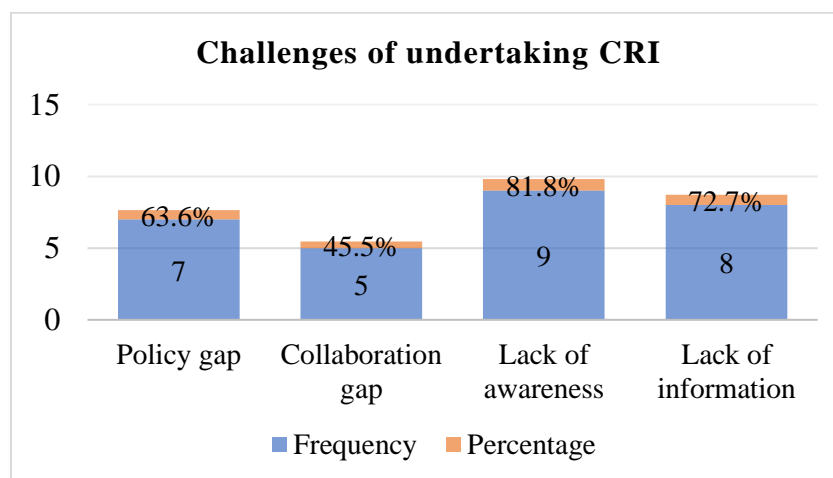


Figure 4.28: Challenges of introducing CRI (multiple responses=29)

Chapter Five: Discussion, Policy Recommendations and Conclusions

5.1 Introduction

This chapter will provide a critical analysis of the findings of the study by drawing similarities and dissimilarities with the earlier studies. Then the recommendation part will be followed up with a series of recommendations for policymakers. Concluding remarks are presented in the last part of the chapter.

5.2 Discussion

The Sendai Framework for Disaster Risk Reduction (SFDRR) has globally emphasized the private sector's importance in disaster risk reduction. In Bangladesh, the private sector's contribution to economic growth and disaster response efforts have been widely acknowledged. However, there are significant gaps in the corporate sector's adoption of actions to reduce disaster risk. Traditionally, philanthropy or one-time charitable activities were how the private sector participated in DRR.

There has been little explicit private sector participation in catastrophe mitigation or risk reduction measures within the frame of corporate initiatives. In accordance with the Sendai Framework, the government of Bangladesh has taken a number of policy mechanisms to encourage private sector participation in the development of a comprehensive disaster management framework. The national disaster management plan places a high emphasis on the inclusive and long-term participation of all stakeholders, including the corporate sector. (Nasreen, 2017). However, these government legislative frameworks make general assertions about the private sector's position as a vital player in disaster management without defining the roles, tasks or procedures that will allow the sector to be formally integrated into national DRR systems. This is consistent with the findings of a prior study, which found that the private sector's roles and responsibilities are only vaguely addressed by the legal frameworks of disaster risk and emergency management rather than being explicitly stated to facilitate its structure integration into DRR systems (Sarmiento et al., 2015). This view is further supported by a case study of Myanmar's private-sector contributions to disaster preparedness that identified weak institutional interactions between the private sector and national DRR strategies in policy or practice. In addition, the study has also reported the absence of formal channels or mechanisms for private-sector stakeholders to interact with the government during disasters (Thaw, 2019).

The study's findings reveal that disruptions like supply chain and utility outages are the most cited variables of concern across all organizations. This concern could serve as the entry point for a series of thoughts and actions to deal with different types of emergency risks including disasters. Regarding hazard awareness initiatives, the study indicates that the most frequently practiced activities are simulation and drill exercises, employee training in emergency procedures and public awareness campaigns. This is also consistent with the

finding that companies can demonstrate their involvement in disaster issues and risk awareness by participating in and promoting training programs and awareness-building activities under the umbrella of CSR initiatives (Agrawala et al., 2011). While awareness-building activities are initiated to change the behavior of the general public or customers, internal training programs are created to prepare employees against disasters.

The study's findings demonstrate that a high level of risk awareness has been prevailing in the private sector. This is supported by the findings that the majority of companies surveyed have incorporated DRR into their organizational policies, and more than half of the companies have performed assessments of disaster risk awareness among their employees. Regarding potential hazards and threats, most respondents have stated that fire is the most likely and risky hazard that could negatively affect their businesses, similar to what Setyawan et al. (2017) found in assessing the disaster risk perception of SMEs. Moreover, in terms of prioritizing disasters that have the potential to threaten businesses in the future, rapid onset disasters like fire, earthquake and pandemic have been mentioned by the largest percentage of respondents. This coincides with the findings that businesses prioritize extreme weather occurrences over gradual changes such as climate change-related events (Agrawala et al., 2011). With regard to the vulnerability of business elements, the study results show that raw materials, followed by products or services and supply chains, have significant exposure to hazards. This result is further supported by Agrawala et al.'s findings that businesses pay particular attention to physical risks as well as threats to supply networks and raw materials.

The findings on preparedness measures of this study demonstrate that the preparedness levels vary across companies depending on individual preparedness measures and the business category. The study has also found an important relationship between the business and individual preparedness measures. This is consistent with earlier studies, which discovered that the size of a company in terms of the number of employees is a strong indicator of its level of disaster preparedness. Larger companies are more prepared than smaller ones. (Dahlhamer & D'Souza, 1997; Kato & Charoenrat, 2018; Rapeli & Mussalo-Rauhamaa, 2017). The current study finds that the majority of the organizations surveyed have a written BCP in place. However, major differences exist in the BCP status in terms of company types, indicating that private limited companies are better prepared than their public limited counterparts in developing a BCP. The three major reasons for not having a BCP identified in this study include lack of awareness about BCP, absence of legal mandate needed for BCP development and lack of interest from top management, as evidenced in the study of Ono (2012).

The results of the study show that most CSR initiatives in disaster management are one-time interventions and fall under the category of philanthropic or charitable activities. The most frequently undertaken CSR initiatives in this study include donations or in-kind activities and

environment preservation. These activities are generally event-based and reactive, supporting the previous studies that have also found that disaster management activities under CSR initiatives of companies are mainly concerned with post-disaster, response-based measures (B. R. Johnson et al., 2011; Miyaguchi & Shaw, 2007; Sattar, 2017) and are one-time relief efforts instead of long-term mitigation and preparedness efforts. (Twigg, 2001). In terms of CSR partnerships in DRR, the study finds that most companies are involved in philanthropic or charitable activities, followed by sponsorships. This is consistent with the finding that business partnerships in disaster management tend to be limited to making advertisements and sponsoring or funding specific initiatives or events (Matin et al., 2002). It is found that public limited companies have greater involvement in collaborative partnerships, while private limited companies have a larger share in sponsorships. With regard to corporate initiatives directed toward disaster risk management at the community level, most activities are adopted during the response phase, followed by preparedness. This finding also coincides with existing studies that posit that corporate initiatives supporting community-level disaster risk management mainly address disaster response and short-term preparedness (Bhatt, 2002; Sarmiento et al., 2015).

The study has identified key gaps related to private sector engagement in DRR that include: a) lack of a clear understanding of DRR; b) low level of DRR expertise; c) inadequate funds and human resources to invest in DRR; d) lack of trust and collaboration among partner organizations; e) lack of specific business guidelines related to DRR; f) lack of government regulations for industry-specific contributions to DRR; g) lack of supportive regulations like policies and incentives; h) lack of organizational accountability and transparency; i) lack of monitoring and follow-up procedures to assess successful implementation of DRR initiatives. Given these limitations, the interviewed stakeholders suggested a government-led approach with sufficient legislative support and incentives to encourage private sector participation in disaster risk reduction in the future.

The present study looked at certain aspects of private sector engagement in disaster risk reduction at national level, namely disaster risk perception, disaster preparedness and response measures taken by businesses, although DRR encompasses other initiatives such as mitigation and recovery ranging between national and international boundaries. In a narrow context, this study investigates the adoption of a number of preparedness measures by the private sector in Bangladesh. Future research might investigate the state of SMEs involvement in DRR along with examining their BCP development status. Lastly, a focus area for future studies to explore might include the evaluation of the corporate sector's role in disaster mitigation and recovery efforts at the community level.

5.3 Recommendations

Considering the key gaps in private sector engagement in DRR, the study has the following suggestions and recommendations to promote the involvement of the private sector in DRR efforts in Bangladesh. Relevant policy stakeholders and corporate sector professionals have suggested these recommendations. The recommendations are proposed to the policymakers and the implementation body of the government.

a) Forming DRR Focused Multi-stakeholder Platforms:

Establishing a multi-stakeholder platform would substantially contribute to increased private sector participation in DRR in Bangladesh. There is a knowledge gap among national and local companies in strengthening their preparedness capacities and incorporating DRR principles. Multi-stakeholder forums could potentially be the platforms to create networking between stakeholders from different sectors. Therefore, a government-led multi-stakeholder platform with business associations like DCCI or MCCI being the regulatory body would encourage the corporate houses to exchange their knowledge and experiences on DRR.

b) Harmonizing DRR Policy and Regulations at National Level:

The government should undertake specific policy directives by imposing obligations on private sector or offering higher incentives to motivate them. More specifically, the requirement of a BCP could be made obligatory to register a new business, and incorporation of DRR principles into regular compliance of businesses could be imposed through policies and regulations. For this, sector-specific DRR policies should be devised following the formulation of a national DRR regulatory framework that will act as the primary guideline for government agencies, civil society, and private sector. Actors from all sectors, particularly private sector, will be obliged to participate in DRR-related policy formation and discourse in this harmonization process.

c) Promoting Engagement through Incentives:

Lucrative incentives should be introduced to motivate private sector to take measures. To encourage private sector, the government can offer tax exemptions to businesses that engage in DRR operations. In particular, an important incentive can be introduced by declaring tax exemption on CSR spending made by companies to contribute to disaster response and recovery. This would increase private sector incentives to engage in more substantial and long-term risk reduction initiatives. Besides, the government should introduce a flexible import policy allowing companies to import substantial disaster relief from international business groups. Moreover, the public sector should recognize and highlight the contributions of companies to DRR efforts. Corporate initiatives should be publicized through platforms like media that would encourage greater involvement of private sector in DRR. In addition, fiscal incentives or awards for corporate excellence in DRR are examples of innovative incentives to leverage business engagement.

d) Promoting Inter-sectoral Partnerships:

The government should undertake specific measures for a more conducive environment to promote collaboration with private sector. The corporate sector must have a more proactive

role in disaster management plans for an effective partnership between the three pillars of actors (government, NGOs, and private sector). Private sector's inclusion in the local disaster management committees would enhance business engagement with local communities. Besides, such inclusion would increase private sector collaboration with charity organizations. The government should set up the proper mechanisms for forming disaster management committees (DMC) in the corporate sector's representative bodies to facilitate inter-sectoral collaborations in DRR.

e) Enhancing the Role of the Financial Institutions and Insurance Sector

The insurance sector can play the leading role in strengthening all sectors' DRR efforts. Risk transfer mechanisms like catastrophic bonds could be established in collaboration with insurance and other industries. Insurance companies should also initiate awareness-raising initiatives at the institutional level so that organizations can perceive the possible risk of catastrophic losses and become inspired by the advantages of risk transfer programs. Besides, the government should undertake policy directives with applicable guiding principles to introduce climate/disaster risk insurance in Bangladesh. Financial institutions should incorporate DRR considerations in lending arrangements. When private banks consider financing investment opportunities, evaluating DRR plans and strategies will facilitate establishing a link between corporate sustainability and resilience. In addition, The Bangladesh Bank should provide subsidized funds or loans to weak financial institutions to strengthen their capacity for safety and security.

f) Developing Core Business Models:

To date, most private sector contributions to disaster management are made in the form of CSR activities. Private sector should collaborate with relevant stakeholders to develop inclusive and responsible core business models to contribute to building community resilience. Private sector can fulfill the community's needs by creating creative, affordable, low-technology products, and nature-based solutions including rainwater harvesting infrastructures, water treatment facilities, and solar panels.

5.4 Conclusions

This study aimed at understanding the current status of private sector engagement in DRR in Bangladesh's urban settings. Although private sector has been playing a significant role in post-disaster measures such as relief operations, there has been little involvement from this sector in disaster risk reduction measures, particularly in disaster preparedness and mitigation. Traditionally, private sector involvement in disaster management has been philanthropic and ad-hoc. The study indicates that the advancements made by the private sector in DRR are minimal and have not amounted to substantial efforts in the area of DRR. Fear of hazard-related business disruptions may serve as the starting point for a process of planning and taking appropriate action by private sector to deal with various forms of emergencies and disasters. Most companies have designed training programs to create employee awareness of disaster risks and initiated awareness-building activities to change the attitude of the public or customers. Disaster preparedness measures taken by companies vary depending on individual preparedness activity, type of companies and number of employees. The study also discovered the major reasons for not developing a BCP, including lack of awareness about BCP, absence of legal mandate needed for having a BCP and lack of interest from top management. In terms of CSR activities, private sector involvements are mostly philanthropic and one-off interventions. The study also identified key gaps related to private sector involvement in DRR that ranged from a lack of institutional mechanisms to a lack of government regulations. The government should take the lead in creating an enabling environment for private sector engagement in DRR by providing appropriate policy support and incentives. Equally important, private sector should be willing to contribute its perspective to government-led DRR efforts.

6. References

- Agrawala, S., Carraro, M., Kingsmill, N., Lanzi, E., Mullan, M., & Prudent-Richard, G. (2011). *Private Sector Engagement in Adaptation to Climate Change: Approaches to Managing Climate Risks*. OECD. <https://doi.org/10.1787/5kg221jkf1g7-en>
- Alam, M., Rabbani, B., Herold, C., & Peduzzi, P. (2013). *Global Assessment Report on Disaster Risk Reduction 2013: From shared risk to shared value-The business case for disaster risk reduction*.
- Alam, M., & Rabbani, M. G. (2012). Vulnerabilities and responses to climate change for Dhaka. In *Adapting Cities to Climate Change* (pp. 112–129). Routledge.
- Alam, S. M. S., Hoque, S. M. S., & Hosen, M. Z. (2010). *Corporate Social Responsibility (CSR) of MNCs in Bangladesh: A Case Study on GrameenPhone Ltd.* (SSRN Scholarly Paper 1639570). <https://papers.ssrn.com/abstract=1639570>
- Al-Hussaini, T., Hossain, T., & Al Noman, M. N. (2012). Proposed Changes to the Geotechnical Earthquake Engineering Provisions of the Bangladesh National Building Code. *Geotechnical Engineering*, 43, 1–7.
- Al-Hussaini, T. M. (2003). Critical elements for earthquake disaster in Dhaka City. *USMCA 2003 Symposium on New Technology for Urban Safety of Mega Cities in Asia, Tokyo, Japan*.
- APEC. (2013). *New Approaches on Public Private Partnerships for Disaster Resilience, 4th Emergency Preparedness Working Group Meeting*. Asia-Pacific Economic Cooperation.
- Atteridge, A. (2011). *Will private finance support climate change adaptation in developing countries?: Historical investment patterns as a window on future private climate finance*.

- Ballesteros, L., Useem, M., & Wry, T. (2017). Masters of Disasters? An Empirical Analysis of How Societies Benefit from Corporate Disaster Aid. *Academy of Management Journal*, 60(5), 1682–1708. <https://doi.org/10.5465/amj.2015.0765>
- Bangladesh Fire Service and Civil Defense. (2019). *Annual Fire Incident Report*.
- Baum, D. (2018). *GLOBAL CLIMATE RISK INDEX 2019-Who Suffers Most From Extreme Weather Events? Weather-related Loss Events in 2017 and 1998 to 2017*.
- BBC. (2019, February 21). Bangladesh fire: Blaze kills dozens in Dhaka historic district. *BBC News*. <https://www.bbc.com/news/world-asia-47314098>
- Bhatt, R. M. (2002). Corporate social responsibility and natural disaster reduction: Local overview of Gujarat. *London, UK: Global Research Managed by Benfield Greig Hazard Research Centre, University College*.
- BIS. (2012). *Business population estimates for the UK and regions 2012*. Department for Business, Innovation & Skills. <https://www.gov.uk/government/statistics/business-population-estimates-for-the-uk-and-regions-2012>
- Brammer, H. (2010). After the Bangladesh Flood Action Plan: Looking to the future. *Environmental Hazards*, 9(1), 118–130. <https://doi.org/10.3763/ehaz.2010.SI01>
- CFE-DM. (2015). Disaster Management Reference Handbooks. *Center for Excellence in Disaster Management and Humanitarian Assistance*. <https://www.cfe-dmha.org/Publications/Disaster-Management-Reference-Handbooks>
- Chatterjee, R., & Shaw, R. (2015). Role of Regional Organizations for Enhancing Private Sector Involvement in Disaster Risk Reduction in Developing Asia. In T. Izumi & R. Shaw (Eds.), *Disaster Management and Private Sectors: Challenges and Potentials* (pp. 47–67). Springer Japan. https://doi.org/10.1007/978-4-431-55414-1_4

- Chisty, M. A., & Rahman, M. M. (2020). Coping capacity assessment of urban fire disaster: An exploratory study on ward no: 30 of Old Dhaka area. *International Journal of Disaster Risk Reduction*, 51, 101878.
- Choe, K. A., & Roberts, B. H. (2011). *Competitive Cities in the 21st Century: Cluster-Based Local Economic Development*. Asian Development Bank.
- Chongvilaivan, A. (2012). *Thailand's 2011 flooding: Its impact on direct exports and global supply chains*. ARTNeT working paper series.
<https://www.econstor.eu/handle/10419/64271>
- Chowdhury, Md. R. (2003). The Impact of 'Greater Dhaka Flood Protection Project' (GDFPP) on Local Living Environment – The Attitude of the Floodplain Residents. *Natural Hazards*, 29(3), 309–324. <https://doi.org/10.1023/A:1024798931426>
- Cochrane, H. (2004). Economic loss: Myth and measurement. *Disaster Prevention and Management: An International Journal*, 13(4), 290–296.
<https://doi.org/10.1108/09653560410556500>
- Coopers, P. (2013). *Stimulating private sector engagement and investment in building disaster resilience and climate change adaptation*.
- CSR Asia. (2013). Business and Disaster Preparedness: Helping Communities Prepare for Effective Response. *Disaster Resource Partnership Indonesia National Network: Facilitating Multi Stakeholders Efforts before Disaster Hits*, 17.
- Dahlhamer, J. M., & D'Souza, M. J. (1997). Determinants of business-disaster preparedness in two US metropolitan areas. *International Journal of Mass Emergencies & Disasters*, 15(2), 265–281.
- Dankelman, I. E. M. (2008). Gender, climate change and human security lessons from Bangladesh, Ghana and Senegal. *Newcastle upon Tyne : Gender and Disaster Network*, 74.

- Davies, P. (2011). *The role of the private sector in the context of aid effectiveness: Consultative finding document final report*.
- Dewan, A., & Corner, R. (2013). *Dhaka Megacity: Geospatial Perspectives on Urbanisation, Environment and Health*. Springer Science & Business Media.
- Dewan, A., Kumamoto, T., & Nishigaki, M. (2006). Flood Hazard Delineation in Greater Dhaka, Bangladesh Using an Integrated GIS and Remote Sensing Approach. *Geocarto International*, 21, 33–38. <https://doi.org/10.1080/10106040608542381>
- Dewan, A. M. (2013). Vulnerability of a Megacity to Flood: A Case Study of Dhaka. In A. Dewan (Ed.), *Floods in a Megacity: Geospatial Techniques in Assessing Hazards, Risk and Vulnerability* (pp. 75–101). Springer Netherlands. https://doi.org/10.1007/978-94-007-5875-9_3
- Dewan, A. M., Kabir, M. H., Nahar, K., & Rahman, M. Z. (2012). Urbanisation and environmental degradation in Dhaka Metropolitan Area of Bangladesh. *International Journal of Environment and Sustainable Development*, 11(2), 118–147. <https://doi.org/10.1504/IJESD.2012.049178>
- Dewan, A. M., & Yamaguchi, Y. (2008). Effect of land cover changes on flooding: Example from Greater Dhaka of Bangladesh. *International Journal of Geoinformatics*, 4(1), 11–20.
- Dhaka Tribune. (2022, December 4). Dhaka now 4th most populous city globally. *Dhaka Tribune*. <https://www.dhakatribune.com/world/latin-america/279838/dhaka-now-4th-most-populous-city-globally>
- Donaldson, T., & Preston, L. E. (1995). The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications. *The Academy of Management Review*, 20(1), 65. <https://doi.org/10.2307/258887>

- Economics of Climate Adaptation (ECA). (2009). *Shaping climate-resilient development—A framework for decision-making*. http://ccsl.iccip.net/climate_resilient.pdf
- Ferdous, M. (2006). *Role of the corporate sector in earthquake disaster: A case study of Dhaka city* [PhD Thesis]. Department of Architecture, BRAC University.
- Flood Action Plan (FAP) 8A. (1991). Master Plan Study for Greater Dhaka Protection Project. *Japan International Cooperation Agency*.
https://openjicareport.jica.go.jp/617/617/617_101_10987097.html
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman.
- Freeman, R. E., Velamuri, S. R., & Moriarty, B. (2006). Company stakeholder responsibility: A new approach to CSR. *Business Roundtable Institute for Corporate Ethics*, 19.
- Global Facility for Disaster Reduction and Recovery (GFDRR). (2020). *Private Sector Participation in Disaster Recovery and Mitigation*.
<https://www.gfdr.org/en/publication/private-sector-participation-recovery>
- Gob. (2010a). *National Plan for Disaster Management 2010-2015*. Department of Disaster Management, Ministry of Disaster Management and Relief.
- Gob. (2010b). *Project Brief: Comprehensive Disaster Management Program (CDMP II) (2010-2014)*. Ministry of Disaster Management and Relief.
- Gob. (2014). *Urban Development Directorate*. Ministry of Housing and Public Works.
- Hoxtell, W., Norz, M., & Teicke, K. (2015). Business engagement in humanitarian response and disaster risk management. *Global Public Policy Institute*, 1–74.
- Imam, H. (2010). Nimtoli tragedy: The worst nightmare. *The Daily Star*, 12.
- Ingirige, B., Amaratunga, D., Kumaraswamy, M., Liyanage, C., Perwaiz, A., Towashiraporn, P., & Wedawatta, G. (2014). *Private investment in disaster risk management: Background paper prepared for the 2015 Global Assessment Report on Disaster Risk Reduction*. UNISDR.

- Ishtiaque, A., Mahmud, M., & Rafi, M. (2014). Encroachment of Canals of Dhaka City, Bangladesh: An Investigative Approach. *GeoScape*, 8, 48–64.
<https://doi.org/10.2478/geosc-2014-0006>
- Islam, M. A. (2017, November 4). Present Condition and Future Prospects of Real Estate in Bangladesh. *ICE Business Times*. <https://ibtbd.net/present-condition-and-future-prospects-of-real-estate-in-bangladesh/>
- Islam, M. M., & Adri, N. (2008). Fire hazard management of Dhaka City: Addressing issues relating to institutional capacity and public perception. *Jahangirnagar Planning Review*, 6(6), 57–68.
- Islam, M. S., Rahman, M. R., Shahabuddin, A. K. M., & Ahmed, R. (2010). Changes in wetlands in Dhaka city: Trends and physico-environmental consequences. *Journal of Life and Earth Science*, 5(1), 37–42.
- Islam, M. Z., & Hossain, K. (2018). Fire hazards in Dhaka city: An exploratory study on mitigation measures. *IOSR Journal of Environmental Science, Toxicology and Food Technology*, 12(5), 46–56.
- Ismail, N., Izumi, T., & Shaw, R. (2015). Malaysian Experiences: Public-Private Partnership Involvement in Disaster Risk Reduction in Community Resilience in Malaysia. In T. Izumi & R. Shaw (Eds.), *Disaster Management and Private Sectors: Challenges and Potentials* (pp. 315–332). Springer Japan. https://doi.org/10.1007/978-4-431-55414-1_19
- ISO 22301. (2019). *Security and resilience—Business continuity management systems—Requirements*. <https://www.iso.org/obp/ui/en/#iso:std:iso:22301:ed-2:v1:en>
- ISO 22313. (2020). *Security and resilience—Business continuity management systems—Guidance on the use of ISO 22301*. Enterprise Singapore.
<https://www.iso.org/standard/75107.html>

- Izumi, T., & Shaw, R. (2014). A New Approach of Disaster Management in Bangladesh: Private Sector Involvement. *Risk, Hazards & Crisis in Public Policy*, 5(4), 425–445. <https://doi.org/10.1002/rhc3.12069>
- Izumi, T., & Shaw, R. (2015). Overview and Introduction of the Private Sector's Role in Disaster Management. In T. Izumi & R. Shaw (Eds.), *Disaster Management and Private Sectors: Challenges and Potentials* (pp. 1–10). Springer Japan. https://doi.org/10.1007/978-4-431-55414-1_1
- Jahan, I., Ansary, M. A., Ara, S., & Islam, I. (2011). Assessing social vulnerability to earthquake hazard in Old Dhaka, Bangladesh. *Asian Journal of Environment and Disaster Management*, 3(3), 285–300.
- Jegade, O. (2022, December 7). Top 10 megacities of 2022. *World Excellence International*. <https://www.worldexcellence.com/megacities-of-2022-here-are-the-10-biggest-and-fastest-growing-cities-in-the-world/>
- Johnson, B. R., Connolly, E., & Carter, T. S. (2011). Corporate social responsibility: The role of Fortune 100 companies in domestic and international natural disasters. *Corporate Social Responsibility and Environmental Management*, 18(6), 352–369.
- Johnson, D. A. K., & Abe, Y. (2015). Global Overview on the Role of the Private Sector in Disaster Risk Reduction: Scopes, Challenges, and Potentials. In T. Izumi & R. Shaw (Eds.), *Disaster Management and Private Sectors: Challenges and Potentials* (pp. 11–29). Springer Japan. https://doi.org/10.1007/978-4-431-55414-1_2
- Jones, T. M. (1980). Corporate Social Responsibility Revisited, Redefined. *California Management Review*, 22(3), 59–67. <https://doi.org/10.2307/41164877>
- Kanji, R., & Agrawal, R. (2020). Exploring the use of corporate social responsibility in building disaster resilience through sustainable development in India: An interpretive structural modelling approach. *Progress in Disaster Science*, 6, 100089.

- Kato, M., & Charoenrat, T. (2018). Business continuity management of small and medium sized enterprises: Evidence from Thailand. *International Journal of Disaster Risk Reduction*, 27, 577–587. <https://doi.org/10.1016/j.ijdr.2017.10.002>
- Khan, A. A., & Hossain, M. S. (2005). Recurrence of 1885 Bengal earthquake and hazard vulnerability status of Dhaka Metropolitan City, Bangladesh. *Oriental Geographer*, 49(2), 205–216.
- Khan, H., Vasilescu, L. G., & Khan, A. (2008). Disaster management cycle-a theoretical approach. *Journal of Management and Marketing*, 6(1), 43–50.
- Kytle, B., & Ruggie, J. G. (2005). *Corporate social responsibility as risk management: A model for multinationals*.
- Lal, P. N., Mitchell, T., Mechler, R., & Hochrainer-Stigler, S. (2012). *National systems for managing the risks from climate extremes and disasters* (C. B. Field, V. Barros, & T. F. Stocker, Eds.). Cambridge University Press. http://ipcc-wg2.gov/SREX/images/uploads/SREX-Chap6_FINAL.pdf
- Matin, N., Muhammad, T., & Matin, N. (2002). Corporate social responsibility and natural disaster reduction: Insights from Bangladesh. *UK Department for International Development, London*.
- Mavrodieva, A. V., & Shaw, R. (2019). Enabling Private Sector Engagement in Disaster Resilience in South and East Asia. *Risk, Hazards & Crisis in Public Policy*, 10(4), 466–483. <https://doi.org/10.1002/rhc3.12175>
- McPherson, P. (2015). Dhaka: The city where climate refugees are already a reality. *The Guardian*, 1.
- Mercy Corps Indonesia and R3ADY Asia-Pacific. (2016). *Optimizing Private Sector Engagement in Disaster Risk Reduction in Indonesia*. <http://seepnetwork.org/Blog-Post/Optimizing-Private-Sector-Engagement-in-Disaster-Risk-Reduction-in-Indonesia>

- Miah, M. M., & Bazlee, B. L. (1968). Some aspects of geomorphology of the Madhupur Tract. *Oriental Geographer*, 12(1), 39–48.
- Michael, B. (2003). Corporate social responsibility in international development: An overview and critique 1. *Corporate Social Responsibility and Environmental Management*, 10(3), 115–128.
- Ministry of Finance. (2012). *Chapter 14: Private sector development*. Government of The People's Republic of Bangladesh.
- Miyaguchi, T., & Shaw, R. (2005). *The Corporate Sector Role in Disaster and Environmental Management*.
- Miyaguchi, T., & Shaw, R. (2007). Corporate Community Interface in Disaster Management – A Preliminary Study of Mumbai, India. *Risk Management*, 9(4), 209–222.
<https://doi.org/10.1057/palgrave.rm.8250036>
- MoEF. (2012). *Climate Change and Health in Bangladesh: Information Brief*.
- Mohit, M. A., & Akther, S. (2002). Delineation of flood damaged zones of Dhaka City based on the 1998 flood by using GIS. In *Engineering Concerns of Flood* (pp. 303–318).
https://www.academia.edu/49679905/Delineation_of_flood_damaged_zones_of_Dhaka_City_based_on_the_1998_flood_by_using_GIS
- Nasreen, M. (2017, February 26). Challenges for disaster risk reduction. *The Daily Star*.
<https://www.thedailystar.net/environment-and-climate-action/challenges-disaster-risk-reduction-1367086>
- Nishat, A. (2000). *The 1998 flood: Impact on environment of Dhaka city*. Department of Environment, Ministry of Environment and Forest.
- Ono, T. (2012). Business Continuity Planning Status of the Private Sector in the Asia Pacific Region. *Journal of Disaster Research*, 7(4), 386–391.
<https://doi.org/10.20965/jdr.2012.p0386>

- Ono, T., & Anbumozhi, V. (2020). *Effects of Business Continuity Planning on Reducing Economic Loss due to Natural Disasters*.
- Paul, B. K., & Bhuiyan, R. H. (2010). Urban earthquake hazard: Perceived seismic risk and preparedness in Dhaka City, Bangladesh. *Disasters*, 34(2), 337–359.
<https://doi.org/10.1111/j.1467-7717.2009.01132.x>
- PricewaterhouseCoopers (PwC). (2013a). *Stimulating private sector engagement and investment in building disaster resilience and climate change adaptation. Recommendations for public finance support. Executive Summary*. (p. 31). PricewaterhouseCoopers.
- PricewaterhouseCoopers (PwC). (2013b). *UNISDR and PwC: Working together to reduce disaster risk* (p. 31).
- Rabbani, G., Rahman, A., & Islam, N. (2011). Climate Change Implications for Dhaka City: A Need for Immediate Measures to Reduce Vulnerability. *Resilient Cities: Cities and Adaptation to Climate Change - Proceedings of the Global Forum 2010. Local Sustainability*. https://doi.org/10.1007/978-94-007-0785-6_52
- Rahman, A., & Mallick, D. L. (2008). *Climate change impacts on cities of developing countries: A case study on Dhaka. 40 Tokyo conference on climate change—adaptation measures for sustainable low carbon cities*. October.
- Rahman, M. M., Hassan, Md. S., Md. Bahauddin, K., Khondoker Ratul, A., & Hossain Bhuiyan, M. A. (2018). Exploring the impact of rural–urban migration on urban land use and land cover: A case of Dhaka city, Bangladesh. *Migration and Development*, 7(2), 222–239. <https://doi.org/10.1080/21632324.2017.1301298>
- Rahman, M. M., Shamsuddoha, M., Iqbal, S. M. S., & Datta, M. A. (2018). Transferring climate induced disaster risks: Policy practices and readiness of Bangladesh. *Center*

for Participatory Research & Development-CPRD. www.cprdbd.org/climate-risk-insurance/

- Rahman, N., Ansary, M. A., & Islam, I. (2015). GIS based mapping of vulnerability to earthquake and fire hazard in Dhaka city, Bangladesh. *International Journal of Disaster Risk Reduction*, *13*, 291–300. <https://doi.org/10.1016/j.ijdrr.2015.07.003>
- RAJUK. (2015). *Dhaka Structure Plan 2016-2035*. Rajdhani Unnayan Kartripakkha.
- Rapeli, M., & Mussalo-Rauhamaa, H. (2017). Disaster preparedness of private social services: Case Finland. *International Journal of Emergency Services*, *6*(1), 40–51. <https://doi.org/10.1108/IJES-09-2016-0017>
- Roy, S., Sowgat, T., & Mondal, J. (2019). City Profile: Dhaka, Bangladesh. *Environment and Urbanization ASIA*, *10*, 097542531985912. <https://doi.org/10.1177/0975425319859126>
- SAARC. (2014). *Post-2015 DRR framework for SAARC region (HFA2): SDMC* (p. 43).
- Sarmiento, J. P., Hoberman, G., Ilcheva, M., Asgary, A., Majano, A. M., Poggione, S., & Duran, L. R. (2015). Private sector and disaster risk reduction: The Cases of Bogota, Miami, Kingston, San Jose, Santiago, and Vancouver. *International Journal of Disaster Risk Reduction*, *14*, 225–237. <https://doi.org/10.1016/j.ijdrr.2014.09.008>
- Sattar, M. A. (2017). Corporate social responsibility in Disaster Risk Management: A study on some selected private commercial banks of Bangladesh. *International Journal of Environment, Ecology, Family and Urban Studies (IJEEFUS)*, *7*(5), 7–18.
- Savage, G. T., Nix, T. W., Whitehead, C. J., & Blair, J. D. (1991). Strategies for assessing and managing organizational stakeholders. *Academy of Management Perspectives*, *5*(2), 61–75. <https://doi.org/10.5465/ame.1991.4274682>

- Setyawan, A. A., Isa, M., Wajdi, F., & Syamsudin, S. (2017). Disaster as Business Risk in SME: An Exploratory Study. *International Journal of Research in Business and Social Science* (2147- 4478), 6(6), Article 6. <https://doi.org/10.20525/ijrbs.v6i6.831>
- Shah, F., & Murao, O. (2011). Understanding seismic risk recognition and intention for safety measures of residents in Dhaka, Bangladesh. *Asian Journal of Environment and Disaster Management*, 3(3), 357–372.
<https://doi.org/10.3850/S1793924011000964>
- Sharmin, S., & Saadi, S. (2010). Urban Earthquake Management Challenges in Bangladesh: A Case Study. *OIDA International Journal of Sustainable Development*, 1(6), 43–48.
- Shaw, R. (2018). Role of private sectors in disaster risk reduction: Potential and challenges. *Journal of Disaster Research*, 13(7), 1207–1212.
- Shaw, R., & Izumi, T. (2015). Challenges and Potentials of Private Sectors in Disaster Management. In T. Izumi & R. Shaw (Eds.), *Disaster Management and Private Sectors: Challenges and Potentials* (pp. 333–342). Springer Japan.
https://doi.org/10.1007/978-4-431-55414-1_20
- Shaw, R., Mallick, F., & Islam, A. (Eds.). (2013). *Disaster Risk Reduction Approaches in Bangladesh*. Springer Japan. <https://doi.org/10.1007/978-4-431-54252-0>
- Sobhan, F. (2006, September 16). CSR Its Importance for Bangladesh. *The Financial Express*.
- Stott, C., & Nadiruzzaman, M. (2014). Disaster Risk Reduction in Dhaka City: From urban landscape analysis to opportunities for DRR integration. *International Centre for Climate Change and Development*. <http://dx.doi.org/10.13140/RG.2.1.1227.4722>
- Swapan, M. S. H., Zaman, A. U., Ahsan, T., & Ahmed, F. (2017). Transforming urban dichotomies and challenges of South Asian megacities: Rethinking sustainable growth

- of Dhaka, Bangladesh. *Urban Science*, 1(4), 31.
<https://doi.org/10.3390/urbansci1040031>
- Taleb, M. A. (2012). Comparative study of urban area extension and flood risk in Dhaka City of Bangladesh. *Global Journal of Human Social Science Geography & Environmental Geosciences*, 12(11), 37–40.
- Thaw, M. (2019). The Measure of Private Sector Contributions in Myanmar and Business Resilience for Disaster Preparedness. *The University of Newcastle Australia*, 51.
- The Daily Star. (2019, March 29). Banani fire: Death toll rises to 25. *The Daily Star*.
<https://www.thedailystar.net/city/news/banani-fire-death-toll-rises-25-1722037>
- The World Bank. (2012). *Bangladesh - Towards accelerated, inclusive and sustainable growth: Opportunities and challenges* (Text/HTML 67991). World Bank Group.
<https://documents.worldbank.org/en/publication/documents-reports/documentdetail/280061468006660483/Main-report>
- Tierney, K. J. (2007). Businesses and Disasters: Vulnerability, Impacts, and Recovery. In H. Rodríguez, E. L. Quarantelli, & R. R. Dynes (Eds.), *Handbook of Disaster Research* (pp. 275–296). Springer. https://doi.org/10.1007/978-0-387-32353-4_16
- Tishi, T. R., & Islam, I. (2019). A study on fire fighting capacity of fire stations of Dhaka metropolitan area. *International Conf. on Disaster Risk Management*, 611–622.
- Twigg, J. (2001). *Corporate social responsibility and disaster reduction: A global overview*. Benfield Greig Hazard Research Centre London.
- UN. (2016). *The World's Cities in 2016: Data Booklet (ST/ESA/SER.A/392)*. United Nations: New York, NY, USA. <https://digitallibrary.un.org/record/1634928>
- UNDRR. (2008). *Private sector activities in disaster risk reduction: Good practices and lessons learned* (p. 80).

- UNDRR. (2013a). *Findings of the review of national platforms for disaster risk reduction 2012-2013* (p. 45). <http://www.undrr.org/publication/findings-review-national-platforms-disaster-risk-reduction-2012-2013>
- UNDRR. (2013b). *Global Assessment Report on Disaster Risk Reduction: From Shared Risk to Shared Value: The Business Case for DRR*.
<http://www.undrr.org/publication/global-assessment-report-disaster-risk-reduction-2013>
- Un-Habitat. (2008). *State of the World's Cities 2008/9: Harmonious Cities*. United Nations Human Settlements Programme.
- UNISDR. (2009). *2009 UNISDR terminology on disaster risk reduction* (pp. 10–11).
<http://www.undrr.org/publication/2009-unisdr-terminology-disaster-risk-reduction>
- UNISDR. (2015). *Disaster Risk Reduction Private Sector Partnership, Post 2015 Framework—Private Sector Blueprint Five Private Sector Visions for a Resilient Future*. <https://goo.gl/dHnTk6>
- World Economic Forum. (2008). *Building resilience to natural disasters: A framework for private sector engagement* | UNDRR. <http://www.undrr.org/publication/building-resilience-natural-disasters-framework-private-sector-engagement>

7. Appendix

Appendix 7.1: Questionnaire for the survey of the study organizations

Private Sector Engagement in Disaster Risk Reduction in Bangladesh: A Study on the Selected Corporate Organizations in Dhaka

[This study is conducted on the private sector engagement in disaster risk reduction (DRR) in Bangladesh under the supervision of the Institute of Disaster Management and Vulnerability Studies. This study aims to explore the current state of the private sector engagement in disaster risk reduction and identify institutional models and mechanisms for promoting the private sector's involvement in DRR activities in Bangladesh. As a survey respondent, your responses will add significant value to the study. The information you give us will be kept confidential and will only be used for the purpose of the study. If you give the consent, we can carry on with the interview....]

Section A: Background Information			
101	Name of the organization		
102	Name of the respondent		
103	Contact number		
104	Designation	<input type="checkbox"/> Top management....[1] [CEO/Vice-President/ Head of HR and Administration] <input type="checkbox"/> Executive level....[2] [Manager/Senior Executive/Assistant Vice-President/CFO] <input type="checkbox"/> Mid-level....[3] [Executive/Assistant Manager]	
105	Industry	<input type="checkbox"/> Conglomerates....[1] <input type="checkbox"/> Bank....[2] <input type="checkbox"/> Insurance....[3] <input type="checkbox"/> Pharmaceuticals....[4] <input type="checkbox"/> RMG....[5] <input type="checkbox"/> Food and Beverage....[6] <input type="checkbox"/> Consumer Products....[7] <input type="checkbox"/> Telecommunication....[8] <input type="checkbox"/> Other....[9]	
106	Type of Company	<input type="checkbox"/> Private limited company....[1]	<input type="checkbox"/> Public limited company....[2]
107	Business category by the product type	<input type="checkbox"/> Product-based company....[1]	<input type="checkbox"/> Service-based company....[2]
108	Number of employees	<input type="checkbox"/> Less than 1000....[1] <input type="checkbox"/> 1000 to 3000....[2] <input type="checkbox"/> 3001 to 5000....[3] <input type="checkbox"/> 5001 to 10000....[4] <input type="checkbox"/> More than 10,000....[5]	

109	Location of the head office or corporate office	<input type="checkbox"/> Motijheel Commercial Area....[1] <input type="checkbox"/> Tejgaon Industrial Area....[2] <input type="checkbox"/> Gulshan 1 and 2....[3] <input type="checkbox"/> Other....[4]
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Section B: Disaster Risk Perception		
201	Which of the following hazard-induced disruptions has your organization experienced over the last five years?	<input type="checkbox"/> Utility outage[1] <input type="checkbox"/> Damaged facility or equipment....[2] <input type="checkbox"/> Supply Chain disruption....[3] <input type="checkbox"/> Environmental incident....[4] <input type="checkbox"/> Fire-Induce losses....[5] <input type="checkbox"/> Bad debt....[6] <input type="checkbox"/> Other....[7] <input type="checkbox"/> None of the above....[8]
202	What types of hazard awareness initiatives have been undertaken by your organization over the last five years?	<input type="checkbox"/> Public awareness campaigns....[1] <input type="checkbox"/> Distribution of printed materials....[2] <input type="checkbox"/> Informational website....[3] <input type="checkbox"/> Simulation and drill....[4] <input type="checkbox"/> Hazard map....[5] <input type="checkbox"/> Training program for employees....[6] <input type="checkbox"/> Other....[7]
203	Which of the following hazards does your organization consider threatening to business process and investment	<input type="checkbox"/> Earthquake....[1] <input type="checkbox"/> Fire....[2] <input type="checkbox"/> Building Collapse....[3] <input type="checkbox"/> Climate change-induced hazards....[4] <input type="checkbox"/> Pandemic....[5] <input type="checkbox"/> Other....[6]
204	Which of the following business elements of your organization are vulnerable to hazards?	<input type="checkbox"/> Machinery....[1] <input type="checkbox"/> Capital....[2] <input type="checkbox"/> Raw materials....[3] <input type="checkbox"/> Product/service....[4] <input type="checkbox"/> Supply chain....[5] <input type="checkbox"/> Information system....[6] <input type="checkbox"/> Utility services....[7] <input type="checkbox"/> Other....[8]
205	Is Disaster Risk Reduction incorporated into your organizational policy?	<input type="checkbox"/> Yes....[1] <input type="checkbox"/> No....[2] <input type="checkbox"/> Do not know....[3]
206	What is the vision behind your organization's involvement in disaster risk reduction activities?	<input type="checkbox"/> To meet public needs....[1] <input type="checkbox"/> To meet moral obligation....[2] <input type="checkbox"/> To achieve long-term profits....[3] <input type="checkbox"/> Business disruptions by disasters....[4]

		<input type="checkbox"/> To increase reputation....[5] <input type="checkbox"/> Other....[6]
207	Has your organization ever performed an assessment of the state of disaster risk perception among the employees?	<input type="checkbox"/> Yes....[1] <input type="checkbox"/> No....[2] <input type="checkbox"/> Do not know....[3]
208	How did you perform such an assessment?) - Please provide one or more examples of such assessments, e.g., for one or multiple hazards.	➤ ➤

Section C: Disaster Preparedness Measures

Section C: Disaster Preparedness Measures		
301	What preparedness measures your organization has adopted to better prepare for disasters?	<input type="checkbox"/> Developed emergency plan....[1] <input type="checkbox"/> Arranged internal workshops on disasters....[2] <input type="checkbox"/> Discussion on disasters in organizational meetings....[3] <input type="checkbox"/> Assessment of building by engineers....[4] <input type="checkbox"/> Arranged site visits by experts....[5] <input type="checkbox"/> Store office supplies....[6] <input type="checkbox"/> Made contact lists of emergency responders....[7] <input type="checkbox"/> Other....[8]
302	What kind of in-house preparedness activities does your organization have for your employees?	<input type="checkbox"/> Safety drills/ simulation....[1] <input type="checkbox"/> Safety kits[2] <input type="checkbox"/> Insurance coverage for employees....[3] <input type="checkbox"/> Magazine distribution....[4] <input type="checkbox"/> Storage sufficient food....[5]
303	What kind of facilities does your organization have in place for emergency management?	<input type="checkbox"/> Fire-fighting equipment....[1] <input type="checkbox"/> Provision of emergency exit route....[2] <input type="checkbox"/> Fire and emergency alarm....[3] <input type="checkbox"/> Emergency generator....[4] <input type="checkbox"/> Health corner or first aid kit....[5] <input type="checkbox"/> Safety officer....[6] <input type="checkbox"/> Other....[7]
304	Which of the following best describes your organization's business development plan status? (<i>Select one</i>)	<input type="checkbox"/> Have a written BCP....[1] <input type="checkbox"/> No BCP in place....[2] <input type="checkbox"/> In the process of developing

		BCP....[3]
305	<p>If your organization has a business continuity plan which of the following best explains the reason?</p> <p>[Only applicable for those who have a business continuity plan]</p>	<input type="checkbox"/> Established internal policy....[1] <input type="checkbox"/> Continuity of operations....[2] <input type="checkbox"/> Government regulations....[3] <input type="checkbox"/> Industry standard....[4] <input type="checkbox"/> Competitive gains....[5] <input type="checkbox"/> Audit finding....[6] <input type="checkbox"/> Other....[7]
306	<p>If your organization doesn't have a business continuity plan, please explain the reasons.</p> <p>[Only applicable for those who don't have a business continuity plan]</p>	<p>➤</p> <p>➤</p>
307	<p>Which business approaches does your organization have in place to manage hazards and risks?</p>	<input type="checkbox"/> Conduct risk training....[1] <input type="checkbox"/> Conduct business impact analysis....[2] <input type="checkbox"/> Conduct risk assessment....[3] <input type="checkbox"/> Appoint a risk manager or officer....[4] <input type="checkbox"/> Purchase fire/earthquake insurance....[5]
308	<p>What sources does your organization use for disaster recovery funding?</p>	<input type="checkbox"/> Self-funding....[1] <input type="checkbox"/> Insurance....[2] <input type="checkbox"/> Subsidized loan....[3]
309	<p>What are the perceived risks of investing in Disaster Risk Reduction?</p>	<input type="checkbox"/> Lack of institutional mechanism....[1] <input type="checkbox"/> Lack of expertise....[2] <input type="checkbox"/> Uncertain in profitability....[3] <input type="checkbox"/> Frequency of disaster....[4] <input type="checkbox"/> Other....[5]
310	<p>Has your organization financed or invested in any climate change adaptation initiatives?</p>	<input type="checkbox"/> Yes....[1] <input type="checkbox"/> No....[2] <input type="checkbox"/> Do not know....[3]
311	<p>What funding sources for climate financing does your organization use?</p>	<input type="checkbox"/> Own capital....[1] <input type="checkbox"/> Grant....[2] <input type="checkbox"/> Subsidized or soft loan....[3] <input type="checkbox"/> Special fund....[4]
312	<p>What kinds of climate change adaptation activities does your organization conduct?</p>	<p>➤</p> <p>➤</p>

Section D: Contributions to Community-level DRR

401	What corporate responsibility initiatives does your organization conduct regarding disaster risk management?)	<input type="checkbox"/> Public awareness campaigns....[1] <input type="checkbox"/> Disseminate early warning messages....[2] <input type="checkbox"/> Cash donations or in-kind assistance....[3] <input type="checkbox"/> Assistance through foundations....[4] <input type="checkbox"/> Provide jobs in disaster-prone areas....[5] <input type="checkbox"/> Build disaster-resilient infrastructure....[6] <input type="checkbox"/> Capacity building through training....[7] <input type="checkbox"/> Environment preservation....[8] <input type="checkbox"/> Other....[9]
402	Who are the main stakeholders or partners that your organization works with regarding disaster risk management?	<input type="checkbox"/> Government institution....[1] <input type="checkbox"/> NGO....[1] <input type="checkbox"/> International organization....[1] <input type="checkbox"/> Business institution....[1] <input type="checkbox"/> Social organization....[1] <input type="checkbox"/> Community-based organization....[1] <input type="checkbox"/> Other....[1]
403	What type of partnership does your organization have in place with regard to Disaster Risk Reduction?	<input type="checkbox"/> Philanthropic or charitable....[1] <input type="checkbox"/> Sponsorship....[2] <input type="checkbox"/> Collaborative....[3]
404	What are the key elements in partner selection and partnership development with regard to disaster management?	<input type="checkbox"/> Specialization....[1] <input type="checkbox"/> Infrastructure....[2] <input type="checkbox"/> Fund....[3] <input type="checkbox"/> Network....[4] <input type="checkbox"/> None of the above....[5]
405	Has your organization supported NGOs or other civil society organizations in the following activities related to disaster risk management at the community level?	<input type="checkbox"/> Risk Identification....[1] <input type="checkbox"/> Preparedness....[2] <input type="checkbox"/> Mitigation....[3] <input type="checkbox"/> Response....[4] <input type="checkbox"/> Recovery....[5] <input type="checkbox"/> None of the above....[6]
406	What are the main challenges your organization has experienced in implementing community-based disaster risk reduction activities?	<input type="checkbox"/> Political resistance....[1] <input type="checkbox"/> Lack of collaboration with the community....[2] <input type="checkbox"/> Lack of skilled manpower....[3]

		<input type="checkbox"/> Geographical location....[4] <input type="checkbox"/> Inadequate fund....[5] <input type="checkbox"/> Other....[6] <input type="checkbox"/> Not sure....[7]
407	How long was the disaster risk management intervention adopted for the community? (<i>select one</i>)	<input type="checkbox"/> One-term....[1] <input type="checkbox"/> Short-term....[2] <input type="checkbox"/> Long-term....[3] <input type="checkbox"/> Both one-time and long-term....[4]
408	How do you rate the importance of involvement with local communities in implementing DRR activities at community level (<i>select one</i>)	<input type="checkbox"/> Highly important....[1] <input type="checkbox"/> Important....[2] <input type="checkbox"/> Somewhat important....[3]
409	What challenges does your organization face in contributing to disaster risk reduction?	➤ ➤ ➤
410	What types of initiatives should be undertaken to encourage private sector involvement in disaster risk reduction?	➤ ➤ ➤
411	How does your organization advocate for disaster risk management policies or measures at the national level?	<input type="checkbox"/> Support media awareness campaigns....[1] <input type="checkbox"/> Empower local community....[2] <input type="checkbox"/> Coordination with international community....[3] <input type="checkbox"/> Co-finance public investment in community efforts....[4] <input type="checkbox"/> None of the above....[5]

Section E: Disaster Risk Transfer Mechanism [Only applicable for insurance companies]		
501	What is your understanding of climate-induced risk insurance?	<input type="checkbox"/> Know very well....[1] <input type="checkbox"/> Partial knowledge....[2]
502	What are the main reasons behind not having climate-induced risk insurance?	<input type="checkbox"/> Lack of govt. directives....[1] <input type="checkbox"/> Lack of institutional mechanism....[2] <input type="checkbox"/> Lack of knowledge of the risk transfer mechanisms....[3] <input type="checkbox"/> Not profitable....[4]
503	What type of risk transfer insurance does your organization have in place?	<input type="checkbox"/> Traditional Insurance....[1] <input type="checkbox"/> Weather-index-based insurance....[2] <input type="checkbox"/> Flood/Cyclone/Earthquake/Fire....[3] <input type="checkbox"/> Other....[4]
504	What are the challenges of introducing disaster or climate risk	<input type="checkbox"/> Policy gap....[1] <input type="checkbox"/> Collaboration gap....[2]

	insurance?	<input type="checkbox"/> Lack of awareness....[3] <input type="checkbox"/> Lack of information....[4]
505	What kinds of measures should be taken to make climate risk insurance viable?	➤ ➤ ➤

Appendix 7.2: List of companies for the survey

Sr. No.	Name of the organization	Industry
1	Square Pharmaceuticals PLC	Pharmaceuticals
2	The City Bank Limited	Banking
3	Pandugar Group	Conglomerates
4	BD Foods Limited	Food and Beverage
5	Aman Group of Company Limited	Conglomerates
6	Swadesh Properties Limited	Real Estate
7	Mutual Trust Bank Limited	Banking
8	BRAC Bank Limited	Banking
9	Banglalink Digital Communications Limited	Telecommunication
10	Guardian Life Insurance Limited	Insurance
11	Meghan Group of Industries	Conglomerates
12	Takaful Islami Insurance Limited	Insurance
13	Social Islami Bank Limited	Banking
14	Asia Insurance Limited	Insurance
15	United Insurance Company Limited	Insurance
16	Akij Group Limited	Conglomerates
17	HSBC Bank Limited	Banking
18	Metal Group Bangladesh	Agriculture Mechanization
19	Bangladesh National Insurance Company Limited	Insurance
20	Popular Life Insurance Company Limited	Insurance
21	BSRM Steels Limited	Iron and Steel
22	Fair Technology Limited	Consumer Electronics
23	RFL Group	Plastic and consuming items
24	BEXIMCO Pharmaceuticals Limited	Pharmaceuticals
25	ACI Limited	Conglomerates
26	Navana Group	Automobile
27	Reliance Insurance Limited	Insurance
28	Orion Group	Conglomerates
29	Pragati Insurance Limited	Insurance
30	Bangladesh Finance Limited	Financial Services
31	Anwar Group of Industries	Conglomerates
32	Coca-cola Bangladesh Limited	Food and Beverage
33	City General Insurance Company	Insurance

	Limited	
34	Dutch-Bangla Bank Limited	Banking
35	Goldtex Garments Limited	RMG
36	South China Bleaching and Dyeing Factory Limited	RMG
37	Haseen Garments Limited	RMG
38	ISPAHANI Tea Limited	Food and Beverage
39	Beacon Pharmaceuticals PLC	Pharmaceuticals
40	Jamuna Bank Limited	Banking
41	Bata Shoe Company Limited	Consumer Goods
42	MG Shirtex Limited	RMG
43	Abul Khair Group	Conglomerates
44	The Achme Laboratories Limited	Pharmaceuticals
45	British American Tobacco Bangladesh	Consumer Goods
46	Green Delta Insurance	Insurance
47	Ibrahim Knit Garments Limited	RMG
48	Nestle Bangladesh Limited	Consumer Goods
49	Reckitt Benckiser Bangladesh PLC	Consumer Goods
50	Robi Axiata Limited	Telecommunication

Appendix 7.3: Checklist for Key Informant Interview and In-depth Interview

[This study is conducted on the private sector engagement in disaster risk reduction (DRR) in Bangladesh under the supervision of the Institute of Disaster Management and Vulnerability Studies. This study aims to explore the current state of the private sector engagement in disaster risk reduction and identify institutional models and mechanisms for promoting the private sector’s involvement in DRR activities in Bangladesh. As a Key Informant, your opinion will add significant value to our study. The information you give us will be kept confidential and will only be used for the purpose of the study.]

General Information:

Name of the Participant	
Designation	
Organization	

Incentives for Private Sector Engagement in Disaster Risk Reduction (DRR):

1. What role do you think the private sector (domestic level) should play in relation to the disaster risk reduction process?
2. What are the main gaps and opportunities related to private sector engagement in disaster risk reduction at the national level?
3. What legislation and policies should the government devise to get the private sector more engaged in the national-level DRR effectiveness agenda?

Private Sector Investment in Disaster Risk Management (DRM) and the Potential for Partnerships:

1. What can be done to promote the interest of corporates to invest in SDGs and disaster resilience?
2. What are the conditions for an effective partnership between the stakeholders engaged in disaster risk management (GOs, NGOs/INGOs, CSOs, partner organizations, etc.) and the private sector to deliver sustainable output at the country level?
3. How do we ensure that private sector contributions to DRR are transparent, accountable, and aligned with global protocols and national plans?

Mainstreaming DRR in the Private Sector:

1. What measures should be taken to internalize disaster risk reduction approaches into business plans and policies?

2. What can be done to encourage disaster risk awareness among small and medium enterprises (SMEs) in Bangladesh?
3. How can the private sector advocate for the country's disaster management policies?

Appendix 7.3.1: List of interviewees for KII

Sr. No.	Name and designation of the person interviewed	Name of the organization
1.	A M Nasir Uddin Consortium Manager, SUPER Project	ActionAid Bangladesh
2.	Khondoker Anwar Kalam Joint Executive Secretary	Dhaka Chamber of Commerce and Industry
3.	Mr. Abu Sayeed Khan Advisory Editor	The Daily Samakal
4.	Dr. Tariqur Rahman Bhuiyan Manager, Research and Knowledge Management	DM Watch Limited
5.	Md. Asaduzzaman Manager and Head, Training and Development	The Metal (Pvt) Limited

Appendix 7.3.2: List of Interviewees for IDI

Sr. No.	Name and designation of the person interviewed	Name of the organization
1.	Fakhrul Hasan General Manager, Human Resource Department	Square Pharmaceuticals PLC.
2.	Syed Forhad Abbas Uddin Deputy Managing Director, Head of Reinsurance	Green Delta Insurance
3.	Rahmat Ullah Manager, HR and Administration	BD Foods Limited
4.	Golam Habib Head of HR and Corporate Affairs	Pandugarh Group
5.	Syed Sehab Ullah Al-Manjur Chief Executive Officer	Pragati Insurance Limited
6.	Monir Ahmed Vice President, Head of Reinsurance and Claims	Asia Insurance Limited
7.	Apurba Kumar Biswas Assistant Manager, Group Admin	Navana Group
8.	Mohammad Refatul Haque Senior Manager, HR and Administration	Beacon Group
9.	Md. Aminul Islam	Dutch-Bangla Bank Limited

	Deputy Manager	
10.	Shakhwat Hossain Senior Executive, HR	ISPAHANI Tea Limited

THE END