



National  
Resilience  
Programme



# Research Report on

## INTRODUCING BUSINESS CONTINUITY PLAN (AREA SPECIFIC AND ENTERPRISE-LEVEL) IN SELECTED ECONOMIC ZONES OF BANGLADESH

**National Resilience Programme (NRP)**  
Programming Division  
Bangladesh Planning Commission, Ministry of Planning  
Government of the People's Republic of Bangladesh

December 2022







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In collaboration with Bangladesh Economic Zones Authority (BEZA)

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**Executive Chairman**  
**Bangladesh Economic Zones Authority (BEZA)**  
**Prime Minister's Office**

## MESSAGE

It gives me utmost pleasure to learn that National Resilience Program (NRP) under Planning Division is publishing a final report on **“Research Report on Introducing Business Continuity Plan (Area-Specific and Enterprise-Level) in Selected Economic Zones of Bangladesh.”**

Two designated economic zones, namely, Bangabandhu Sheikh Mujib Shilpa Nagar (BSMSN) and Meghna Industrial Economic Zone (MIEZ) have been selected as piloting basis to prepare business continuity plan as a tool to resume business in a shortest possible of time after natural and man-made disaster.

The global business landscape is constantly evolving and that challenges can arise at any moment, including natural disasters, pandemics, or even geopolitical events. Therefore, it is crucial that we take proactive measures to mitigate the risks and impacts of such events.

BEZA is committed to develop robust Business Continuity Plans (BCPs) at both in Economic Zone and enterprise levels. These plans will identify and address potential risks, assess critical operations and functions, and provide guidelines for the continuation of essential services during times of emergency.

We believe that this initiative will not only protect our stakeholders' interests but also enhance our EZs' attractiveness for domestic and foreign investors. It will also contribute to the sustainable development of the country's economy by ensuring business continuity.

Together, we can build a more resilient and sustainable business environment in Economic Zones of Bangladesh that can weather any challenge that comes our way. The **“Business Continuity Plans”** is expected to be useful to our valued investors.

Joy Bangla  
Joy Bangabandhu

**Shaikh Yusuf Harun**



## ACKNOWLEDGMENT

The research report on “Business Continuity Plan (BCP) (Area Specific and Enterprise-Level) in Selected Economic Zones of Bangladesh” is a joint initiative of the Programming Division of Bangladesh Planning Commission and the Bangladesh Economic Zones Authority (BEZA). This is the first time that such a study focuses on guidelines and piloting multi-hazard Business Continuity Plans (BCP) in economic zones and industries to strengthen the resiliency of the business sector in the country. Based on reviewing the best practices around the world, all relevant standards, laws, and regulations and consultation with relevant stakeholders, the study developed useful standardized templates to prepare BCP for economic zones and enterprise and piloted in two designated economic zones, namely, Bangabandhu Sheikh Mujib Shilpa Nagar (BSMSN) and Meghna Industrial Economic Zone (MIEZ). The scope of the BCP provides plans for continuity of critical operations of the Economic Zones Authority in case of a natural or man-made disaster so that the down time of operations of the enterprises within the economic zone is minimum and the entire system returns to its normal operation level within a reasonable time frame.

The above objective of the study would not have been possible without the active cooperation from officials of respective Economic Zones, government officials, local administration, scientific and research organizations and the non-state actors. I express my gratitude to BCP Technical Committee members for their support and guidance in conducting the research and developing the BCP Templates.

We are very grateful to BEZA for entering into an MOU with Programming Division in 2021 which allowed us to start and successfully complete the pioneering study. We express thanks to Mr. Shaikh Yusuf Harun (Executive Chairman), for his cordial and sincere cooperation. Mr. Mohammed Erfan Sharif (Additional Secretary, Executive Member-Planning & Development), Mr. Doyananda Debnath (Joint Secretary, General Manager - Planning & Development), Dr. Shaikh Mohammad Jobayed Hossain (Joint Secretary, General Manager - Finance & Budget) and other officials of BEZA, the study could not have progressed without their sincere support.

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Special thanks to the study team for their sincere efforts to make the report comprehensive and informative. Thanks also goes to the NRR-PD project team for its contribution to the study design and to UNDP's for its technical support.

We hope that this study will make additional value in undertaking future action in overcoming this problem and strengthening the resilience of the private sector.

**Dr. Nurun Nahar**

Joint Chief, Programming Division  
and Project Director, NRP-PD Part

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## LIST OF ABBREVIATIONS

AFD	Armed Forces Division
AGM	Assistant General Manager
BARC	Bangladesh Agriculture Research Council
BBA	Bangladesh Bridge Authority
BBS	Bangladesh Bureau of Statistics
BCM	Business Continuity Management
BCMS	Business Continuity Management System
BCP	Business Continuity Plan
BDP	Bangladesh Delta Plan
BEZA	Bangladesh Economic Zone Authority
BGMEA	Bangladesh Garment Manufacturers and Exporters Association
BIA	Business Impact Assessment
BIWTA	Bangladesh Inland Water Transport Authority
BLPA	Bangladesh Land Port Authority
BMD	Bangladesh Meteorological Department
BNBC	Bangladesh National Building Code
BR	Bangladesh Railway
BREB	Bangladesh Rural Electrification Board
BSCIC	Bangladesh Small and Cottage Industries Corporation
BSMSN	Bangabandhu Sheikh Mujib Shilpa Nagar
BTCL	Bangladesh Telecommunications Company Limited
BWDB	Bangladesh Water Development Board
CCCI	Chittagong Chamber Commerce and Industry
CDMP	Comprehensive Disaster Management Programme
CEGIS	Centre for Environment and Geographic Information System
CETP	Common Effluent Treatment Plant
CPA	Chittagong Port Authority
DDM	Department of Disaster Management
DGHS	Directorate General of Health Services
DGM	Deputy General Manager
DIFE	Department of Inspection for Factories and Establishments
DoE	Department of Environment
ECR	Environment Conservation Rules
ED	Executive Director
EOC	Emergency Operation Centre
EPZ	Export Processing Zone
ESCP	Environmental and Social Commitment Plan



ESRM	Environmental and Social Risk Management
ETP	Effluent Treatment Plant
EZ	Economic Zone
FBCCI	Federation of Bangladesh Chambers of Commerce and Industry
FCDO	Foreign, Commonwealth and Development Office
FGD	Focal Group Discussion
FMEA	Failure Mode and Effects Analysis
FRF	Fire Risk Factor
FSCD	Fire Service and Civil Defense
GDP	Gross Domestic Product
GIS	Geographic Information System
GM	General Manager
GoB	Government of Bangladesh
GPS	Government Primary School
GREZ	Green Economic Zone Guideline
GSB	Geological Survey of Bangladesh
HFA	Hyogo Framework of Action
HR	Human Resources
ICS	Incident Command Systems
ICT	Information and Communication Technology
ILO	International Labour Organization
IPCC	International Panel on Climate Change
ISO	International Organization for Standardization
IT	Information Technology
IWM	Institute of Water Modeling
JICA	Japan International Cooperation Agency
KEPZ	Karnaphuli Export Processing Zone
KGDCL	Karnaphuli Gas Distribution Company Limited
KII	Key Informant Interview
LDRRF	Local Disaster Risk Reduction Firm
LED	Light Emitting Diode
LGED	Local Government Engineering Department
LPG	Liquid Petroleum Gas
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MIEZ	Meghna Industrial Economic Zone
MIS	Management Information System
NBR	National Board of Revenue
NGO	Non-Government Organization



NRP	National Resilience Programme
OC	Officer-in-Charge
PGCB	Power Grid Company Bangladesh
PP	Perspective Plan
RHD	Roads and Highways Department
RMG	Readymade Garment
RPCL	Rural Power Company Limited
S&R	Search and Rescue
SDG	Sustainable Development Goals
SE	Superintending Engineer
SFDRR	Sendai Framework for Disaster Risk Reduction
SIDA	Swedish International Development Cooperation Agency
SME	Small and Medium-Sized Enterprises
SODIS	Solar Disinfection
SOP	Standard Operation Procedure
SPARSO	Space Research and Remote Sensing Organization
SRO	Statutory Regulatory Order
SWOT	Strength, Weakness, Opportunity, and Threat
TTX	Tabletop Exercise
UDD	Urban Development Directorate
UK	United Kingdom
UMIC	Upper-Middle-Income Country
UN	United Nations
UNDP	United Nations Development Programme
UNO	Upazila Nirbahi Officer
WHO	World Health Organization
XEN	Executive Engineer

## EXECUTIVE SUMMARY

National Resilience Programme (NRP) is a joint programme being implemented by four GoB agencies—Department of Disaster Management (DDM), Programming Division of Bangladesh Planning Commission, Department of Women’s Affairs, and Local Government Engineering Department (LGED). FCDO (UK), SIDA (Sweden), and the Government of Bangladesh provided financial support. The NRP-Programming Division Part Project is designed to contribute to the institutionalization of disaster and climate risk screening in the planning process, promote resilience in public and private sector investment and enhance the knowledge base on disaster resilience among the business community. As part of NRP efforts to promote resilience in business, developing guidelines and piloting multi-hazard Business Continuity Plans (BCP) in economic zones and industries is identified as one of the key interventions.

The NRP undertook the assignment of developing guideline and piloting multi-hazard Business Continuity Plans (BCP) for economic zones under Bangladesh Economic Zones Authority (BEZA) and piloting in two designated economic zones, namely, Bangabandhu Sheikh Mujib Shilpa Nagar (BSMSN) and Meghna Industrial Economic Zone (MIEZ). BEZA through an office order constituted an eight-member Technical Committee on BCP to monitor the assignment.

The consultants conducted a thorough literature review of the best practices around the world, all relevant standards, laws, and regulations. They collected an enormous amount of data and literature from the concerned authorities. A stakeholder mapping was conducted and a total of 13 categories of stakeholders were identified. 14 meetings were held, three workshops were organized, and four visits were made to the sites to prepare the BCP. Finally, based on ISO 22301: 2019 a BCP framework was customized for the economic zones of BEZA.

Two versions of the BCP framework were prepared: one for the Area level BCP applicable for an economic zone and another Enterprise level BCP applicable to an individual factory/plant within an economic zone. The area BCP framework was applied to the BSMSN and MIEZ and the enterprise level BCP framework was applied to the Meghna Beverage Limited. Finally, both the frameworks were piloted at MIEZ on 22 September 2022 for an earthquake scenario with secondary fire and liquefaction disasters.

A seven-step approach was followed to prepare the BCP framework: i) Data collection, ii) Defining objectives, iii) Risk assessment iv) Business impact assessment v) Developing scenarios vi) Developing strategies and vii) Business Continuity Plan. The BCP framework itself is composed of six phases: i) Understand, ii) Analyze, iii) Design, iv) Plan, v) Implement and vi) Monitor. The scope of the BCP is proposed to provide plans for continuity of critical operations of the economic zone authority in case of a natural or man-made disaster so that the down time of operations of the

enterprises within the economic zone is minimum and the entire system returns to its normal operation level within a reasonable time frame.

An emphasis has been given to create a regulatory compulsion for enforcement of BCP through an appropriate policy to be adopted by BEZA. Separate organograms have been proposed for economic zones and enterprises to implement BCP. A cluster-based approach has been proposed for response and recovery. 15 types of strategies have been listed which can be adopted for different scenarios. A set of templates and checklists for business impact analysis and business continuity management systems with monitoring mechanisms have been proposed for regular updating of the BCP.

BEZA is expected to take the initiative to apply the developed BCP framework to all of its economic zones and the enterprises within them, gradually, with a long-term plan, and to have a legally binding provision to have BCPs in place at all its zones and enterprises therein in the near future. The BCP framework can be integrated with the Management Information System of BEZA. It is recommended for BEZA to have a plan for its human capital development with the appropriate expertise and domain knowledge to meet the future requirements, and in the short-term, it can recruit dedicated human resources who will have the capacity to develop BCPs for zones and enterprises. BEZA can consider offering the technical services for developing BCPs in exchange for a reasonable fee for the enterprises. BEZA is urged to consider setting up financial arrangements, such as, Trust Funds, Emergency/Contingency Funds, in addition to adapting the variations of Workers' Welfare Funds, and introduction of incentive mechanisms, i.e., reduced tariffs for utility services, for the investors.

Risk profiles of the economic zones should be developed along with business impacts. Contingency plans should be developed for emergency response and recovery. An Incident Command System should be set in place in all economic zones with an Emergency Operation Center (EOC). The EOC should be equipped with an emergency communications system for warning and announcement. Mechanisms to enforce building construction rules should be established. Multimodal transport system with alternate routes for disaster scenarios should be developed. A hospital for each zone should be equipped with a burn unit and other facilities to treat health hazards that commonly occur in industrial areas. The hospitals should have sufficient preparation for Covid-19 like pandemics. An area wide lightning protection system should be designed for economic zones with a sufficient number of lightning arrestors at suitable locations. There should be a coordination committee at the economic zones participated by all the investors so that the investors can be apprised of risks caused by different factories and a combined plan of action can be developed. BEZA should organize regular drills, exercises, training, and awareness programs for different hazard scenarios.

A piloting exercise was conducted at MIEZ on 22 September 2022. The main objective of the piloting was to test the level of understanding of the BCP framework at the area and enterprise levels and implement ability of the framework during a time of disaster. An earthquake scenario with secondary fire and liquefaction incidences was selected as the scenario for piloting. The participants

engaged in a Tabletop Exercise (TTX) where they simulated the instructions that are supposed to be delivered during an actual disaster situation. After the TTX, field exercises were conducted for firefighting, route selection for vehicles, evacuation, assembly, medical services etc. Finally, feedback was received from the MIEZ Authority. The Executive Director (Technical) of the Meghna Group of Industries made suggestions to make changes in the chain of command for more efficient emergency response. During piloting it was felt that there is a need for a central evacuation center at the economic zone level and a shelter where people may have to stay for days or even longer durations in case of an earthquake. Comments received from the feedback of the piloting exercise were incorporated in the BCP.

It has been noted that preparing an actual BCP for a large industrial zone like BSMSN will require considerable resources, and such an initiative can be taken, at least for selected zones, such as Zones 2 A, and 2B of the BSMSN, and further studies can be initiated to assess the viability of various innovative financing mechanism for supporting business recovery and emergency expenses, in the next phase of activities under the NRP.



# CHAPTER 1 INTRODUCTION

## 1.1 General

Bangladesh has made significant progress in disaster risk management, but the country is still at risk of growing loss and damage due to disasters and climate stresses. The evidence shows that the current and likely future impacts of disasters and climatic stresses on the economy, livelihoods, and assets of the country have been pointedly increased in the past decades. However, the country has earned a global reputation in many areas of the Millennium Development Goals (MDGs) and Hyogo Framework of Action (HFA), and currently, the development agenda is highly focused on achieving the Sustainable Development Goals (SDGs), Paris Climate Agreement, and Sendai Framework for Disaster Risk Reduction (SFDRR).

National Resilience Programme (NRP) is a joint programme being implemented by four Government agencies—Department of Disaster Management (DMD), Programming Division of Bangladesh Planning Commission, Department of Women’s Affairs, and Local Government Engineering Department (LGED). Foreign, Commonwealth & Development Office (FCDO, UK), Swedish International Development Cooperation Agency (SIDA), and the Government of Bangladesh provided financial support. The main goals of NRP are to contribute to sustainable economic growth through risk-informed development, assist resilience efforts in the community, and make development planning gender-responsive and inclusive. The NRP-Programming Division Part Project is designed to contribute to the institutionalization of disaster and climate risk screening in the planning process, promote resilience in public and private sector investment and enhance the knowledge base on disaster resilience among the business community. The NRP also considers emerging issues such as pandemics as a component of resilience, and human-induced hazard mitigation is emphasized to minimize economic loss.

As part of NRP efforts to promote resilience in business, developing guidelines and piloting multi-hazard Business Continuity Plans (BCP) in economic zones and industries is identified as one of the key interventions. Considering the significant contribution of Economic Zones (EZs) to the Bangladesh economy, managed by the Bangladesh Economic Zones Authority (BEZA) under the Prime Minister’s Office, the NRP worked with BEZA to develop guidelines for area BCP in two designated economic zones (i.e., Bangabandhu Sheikh Mujib Shilpa Nagar (BSMSN) and Meghna Industrial Economic Zone (MIEZ)).

## 1.2 Rationale of the Study

By 2031, Bangladesh will have a middle-income status. Bangladesh must overcome many obstacles in order to acquire this position. One of these problems that is crucial to overcome is resilience in the face of disasters. In the public sector, the government has already begun to work on disaster

management. Thought must also be given to the private sector. The continuation of progress cannot be guaranteed without the private sector developing resilience. Private businesses should have a strategy in place to retain their adaptability so that operations are not affected. They frequently participate in various industrial zones and take advantage of their amenities. The BCP for that zone won't work if these private businesses operate without BCP. Two particular BEZA zones have been picked for this study's BCP implementation experiment. There will be enterprise-level BCP in one zone and area-wide BCP in both zones.

### **1.3 Objective of the Study**

The broad objective of the Study is to develop a general framework of Business Continuity Plan (BCP) for Bangladesh Economic Zones Authority based on widely accepted methodological approach and standards, in the context of relevant risks associated with selected zones, BSMSN, and MIEZ.

#### **1.3.1 Specific Objectives**

Specific objectives of the Study are as follows:

- a) Identify appropriate methodological elements, standard analytical and technical tools, checklists, and reporting formats to be adopted based on internationally accepted norms practices, and guidelines (e.g., those of ISO, GREZ, etc.) for developing the BCP Framework for adaptation and management of the same by BEZA, and the zones and enterprises thereunder.
- b) Develop risk assessment matrices and tools based on risk perception and history of risk occurrence in the targeted areas of BSMSN, and MIEZ.
- c) Identify the critical elements of infrastructure, utility and services, and business functions that are likely to be disrupted at different levels in case of a hazard incident occurs, and then develop standard tools and templates to assess the business impact of such disruptions, followed by measures to be taken for back-to-business-as-usual at the zone and enterprise levels.
- d) Preparation of checklists for assessing the preparedness of the targeted zones in line with the existing Regulatory and Policy Frameworks and international practices and review the environmental and social elements to be critically affected in case of hazard occurrence at the targeted zones.
- e) Assess the process flow and operations of the selected enterprise operating within the broad parameters of infrastructure, utility and services provided by the economic zone, identify the hazards specific to the operations and process flow of the enterprise, and develop framework and tools for reducing the enterprise level risks; and
- f) Provide strategic recommendations for BEZA for its institutional capacity building in managing and implementing BCPs in terms of management structure, human capital, services, and financial arrangements.



## 1.4 Scops of works

The scope of the present assignment includes preparation of area-level BCP frameworks for two economic zones of BEZA i.e., Bangabandhu Sheikh Mujib Shilpa Nagar and Meghna Industrial Economic Zone and enterprise level BCP framework for one of the enterprises of Meghna Industrial Economic Zone, namely, Meghna Beverage Limited. These frameworks will serve as a model for BCPs for other areas or enterprises. For this template, a thorough risk mapping has been conducted. Information from secondary sources has been used for risk assessment. To prepare individual BCPs in future, a thorough disaster risk profiling will be necessary for the areas. A thorough investigation of supply chain resilience will also be-needed for the enterprises. The primary studies for risk profiling and supply-chain resilience is outside the scope of this article. In this study action plans for few selected risks are provided. Based on a detailed risk profiling a complete action plan can be developed in future. The present study will be a reference template for future detailed BCPs.

## 1.5 Organization of the Report

This report is organized in ten chapters. Chapter 1 provides a background of the study, its objectives, identification of the team of experts and the Technical Committee formed by BEZA for assessing the merits of the key deliverables and timeline of approval thereof, the key deliverables, the organization, or the sequence of contents of the report, and limitations. Chapter 2 covers the literature review part, which is in essence a part of the methodology followed but has been put in a separate chapter to underscore the due importance of the policy and regulatory issues discussed in this chapter. Chapter 2 also highlights some of the international and regional best practices in developing and implementing area BCPs and some contemporary guidelines and standards of risk management and recovery that have been reviewed for the study.

Chapter 3 covers the methodology followed to perform the activities inclusive of collection of primary and secondary information, designs and maps, stakeholders' views, case studies, best practices, tools and templates, and standards related to environmental, social, and risk management issues. Chapter 3 also highlights the summary of meetings, workshops, and visits that were carried out for stakeholder engagement and data collection. This chapter also lists the documents collected from BEZA and various other organizations and how the information was used. Chapter 4 proposes various general frameworks, templates, checklists, and analytical tools and formats for Business Continuity Plan (BCP), which are required for an end-to-end management of risks and hazards - risk assessment and mapping, establish redundancy and risk management targets, preparedness, risk minimization measures, protocols for emergency response and recovery, relief and rescue, exercises and drills, assessment of business impact, and measures for back-to-business-as-usual - for the area and enterprise level BCPs.

Specific protocols for the BCP Frameworks for BSMSN and MIEZ are presented in chapters 5 and 6 respectively, considering the geo-physical and socio-environmental parameters, and industry specifications of these two areas. Chapter 7 presents the enterprise level BCP for Meghna Beverage Limited. A piloting exercise was conducted at Meghna Beverage Limited, located in MIEZ on 22 September 2022. A detailed description of the piloting is provided in Chapter 8. Chapter 9 provides conclusions and recommendations in four tiers - the strategic policy options, then general recommendations, followed by specific recommendations for BSMSN, MIEZ, and Meghna Beverage Limited, respectively. Chapter 10, titled Way Forward, outlines the required steps, and important issues that could not be addressed or covered in this report, but are expected to be taken up in the near future in order to effectively implement BCPs at BEZA, the zones and enterprises therein. Citations of all references are appended at the end of the report.

## **1.6 Limitations**

One major limitation faced was unavailability of adequate data, particularly the various survey data, maps, and risk assessments done by various organizations and consulting firms, for BEZA and other public agencies. Even if the data were available, they were often not shared with the BEZA authority or the team of experts in a timely manner. Multi-industry area BCPs are rare in the world, if there are any at all, and this made the whole task of developing a BCP Framework for a large industrial zone like BSMSN a challenging task. Some of the major stakeholders, or their appropriate representatives could not be reached due to lack of coordination. Another major limitation of the assignment is absence of benchmark and empirical precedence of such BCPs in Bangladesh. In essence, this report is a Framework for BCP only, but not the real BCP which can be tangible implemented in the economic zones and enterprises. This abstract level nature of the framework makes it difficult to communicate, demonstrate, understand, for decision making. However, it will be reasonable to expect that such limitations can be overcome once actual BCPs are formulated and a clear pathway for financing the recovery and emergency costs can be established, as suggested in the 'Way Forward' chapter for the activities in the next phase of interventions under the NRP.

# CHAPTER 2 LITERATURE REVIEW

## 2.1 Understanding Business Continuity Plan (BCP)

An enterprise or organization can face a wide range of crises. Among those crises could be physical crises (like accidents, production system failure, loss of utilities), personnel crises (illness of large-scale staff or death), criminal activity both (internal or external), criminal crises (terrorism) and, information crises (cybercrime or information theft), natural disasters (flood, earthquake, cyclone, storm surges), economic crises (economic recession), and reputational crises such as internet defacement or malicious rumors (Mitroff & Alpaslan, 2003)<sup>1</sup>. The BCP definition has been clearly stated by International Organization for Standardization (ISO)-22301<sup>2</sup>:

*“A Business continuity plan (BCP) is documented information that guides an organization (such as an EZ management entity, utility operators, tenant firms, etc.) to respond to a disruption and resume, recover, and restore operations and the delivery of products and services consistent with its business continuity objectives.”*

[ISO (International Organization for Standardization), “ISO 22301:2019(en)"]

The procedure an organization flows in order to manage these crises within a plan to continue business is the outcome of business continuity management (BCM).

The British Standards Institution, 2006, p. 1<sup>3</sup> defined BCM as:

*“Holistic management process that identifies potential threats to an organization and the impacts to business operations that those threats, if realized, might cause, and which provides a framework for building organizational resilience with the capability for an effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities.”*

Early in the 1970s, business continuity planning became widely accepted as a way for businesses to complement their contingency and disaster recovery plans in the face of technical and operational risks that could jeopardize their ability to recover from hazards and interruptions (Brahim 2010)<sup>4</sup>. Initially, the BCP was developed from disaster recovery planning to protect financial organizations (banks and insurance companies). In addition, BCP aims to protect organizations by using them to store pack-up tapes to reduce the loss generated by any threat. Later, the major emphasis of BCPs was only on IT recovery, and most recently, the companies realized the importance of a business

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<sup>1</sup> Mitroff, I.I., & Alpaslan, M.C. (2003). Preparing for evil. *Harvard Business Review*, 81(4), 109– 115.

<sup>2</sup> ISO (International Organization for Standardization), “ISO 22301:2019(en) Security and Resilience—Business Continuity Management Systems.

<sup>3</sup> British Standards Institution. (2006). BS 25999-1 Code of practice for business continuity management. London: British Standards Institution.

<sup>4</sup> Herbane, Brahim. (2010). The Evolution of Business Continuity Management: A Historical Review of Practices and Drivers. *Business History*. 52. 978-1002. 10.1080/00076791.2010.511185.



continuity plan as they might lose customers and their competitive advantage without it. BCPs are more important for any type of business to fight the loss of revenue and higher costs caused by threats and disruptions, which lead to a drop in profitability<sup>5</sup>. The primary objective of a BCP is to ensure an organization's capacity to resume its operational effectiveness within a specific period after the onset of a disaster or other disrupting event.

## 2.2 Review of National Policy & Regulatory Framework on Management of Industrial Accidents and Business Risks

According to a report published by the Department of Disaster Management<sup>6</sup> of Bangladesh, at present the economic cost of disaster is 10 times higher in Bangladesh compared to the year of 1970 and ranging from 0.8 to 1.1% of the country's GDP. The incremental economic cost is due to increase in the population density and rapid urbanization, coupled with unplanned infrastructure development, according to the experts. However, the cost of all disasters was not considered while calculating the economic costs but has been based on only 7 major events. The Disaster Management Department (DMD) reported that the Heavy floods in 1987, 1988, 1998, 2004, and 2007 caused Bangladesh an economic loss of \$8.4 billion; and cyclones Sidr in 2007 and Aila in 2009 caused \$3.2 billion in losses. That brings the total losses and damages to \$11.6 billion in that time period of 22 years spanning from 1987 to 2009. If the cost of other disasters, such as other cyclones or floods (*191 such events during 1991-2018 period as reported in the **Global Climate Risk Index 2020***) were recorded, the economic cost would have stood at a much higher figure.

The mid-term **Delta Plan 2050** of Bangladesh specifically mentions some disaster risk scenario<sup>7</sup>, such as, water level surges due to cyclones and storms are projected to rise up to 1 to 3 meters, which are 14% to 69% higher than the current base line. It also mentions the 2013 Report from the Intergovernmental Panel on Climate Change (IPCC) that the sea level at the Bay of Bengal is projected to rise from 0.2 meters to 1.0 meter for low to high carbon emission scenario by the year 2100, and the temperature could rise by up to 2 degree Celsius by the year 2050, resulting in more of glacier melts in the Himalayas and consequent flooding of the Ganges plains, combined with increased silting of the river beds and reduced navigability. The mid-term **Delta Plan 2050** also mentions the projected estimates mentioned in IPCC-AR5 Report<sup>8</sup> the about increased salinity intrusion by up to 5 PPT in 24% of land territory in Bangladesh, adding a dimension of vulnerability and corrosion to the transport and connectivity infrastructure required for efficient supply chain.

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<sup>5</sup> <https://quodeckspeak.com/2020/07/14/what-is-bcp-and-why-do-you-need-one/>

<sup>6</sup> <https://www.dhakatribune.com/opinion/special/2018/11/17/little-knowledge-on-assessing-disaster-related-losses-a-bar-to-demand-compensation>.

<sup>7</sup> Source: GED Presentation, Ministry of Planning, Bangladesh, January 2019; [https://www.gwp.org/globalassets/global/gwp-sas\\_images/gwp-sas-in-action/ldai/bdp-2100-ppt.pdf](https://www.gwp.org/globalassets/global/gwp-sas_images/gwp-sas-in-action/ldai/bdp-2100-ppt.pdf)

<sup>8</sup> The 5th Assessment Report 2014, Intergovernmental Panel on Climate Change, United Nations; <https://www.ipcc.ch/report/ar5/syr/>

At the same time, not enough is being done at the policy and private sector levels to protect Bangladesh's economic growth from these natural disasters. As with any form of disruption, climate change and other natural hazards are creating and will continue to create risks and opportunities for business in a diverse number of ways. Bangladesh is yet to catch up with an increased global level of awareness on the risks and opportunities for businesses emerging from climate change and other natural hazards, as pointed out by World Economic Forum Global Risk Report 2019<sup>9</sup>. There is a need for realizing that climate change and natural disaster risks are not some projected phenomena, but are rather affecting the businesses here and now, as reflected in the first annual risk report published in 2018 by **Resilience360 Annual Risk Report**<sup>10</sup> by DHL, stating that natural disasters as one of the main disruptive events affected the global supply chain. The Resilience360 Annual Risk Report further elaborates the global and regional risk factors faced in 2018 by categories and frequency of occurrence. For Asia and the Pacific, 11.7% of the supply chain risks occurred from natural disasters, while 17.6% occurred due to disruptions in the ground transportation systems due to reasons other than natural disasters, 12.6% due to civil unrest, and 11.8% due to fire accidents.

### 2.2.1 The Disaster Management Act 2012

The Disaster Management Act 2012 of Bangladesh is the umbrella law in Bangladesh to deal with the disaster situations and manage the exigencies that come with them. This allows room for benefitting from the jurisdiction of this law to **develop disaster resilient infrastructure, including transport and shipping infrastructure, i.e., highways, bridges, railways, waterways, ports, warehouses, and storage depots**, etc. This scope is reflected in its preamble, categorically mentions its purpose - *“to make the activities about disaster management coordinated, object oriented and strengthened and to formulate rules to build up infrastructure of effective disaster management to fight all types of disaster.”*

For implementation and coordination, this law prescribes forming a number of Committees at various policy and functional levels. Many of these prescribed committees are required to have representation from ministries and agencies relevant to the supply chain. For example, representation from the ministries of shipping and ports, railways, communications, etc., and key agencies, such as, Roads and Highways Division, Local Government Engineering Division, etc. are specifically mentioned in the structures of these committees. This leaves the opportunity to address the strategic needs to address disaster resilient utility services, logistics management, and supply chain related to economic zones and industrial clusters under the aegis of the **Disaster Management Act 2012** of Bangladesh.

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<sup>9</sup> [http://www3.weforum.org/docs/WEF\\_Global\\_Risks\\_Report\\_2019.pdf](http://www3.weforum.org/docs/WEF_Global_Risks_Report_2019.pdf)

<sup>10</sup> [https://www.resilience360.dhl.com/wp-content/uploads/2019/03/Resilience360\\_Annual-Risk-Report-2018.pdf](https://www.resilience360.dhl.com/wp-content/uploads/2019/03/Resilience360_Annual-Risk-Report-2018.pdf)

### **2.2.2 The 8th Five Year Plan**

Under the 8th Five Year Plan, the Disaster Management Act of 2012 will be institutionalized and implemented to achieve adequate decentralization and accountability for delivery. The 8th FYP also underscores mobilizing adequate national resources to finance risk reduction and enable appropriate allocation of resources for disaster resilience through local and national level mechanisms.

### **2.2.3 Bangladesh Delta Plan 2100 (BDP 2100)**

Bangladesh Delta Plan 2100 (BDP 2100) was approved by the government on September 04, 2018, with the objective of ‘achieving Safe, Climate Resilient and Prosperous Delta’. The BDP 2100 is the plan for the next 100 years and is the “the combination of long-term strategies and subsequent interventions for ensuring long term water and food security, economic growth and environmental sustainability while effectively reducing vulnerability to natural disasters and building resilience to climate change and other delta challenges through robust, adaptive and integrated strategies, and equitable water governance.” BDP 2100 considers the following two options: (i) business as usual policy option (without BDP2100); and (ii) Delta Plan policy option incorporates the adoption of strong climate change and other delta-related measures. Under the first option, it was expected that, “the GDP growth rate starts to fall over time, efficiency of capital falls resulting in lower agricultural production, unemployment, migration and pressure on urbanization.” The second policy option “will allow the country to achieve national level goals of eradicating extreme poverty, gain the status of UMIC by 2030 and also secure being a prosperous country by 2041.” The Perspective Plan (2021-2041) coincides with the Bangladesh Delta Plan, in terms of planning period, in which they share 20-year implementation period. They also share some common visions and goals “to create an ‘Environmentally Sustainable and a Climate Resilient Delta Nation’.”

### **2.2.4 Vision 2041 and Perspective Plan (2021 - 2041)**

In the year 2008, Vision 2021 was declared by the government, which showed goals and strategies together with a framework for natural and human resource mobilization to achieve those goals. Perspective Plan (2010-2021) was prepared based on the framework set by Vision 2021. The Perspective Plan was scheduled to be implemented through the Sixth Five Year Plan (2011-2015) and the Seventh Five Year Plan (2016-2020). Key objective of this plan was to develop the country from a low-income economy to the first stage of a middle-income economy by 2021. By 2010, the Lower-Middle-Income-Country status has already been attained, which gave rise to the need for a new Perspective Plan to be implemented from 2022 to 2041, which has taken the Vision 2041 as its base. The Perspective Plan (PP 2022-2041) in its Chapter 12, page 199 specifically mentions one vision, “The country is equipped to respond fully and quickly to any incidence of natural disaster”.



### 2.2.5 National Plan for Disaster Management (2021-2025)

The latest iteration of the National Plan for Disaster Management<sup>11</sup> was published in November 2020 by the Ministry of Disaster Management and Relief. This document underscores the need for increased need for inter-agency coordination involved in disaster management and defines a new outline for risk categorization. The broad risk categorization comprises Natural Hazards, Climate Dynamics, Human Induced Risks, and Biological Hazards, in addition to various social risks are identified in this document in pages 29 through 35. This document also emphasizes on shifting to risk-informed planning in future, which requires assessing the risks before planning to develop and design infrastructure, cities, factories, building, roads, etc.

### 2.2.6 Environment and Social Risk Guideline of Bangladesh Bank

Bangladesh Bank issued a set of *Guidelines on Environmental & Social Risk Management (ESRM) for Banks and Financial Institutions in Bangladesh*,<sup>12</sup> in February 2017. In this set of guidelines, the various levels of risks and vis-a-vis credit and business risks are identified, and steps for identification and corrective actions are suggested for the banks and financial institutions to follow. Besides, Bangladesh Bank has a set of guidelines published in May 2015 for ICT security for banks and financial institutions.<sup>13</sup>

Some other relevant Laws, Policy and Acts are summarized in Table 2.1.

**Table 2.1: Summary of Applicable Laws, Policies and Acts**

Summary of Applicable Legislation	Applicability/ Relevance
<p><b>The Constitution of People’s Republic of Bangladesh (15<sup>th</sup> Amendment)</b> The State shall endeavor to protect and improve the environment and to preserve and safeguard the natural resources, biodiversity, wetlands, forests, and wildlife for the present and future citizens.</p>	<p>The BEZA will adopt the BCP to perform, protect and improve environment, biodiversity of the EZs, for its investors and surrounding community.</p>
<p><b>BEZA Act 2010</b> The act spells out the Government Bangladesh’s commitment to ensure environmental protection while pursuing industrial development. For example, BEZA is mandated to:</p> <ol style="list-style-type: none"> <li>i. Ensure infrastructure development of economic zones within specified period through monitoring activities of its own and of economic zone developers.</li> <li>ii. Ensure efficient use of land in the light of clustering principles by dividing the land based on infrastructure and on availability of local resources to provide a conducive environment and facilities within economic zones.</li> <li>iii. Encourage more efficient management and monitor programmers for implementing commitments on environment and other matters.</li> </ol>	<p>Formulation and Implementation of BCP will help BEZA to comply BEZA Act 2010.</p>

<sup>11</sup>[https://modmr.portal.gov.bd/sites/default/files/files/modmr.portal.gov.bd/page/a7c2b9e1\\_6c9d\\_4ecf\\_bb53\\_ec74653e6d05/NPDM%202021-2025%20Draft.pdf](https://modmr.portal.gov.bd/sites/default/files/files/modmr.portal.gov.bd/page/a7c2b9e1_6c9d_4ecf_bb53_ec74653e6d05/NPDM%202021-2025%20Draft.pdf)

<sup>12</sup> [https://www.bb.org.bd/aboutus/regulationguideline/esrm\\_guideline\\_feb2017.pdf](https://www.bb.org.bd/aboutus/regulationguideline/esrm_guideline_feb2017.pdf)

<sup>13</sup> [https://www.bb.org.bd/aboutus/regulationguideline/brpd/guideline\\_v3\\_ict.pdf](https://www.bb.org.bd/aboutus/regulationguideline/brpd/guideline_v3_ict.pdf)

Summary of Applicable Legislation	Applicability/ Relevance
<ul style="list-style-type: none"> <li>iv. Power to exempt application of all or any of the provision of all or certain laws (Explosives Act, 1899, Electricity Act 1910, Boilers Act, 1923, Building Construction Act, 1952, Bangladesh Labour Act, 2006 etc.)</li> <li>v. The Authority (BEZA), economic zone developers, industrial units established in the EZs, financial and business institutions shall be bound to comply with international commitments recognized by the Government of Bangladesh including compliance to all the existing laws on environment and environmental protection.</li> <li>vi. Provisions of the existing laws on EPZ Workers Welfare Association and Industrial Relations, with necessary modification, be applicable to workers of the Special Economic Zones established under this Act.</li> </ul>	
<p><b>Bangladesh Economic Zones (Workers Welfare Fund) Policies, 2017 (S.R.O. No. 339-Law/2017)</b></p> <p><b>Creation of fund:</b></p> <ul style="list-style-type: none"> <li>i. The Authority shall create the Bangladesh Economic Zone Workers Welfare Fund for ensuring the welfare of economic zone workers.</li> <li>ii. The Fund shall comprise of the subscription contributed by the enterprise.</li> <li>iii. The enterprise shall contribute to the Fund according to the subscription bill.</li> </ul> <p><b>Use of fund</b></p> <ul style="list-style-type: none"> <li>i. Administrative cost for security management including setting up of digital security system in economic zone.</li> <li>ii. Information, education and communication campaign, social awareness campaign and training program for economic zone workers; and</li> <li>iii. Taking up any other welfare measures for moral uplift, life skill and occupational training, safety, and social empowerment of the economic zone workers.</li> </ul>	<p>This Workers Welfare Fund creation policies will support BEZA implementing BCP through capacity building training programs (for BEZA, EZs and enterprises). In addition, this fund will help EZs setting up digital security system.</p>
<p><b>Bangladesh Economic Zones (Construction of Building) Rules, 2017 (S.R.O No. 46-Law/2017)</b></p> <ul style="list-style-type: none"> <li>(i) <b>Amenities:</b> based on surrounding infrastructure, settlements density, nature and character, the economic zone shall comprise of different zones like administrative, utility service (water, gas, electricity, internet, telecommunication), healthcare, childcare, hospital, fire station, police station, CETP, education, restaurants, hotels with essential accommodations, along with industrial plots and road networks.</li> <li>(ii) <b>Provision of open space:</b> in dividing any land measuring a total of 1 (one) hectare or more into industrial plots, 5% of the total land area shall be reserved as amenity open space which shall be used as lawn, park, play field or garden. The minimum size of such open space shall be 600 sqm.</li> <li>(iii) <b>Plot size:</b> The plot size shall be as per types of economic zone, generally minimum 4000 sqm per plot.</li> <li>(iv) <b>Access to the site:</b> The development of the site shall be designed to enable vehicles to exit the site in a forward direction. If the area of the site is more than 1.0 hectare, there shall be provision for all vehicles to enter and leave the site in a forward direction.</li> <li>(v) <b>Drainage, waste management:</b> EZs should have a master plan of the drainage and sanitary system for the entire zone showing slopes, retention areas and ultimate discharge point. EZs should have CETP, SET for each individual plots, waste management CETP.</li> <li>(vi) <b>Fire appliances access requirements:</b> every economic zone shall have fire zone as per BNBC; Furthermore, adequate fire brigade stations shall be provided according to the size of the economic zone. Each industrial plot shall be provided with vehicular access roads.</li> </ul>	<p>Applicable in BCP planning, implementation, and monitoring.</p>

Summary of Applicable Legislation	Applicability/ Relevance
<p>(vii) <b>Community open space for industrial plots:</b> industrial plot having an area of 1.0 hectare or more, a minimum of 10% of the total area, but not exceeding 0.25 hectare for shall be reserved as community open space.</p> <p>(viii) <b>Energy management:</b> The developer and the unit investor may use renewable energy and at least one percent of total requirement shall be consumed from online solar system. The best Practice' Option shall be preferred by using high efficiency light systems (e.g., T5, Tri phosphor Fluorescent, LED).</p> <p>(ix) <b>Rainwater</b> harvesting: The plot shall incorporate a rainwater harvesting system designed to capture roof run off from a minimum of 200 sqm (or 50% of the available roof catchment area for roof areas less than 400sqm) during regular rainfall events. The collected rainwater shall be plumbed to supply a seasonally independent water use e.g., toilet flushing.</p> <p>(x) <b>Applicability of BNBC:</b> The BNBC shall be applicable for other issues not mentioned in the preceding rules, such as architectural, structure, plumbing, electrical, mechanical, fire, etc.</p>	
<p><b>Environmental Conservation Act, 1995 and Environment Conservation Rules, 1997</b> According to Rule 7 of the ECR, proposed developments within Bangladesh are classified as one of four categories, as follows:</p> <ul style="list-style-type: none"> <li>○ Green.</li> <li>○ Orange A.</li> <li>○ Orange B; and</li> <li>○ Red</li> </ul> <p>These categories define proposed developments according to their potential environmental impact. Section 12 of the ECA states that 'No industrial unit or project shall be established or undertaken without obtaining an Environmental Clearance Certificate from the Director General, in the manner prescribed by the Rules'.</p> <p>Mandatory requirement of prior environment clearance for certain category of project for conservation and improvement of environment and control and mitigation of pollution of the environment. Standards are described under ECR, 1997</p> <p>To ascertain responsibility for compensation in case of damage to ecosystem.</p> <p>Restriction on polluting automobiles, sale, and production of environmental harmful items.</p>	<p>Areas EZs and entities should comply ECA, 1995 and ECR, 1997 to protect environmental components from different sources of pollutions that may occur due to accidental release or failures of process during an emergency.</p>
<p><b>The Noise Pollution Control Rules, 2006</b> The Noise Pollution Control Rules have been established to manage noise-generating activities which have the potential to impact the health and wellbeing of workers and the surrounding communities.</p>	<p>Applicable for BCP since minor to moderate noise emission is expected from industries during any accidents or disaster arise.</p>
<p><b>Environment Court Act, 2010</b> To give high priority to environment Pollution prevention.</p>	<p>Applicable since all projects and enterprises have potential environmental impact.</p>
<p><b>Air Pollution Control Rules 2021 (Draft)</b> This rule established emission standards for carbon monoxide, hydrocarbon, oxides of nitrogen, and particulate matter for both petrol and diesel operated engines. Moreover, the rules set separate emission standards for new and in-use vehicles. Since this rule contain the most updated emission standard and measuring instructions in the country, it will be used as governing rules for vehicular pollution control once the rules is finalized.</p>	<p>Applicable for BCP because minor to moderate noise emissions from industries are expected during any accidents, or accidental release of hazardous chemicals/flumes or disasters.</p>
<p><b>Water Resource Planning Act, 1992</b> This act has been enacted to develop water resources and to ensure efficient use of this resource. This act focuses on establishing an institution named Water Resource</p>	<p>Applicable, because BCP implementation and monitoring should ensure</p>

Summary of Applicable Legislation	Applicability/ Relevance
<p>Planning Institution, the location of its office, Scheduled work, Organogram of the director bodies, etc.</p>	<p>that water resources in various EZs are used in a sustainable manner.</p>
<p><b>National Water Management Plan, 2001 (Approved in 2004)</b>  <b>The objectives of the Plan are listed below:</b></p> <ul style="list-style-type: none"> <li>• To operationalize directives given in National Water Policy and to do by the Government approved Development Strategy.</li> <li>• To address issues related to harnessing and development of all forms of surface and groundwater and management of these resources efficiently and equitably.</li> <li>• Consultation and participation with the direct beneficiaries in the handover and development of water schemes.</li> </ul>	<p>Applicable, because area EZs and entities should comply this plan to protect surface and ground water.</p>
<p><b>Water Supply and Sewerage Authority Act, 1996</b>  Laws made for the establishment of authorities for making provision for the construction, development, expansion, management, and conservation of water supply and irrigation systems, and other facilities related to environmental health systems.</p>	<p>Applicable, because implementing the BCP, the authority of EZs ensures the supply, management, and conservation of water and sewerage networks.</p>
<p><b>The Embankment and Drainage Act, 1952</b>  An Act to consolidate the laws relating to embankment and drainage and to make better provision for the construction, maintenance, management, removal, and control of embankments and water courses for the better drainage of lands and their protection from floods, erosion, or other damage by water.</p>	<p>EZs should comply this act to protect EZ areas from tidal surges, erosion, floods, or other damages.</p>
<p><b>Wetland Protection Act 2000</b>  No construction of roads is likely to affect the flow of navigable waterways without clearance from concerned authorities. Upland flow in water channels to preserve the ecosystem. Protection against degradation and resuscitation of natural water bodies such as lakes, ponds, beels, khals, tanks, etc. affected by man-made interventions or other causes.</p>	<p>EZs authority should comply this Act to protect and maintain flows of natural water bodies located in or around the EZs.</p>
<p><b>Bangladesh Standards and Guidelines for Sludge Management, 2015</b>  The major priority of these standards and guidelines for sludge management in Bangladesh is to ensure that human health and the environment are strictly protected from any negative impacts of sludge management.</p>	<p>Applicable, BEZA including EZs, and enterprises should manage generated sludge in STP, ETP and CETP by following this standard.</p>
<p><b>Hazardous Waste (E-Waste) Management Rules, 2021</b>  These rules prepared under the Environmental Protection Act, 1995. It covers the products listed in the Schedule (home appliances, monitoring and control equipment, medical equipment, automatic machines, IT, and communication equipment), and establishes obligations for producer, dealers, assemblers, collectors, sellers, and consumers of the products. The main provisions of this regulation.</p> <ul style="list-style-type: none"> <li>• Defines the roles of individual stakeholders involved in the E-waste management procedure.</li> <li>• Regulates the import export and handling of E-wastes.</li> <li>• Provides an appropriate documentation process to facilitate the overall E-waste Management implementation.</li> </ul>	<p>Applicable, BEZA should ensure enterprises under the area EZs are complying these rules.</p>
<p><b>Bangladesh Biodiversity Act, 2017</b>  To ensure biodiversity conservation and sustainable utilization of its components, to distribute benefits and fair share obtained from the livestock and related information this act has been composed.</p>	<p>BEZA, EZs area and enterprises shall ensure that surrounding biodiversity should not be affected.</p>
<p><b>Wildlife Conservation (Protection and Safety) Act, 2012</b>  The act has been formulated for the conservation and safety of wildlife to manage the protected areas. The act depicts 10 new types of protected areas. The Act with many other provisions</p>	<p>BEZA, EZs area and enterprises shall ensure that wildlife nearby EZs should not be affected.</p>



Summary of Applicable Legislation	Applicability/ Relevance
<p>proposed stern action for violation of the law. It proposed one year imprisonment and Taka 50,000 fine for such a violation. The law also proposed at least two years and the highest seven years of imprisonment and minimum Taka one lakh and maximum Taka 10 lakh fine for killing a tiger or an elephant.</p>	
<p><b>Standing Orders on Disaster, 2019</b>  The Standing Orders on Disaster is designed to enhance capacity at all tiers of government administrative (ministries, divisions, departments, and agencies) and social structures (field level officials, humanitarian agencies) for coping with and recovering from disasters. This order guides each ministry, division, department, and agency to prepare detailed work plan to perform responsibilities and functions efficiently and takes necessary measures accordingly.</p>	<p>Applicable, BEZA, EZs area and enterprises should tie up with government administrative and social structures to respond in an emergency.</p>

### 2.2.7 Insurance Coverage

Among non-life insurance coverage, the insurers underwrite policies for fire, accident, transportation, and marine, among others, but there is no adequate risk protection yet from flood, earthquakes, storms, and other natural hazards, and from employment injury caused by industrial accidents. There have been pilot projects financed by development partners to provide protection from flood hazards, but such insurance products do not provide adequate coverage in the insurance industry in Bangladesh.

## 2.3 Risk Perception Baseline by the Business Community

The final report on the baseline survey commissioned by the National Resilience Programme, and submitted by the consultants in January 2021, identifies that most of the firms consider natural disasters, health hazards, security crises, man-made incidents, failures in essential government services, support system failures and operational crises as constituting direct costs to them. The highest degree of concern is on health hazards followed by man-made incidents, support system failures, access to essential services, and operational crises in that order. The report found that businesses are relatively less concerned about natural hazards and security as they probably have become accustomed to them due to their recurrence. This report mentions that the greatest number of enterprises suffered production and financial losses due to the COVID-19. Out of the total of 62 respondents interviewed, only 3 firms were reported to have a structured Business Continuity Plan (BCP), and they have designated personnel to implement the plan. However, most forms interviewed were found to have a corrective action plan in place. The business enterprises are generally insured against fire while a majority of them also reported to have coverage for natural hazards particularly for cyclones and floods. All the sampled enterprises reported to have adequate open space and fire-fighting equipment. About one-thirds of the firms interviewed reported to have their own health center while the rest depend on part-time health workers.

## 2.4 Global practices of BCP

Over the last two decades or so, the global business community has been convinced that supply chains are increasingly susceptible to unplanned, unanticipated disruptions due to natural or man-

made disasters or hazards. For economic, environmental, and social efficiency, the various practices of lean systems, total quality management (TQM), time-based competition and other supply chain improvement initiatives, which are the order of the day in recent times, businesses now realize that their supply chains are fragile, particularly to environmental disruptions outside their control. As a result, the emerging practice in managing supply chain risks is characterized by having an effective BCP in place at all tiers of supply chain actors including the manufacturers. characterized as having a very low probability of occurrence, difficult to predict, and with a potentially catastrophic impact on the organization. [Zsidisin, 2005]

Regardless the diversity of industrial sectors, and whereas a firm is involved in manufacturing, or in services, there are some common and required elements which are employed while preparing and managing a BCP. Some of these common and essential elements are as follows, as per Rule 4370 Of FINRA<sup>14</sup> (the Financial Industry Regulatory Authority—is a government-authorized not-for-profit organization that oversees U.S. broker-dealers):

- Data backup and recovery (hard copy and electronic).
- Consideration for all critical systems including infrastructure, functions, utilities, and services.
- Financial and operational assessments.
- Alternate communications between customers and the firm, and between the firm and employees.
- Alternate physical location of employees.
- Critical business constituents, suppliers, buyers, banks, and counterparty impact.
- Regulatory reporting.
- Communications with regulators.
- Financial recovery, and business recovery; and risk coverage provisions; and
- How the firm will assure customers' prompt access to their funds and securities in the event that the firm determines that it is unable to continue its business.

Some very useful and common practices while developing and managing BCPs globally include the following, as mentioned by BCP expert Allan Graham, in his blog<sup>15</sup>.

**1. Get Management Buy-in:** A very essential requirement is to convince the management about the need for a BCP, because it is essentially an investment in something that one hopes never to use. In the case of BEZA, the top management was convinced on the requirement for developing BCPs for all its undertakings, considering the vulnerability of Bangladesh to several natural hazards, the economic requirement in the future, and due to convening power of the UNDP Bangladesh supporting the NRP, a government program. BEZA management was further convinced to do the

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<sup>14</sup> <https://www.finra.org/rules-guidance/key-topics/business-continuity-planning>

<sup>15</sup> <https://blog.equinix.com/blog/2012/04/26/10-best-practices-for-successful-business-continuity-planning-for-financial-services/>

propositions made in the BCM for providing BCP services to the areas and investors for a reasonable fee, paving way for BEZA for additional capacity building opportunity and revenue stream.

**2. Consider Broader Perspectives:** Bangladesh becoming a middle-income country within the next few years, and a developed country, hopefully, by 2041, provided the broader perspective of getting future-ready, and being capable to provide assuredness to the local and foreign investors, has been a major consideration by the BEZA to achieve their started objectives of employment generation, and contribution to the national economy.

**3. Ecosystem:** The climate vulnerability, recent COVID-19 pandemic disrupting the global supply chain, ongoing global economic crisis arising in the aftermath of Russo-Ukrainian conflicts, Bangladesh's commitment to the SDGs, other international commitments and pledges to environmental and social causes, and upcoming changes in the EU legislations requiring stricter social and environmental traceability of their imports constitute the ecosystem Bangladesh should consider to prepare for the near future. Having a BCP framework at BEZA and implement the same at all its areas and enterprises will cater to the need of this changing ecosystem.

**4. Prioritization and Cluster Based Approach in Implementation:** The global best practices require prioritization of actions and adopting a Cluster-based approach when it comes to recovery and restoration. Accordingly, in the proposed BCP framework for the areas, and enterprise, prioritization and cluster-based approach has been adopted, and the processes and applications have been identified that must come online first, and the plan[s] have been designed so that the supporting infrastructure for these processes and applications become available first.

**5. Regulatory or Audit Review:** Regulatory steps and periodic audits are integral parts of a successful BCP management process. There is a need to ensuring that the recovery infrastructure will be consistent with all legal, regulatory and compliance requirements.

**6. Sensitization and Dissemination, and Delegation of Responsibility:** BCPs need to be widely disseminated among all the stakeholders including the investors, management personnel, staff, and service providers, and make it available in multiple formats, including paper, PDF and web. Developing a system (e.g., regular meetings, email updates) is also needed. Clearly defined roles and responsibility and adequate delegation of authority is required for ensuing that executives and managers are familiar with the plan, know how to implement it, and understand their roles in triggering the plan and responding to a crisis.

**7. Training and Capacity Building:** Varieties of resources are available these days on BCP related training and capacity building. There are also various certificate programs. Successful BCP and BCM requires having well-trained personnel and institutional plans for targeted training programs and capacity building initiatives.

**8. Test:** Designing and running a variety of announced and surprise test scenarios is a widely accepted practice. For example, "tabletop exercises," where the team sit in a room, propose a



disaster scenario, and discuss each person's response activities. Such an exercise was carried out during the piloting at the enterprise level during formulation of the BCP framework for BEZA.

**9. Plan Maintenance:** People, business requirements, business facilities, partners, vendors, and regulations all change over time, resulting in the need to update the recovery tiering strategy, roles and responsibilities, etc. Maintaining a rigorous reassessment schedule and update the plan accordingly is a global practice for successful BCM.

**10. Personnel Plan:** Not only an adequate number of emergency-time trained personnel are required, a successful BCM requires a second and third backup person trained for each critical response and recovery function in the event that a primary individual is unavailable (i.e. out of town, on vacation, affected by the crisis). These functions include making the decision to trigger the plan, leading the internal communication effort, contacting vendors, and responding to the media. Additional manpower to the planned organogram of BEZA, the two target intervention areas, and one enterprise have been proposed for this purpose. Additionally, mid and long-term human capital needs assessment for BEZA has been recommended.

#### **2.4.1 Guidelines of BCP**

A number of recent guidelines and toolkits from several international organizations, and examples of area BCPs in other countries have been reviewed for the purpose of developing the BCP framework for BEZA. Though none of the reviewed BCPs covers a whole industrial cluster like BSMSN, or MIEZ, some very useful guidelines, tools, and templates have been used and adopted for the purpose. The reviewed examples are briefly addressed as follows:

##### **JICA Area BCM Toolkit**

This toolkit was developed by JICA in 2015 for developing area-wise Business Continuity Management (BCM), and this document also underscores the need for assessing the area-specific risks and natural hazards. Additionally, this toolkit gives emphasis on engagement with the stakeholders and local authorities who are first responders and defines the scope of risk-informed decision making. According to this toolkit, the risk-informed decision making involves multi-hazard risk assessment and identification of the dominant hazard, probabilistic evaluation of the risks, and business impact analysis based on various disaster scenarios. The JICA toolkit provides a step-by-step guideline for Business Impact Analysis (BIA), and it suggests carrying out the BIA for individual companies in the area, and then collate the information to develop the area's business impact. However, this may not work out for BSMSN, since few, if any, individual enterprises are at operational stage at the moment. However, the BIA involves assessing the damage caused by a possible disaster scenario on life, property, critical infrastructure, utility connections, key operations and management functions, disruptions in the production and supply chain, sales, and communications. This toolkit also defines the BCM cycles, and refers to specific areas of



improvement where needed, mechanism for review, implementation, and scaling up of the BCP and BCM, and will be very useful for developing the BCP for BSMSN, and MIEZ.

### **ILO's Multi-Hazard Business Continuity Management Guide for SMEs**

First published in 2011 by the ILO Programme for Crisis Response and Reconstruction (ILO/CRiSIS), the Multi-Hazard Business Continuity Management Guide for Small and Medium Enterprises is a handy reference document with many useful tools and steps. One item of value addition suggested by the ILO's BCM guideline is identification of the stakeholders, i.e., suppliers, workers, employers, business association, government agencies, media, etc. and their respective roles in the BCM. The issue of supply chain interruption due to disasters has been elaborately addressed in the ILO's guidebook, and suggestions have been made to keep the supply chain flexible and open between vertical and horizontal nodes of the chain. The importance of risk coverage by insurance and social safety net has been mentioned in the ILO's document.

### **WHO Guidance for Business Continuity Planning**

Though primarily this document is for setting up and implementing BCP at WHO offices, this document follows the UN principles and standards for resilience, and assessment of risks, which come as useful for our purpose. The WHO guidance covers safety for the staff, premises, assets, and operations. This guideline recommends procedures for identifying critical operations and functions that should be prioritized for continuity in case of disruptions due to disasters. Being the UN agency for health-related matters, this guideline addresses the need for public health dimensions in the BCPs to be developed, making sense at the time of the global pandemic of COVID-19. It also provides a number of useful templates which would be considered for the purpose of the assignment.

#### **2.4.2 Practices of BCP in Other Countries**

This is to be noted that Business Continuity Plan itself is a fairly modern concept, slowly gaining popularity among the business community and policymakers, particularly in the aftermath of global devastations caused by the Indonesian and Japanese earthquake and tsunami in 2004 and 2011, respectively which caused substantial damages in a vast geographical region, and disrupted global production, trade, and economy.

Business Continuity Planning (BCP) is broadly defined as the process of creating systems of prevention and recovery to deal with potential threats to a company<sup>16</sup>. It is to be further noted that it is rather fairly common in recent days for the individual enterprises or business conglomerates in the developed world to have their own BCP, but it is not so frequent for an entire industrial zone or production cluster to have its BCP for the area of zone. However, there are some examples of area

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<sup>16</sup> Elliot, D.; Swartz, E.; Herbane, B. (1999) Just waiting for the next big bang: business continuity planning in the UK finance sector. *Journal of Applied Management Studies*, Vol. 8, No, pp. 43–60. p. 48.

or zone-specific BCPs off late, but they are mostly for industrial clusters for similar types and interlinked production facilities. But the target intervention areas for this assignment, i.e., Meghna Industrial Economic Zone, and Bangabandhu Sheikh Mujib Shilpa Nagar are zones housing diversified types of manufacturing enterprises, which makes the case for developing an area-wise BCP more challenging. In Bangladesh, this assignment is the first ever attempt to formulate a BCP. Some of the key elements of the BCP in other countries are highlighted in the following section:

### **Bangkadi Industrial Park Area, Thailand**

An assessment of natural disasters and area business continuity plan was formulated for the Bangkadi Industrial Park in Pathumthani Province of Thailand, for the National Economic and Social Development Board of Thailand. The plan was facilitated by Asian Disaster Preparedness Center and supported by the Japan International Cooperation Agency. The plan was published in February 2017. This plan underscored the need for understanding the area itself, in terms of the probability of occurrence of various natural disasters vis-a-vis population working and residing within and in the surrounding area, economic and investment size in the area, and in the national context. Then, the historical data of natural disasters in the area were analyzed and its impact on life, property, environment, and economy were assessed. Since flood in the area was identified as the most serious risk, the flood mitigation policies and local procedures to respond to flood emergencies were addressed in the plan. Next, the critical factors, such as infrastructure, power and gas supplies, water supply, road connectivity, telecommunication, waste management systems, etc. were addressed, and the impact of flood on them were analyzed. The readiness and gaps on part of the business enterprises, local providers of public and utility services, and community were also considered in the course of developing the BCP. The action plan included emergency response measures, preventive actions, and engagement of local authorities.

## **2.5 Business Continuity Management at BEZA**

The published list of services of BEZA covers some 17-point general services comprising broad areas of land acquisition, management, and development, infrastructure development, utility connections, environmental management, effluent treatment, and policy implementation, but does not mention anything about disaster risk management or prevention<sup>17</sup>. Developing a Business Continuity Plan (BCP) is a decision that BEZA has taken to address this gap, and it is highly recommended that suggestions arising from BCP guidelines, once they are framed, should be a part of the published list of services, whenever applicable.

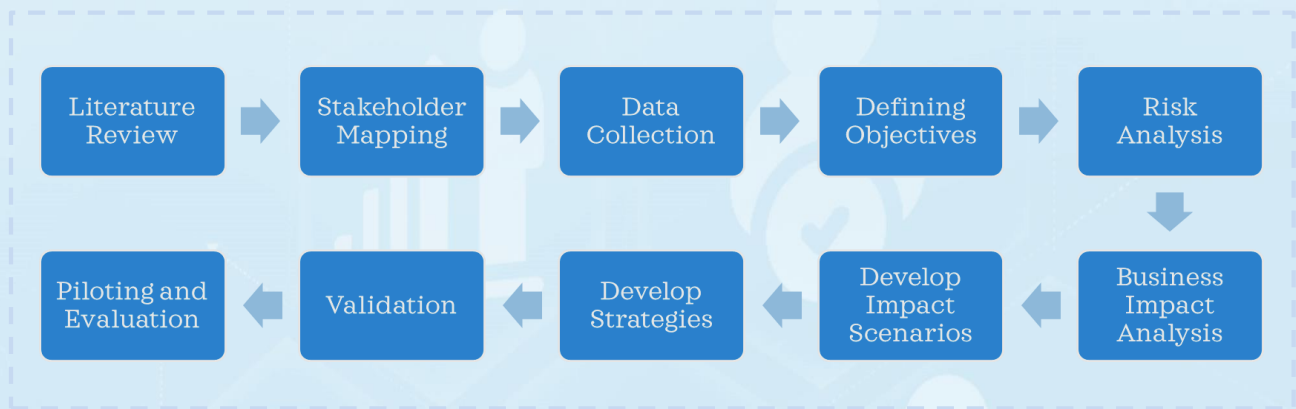
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<sup>17</sup> <https://www.beza.gov.bd/about-beza/beza-services/>

# CHAPTER 3 METHODOLOGY

## 3.1 Introduction

The goal of this assignment is to create a BCP for potential natural disaster impacts in the Economic Zone (BSMSN and MIEZ). The BCP synthesizes studies conducted by all the members of the team, namely, the Team Leader, the Business Continuity Management (BCM) Expert, the Disaster Recovery Planning Expert, the Environmental and Social Analysis Expert, and the Industrial & Production Engineering Expert. The key components of research methodology and technical approach for the assignment are shown in the flowchart of Figure 3.1 and each component is separately described in the following sections.



**Figure 3.1 Key Components of Research Methodology**

## 3.2 Study Area Information

Bangladesh Economic Zones Act 2010 in its preamble clearly defines the importance of establishing economic zones in all potential areas with a view to encouraging rapid economic development through increase and diversification of industry, employment, production, and export (BEZA Act, 2010).<sup>18</sup> To promote inclusiveness and efficiency, and to expedite investment mobilization, this act allows the private sector to own, develop, and/or manage economic zones, as well as establish infrastructure and services for the companies in the zones as a separate business. Under the aegis of this law, Bangladesh Economic Zones Authority (BEZA) was officially instituted by the government in November 2010.

BEZA's stated mission is *to persistently create value for the investors by establishing attractive investment facilities in the economic zones through One-Stop service and competitive incentive packages.*

<sup>18</sup> Chapter 1, Bangladesh Economic Zones Act 2010.



According to a Vision Document<sup>19</sup> published by BEZA in 2016, the target is to establish 100 economic zones in different parts of Bangladesh over 30,000 hectares of land by the year 2030, which is expected to generate additional employment opportunities for over 10 million and add 40 billion US dollars' worth of export revenue over the next 15 years.

As of date, as per public information available on the website<sup>20</sup> of BEZA, out of the targeted 100 zones, 97 such economic zones have been started off countrywide. 68 of these economic zones are under the direct authority and management of the BEZA, and the rest 29 have been entrusted to private sector organizations under a legal agreement between them and BEZA. These 97 economic zones are at varying degree of development, ranging from being fully or partially operational, to having the land earmarked for acquisition. It has been learned that the government economic zones have received investment commitments of over \$24 billion, and the private economic zones have received around \$3 billion investment<sup>21</sup> so far.

### 3.2.1 BEZA

BEZA aims to establish economic zones in all potential areas in Bangladesh including backward and underdeveloped regions with a view to encouraging rapid economic development through increase and diversification of industry, employment, production and export'. Establishing Economic Zones in Bangladesh is a historic initiative of the present government. BEZA has already started development of 7 government economic zones e.g., Bangabandhu Sheikh Mujib Shilpa Nagar, Shreehatta EZ, Maheshkhali Economic Zone (Dholghata), Jamalpur EZ, appointed Public-Private Partnership (PPP) developer for setting up 2 economic zones e.g., Mongla and Mirsarai EZ (1<sup>st</sup> Phase). Projects for improving off-site infrastructure including land acquisition and land development for setting up of Government to Government (G2G) Economic Zones with China, Japan and India have been adopted.

The Business Continuity Plan (BCP) will be developed in two specific economic zones. One is the flagship economic zone under the government management, located at Mirsarai and named as **"Bangabandhu Sheikh Mujib Shilpa Nagar"** (BSMSN). Another one is privately owned, and operated **Meghnaghat Industrial Economic Zone (MIEZ)** located at Sonargaon sub-district of Narayanganj.

#### 3.2.1.1 "Bangabandhu Sheikh Mujib Shilpa Nagar" (BSMSN)

The BSMSN has a total land area of 33,805 acres or 136.86 square kilometers of mostly reclaimed land from the sea, with a 25 km coastline along the Sandwip Channel in the Bay of Bengal, and covers the areas of the two districts, three upazilas, and 6 unions and comprised of 26 mouza.<sup>22</sup> The BSMSN site is located 200 kilometers (km) from Dhaka, 60 km from Chattogram, and 70 km from Chattogram

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<sup>19</sup> <http://www.beza.gov.bd/wp-content/uploads/2016/07/Vision-Document.pdf>

<sup>20</sup> <https://www.beza.gov.bd/economic-zones-site/>

<sup>21</sup> <https://www.dhakatribune.com/business/2022/01/13/attracting-investment-in-bangladeshs-economic-zones>

<sup>22</sup> <https://www.beza.gov.bd/economic-zones-site/government-owned-sites/mirsarai-chittagong/>



Port, and is at a strategically advantageous point with the multimodal networks of road, rail, river, and sea transportation. BEZA targets to generate 1.5 million new employment, and 15 billion US dollars of additional export revenue from BSMSN within the next 15 years.

### **3.2.1.2 “Meghnaghat Industrial Economic Zone” (MIEZ)**

The MIEZ has a total land area of 123 acres,<sup>23</sup> currently with 16 operational factories belonging to 4 foreign, and 12 local enterprises. Out of the 12 local enterprises, 9 belong to the Meghna Group of Industries, the conglomerate owning and operating the private sector MIEZ under license from BEZA. The MIEZ is situated on the Dhaka-Chittagong Highway, the country’s major highway, and within 4 kilometers of an inland river port and container terminal by the river Meghna, 22.5 kilometers from Kamlapur rail link, 38.9 kilometer from Dhaka airport, and 220 kilometers from Chattagram seaport<sup>24</sup>. The zone is fully developed for industrial construction and operation and is secured by boundary walls. MIEZ acquired its Private Economic Zone license from BEZA on September 21, 2017. As per BEZA’s website, MIEZ has created 1,451 employments, and has mobilized worth 600 million US dollars of investments.

## **3.3 Data and Method**

This section includes desk review, key informant interview and consultation workshops respectively.

### **3.3.1 Desk Review**

A literature review has been conducted on the methods of developing BCP and international best practices using the available publications, reports, statistics, and publication manuals from international and national sources. A particular study has been conducted on hazard scenarios due to the different types of disasters and climate change consequences on industries and economic zones. Recent cases of how other countries have developed BCP have also been studied. A toolkit developed by JICA for area based BCP management, two guidelines by the ILO and WHO, and a BCP from an industrial park in Thailand have been reviewed. Apart from these useful documents, the regulations, operational guidelines, and practices of various government agencies and utility services in Bangladesh have been elaborately reviewed. The master plans of the two targeted economic zones and other relevant documents for these two zones have also been reviewed.

The literature on vulnerability studies relating to the particular locations of study has also been thoroughly reviewed. The desk review covers (i) the hazard scenarios, vulnerability, and impact of different types of disasters and climate change consequences in Bangladesh; (ii) global best practices for the BCP framework and its relevance to economic zones; (iii) review of the relevant policy and

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<sup>23</sup> Originally 110 acres, but 13 acres have been newly acquired as extension as of March 2022 at the time of site visit by the consultants

<sup>24</sup> <https://www.beza.gov.bd/meghna-industrial-ez/>

regulatory framework on economic zones, master plans, and green economic zone guidelines in line with the preparation of the BCP framework; (iii) emergency response practices in responding to crises like natural disasters; and (iv) environmental and social code of practices for the industries and BCP implementing authority

### 3.3.1.1 Data Collection

Some major documents reviewed for understanding the specific issues of policy and regulatory framework, learning about the zones, and management structure and decision-making procedures and accountability of BEZA, are listed in Table 3.1 below.

Sl.	Document Type/Title	Source of Documents	Purpose
1	Bangladesh Economic Zone Act, 2010 and amendment 2015, EIA of Water Treatment Plant (Phase-1) at BSMSN, Master Plan of BSMSN, EIA Report of Mirsarai, Water demand and water availability assessment for Bangladesh Sheikh Mujib Shilpanagar, Environmental and Social Commitment Plan (ESCP)-Draft, BEZA Annual Report 2020	BEZA Website ( <a href="https://www.beza.gov.bd">https://www.beza.gov.bd</a> )	Understanding the broad policy and regulatory framework
2	KML file of BSMSN Location, Industry allocation in 2A at BSMSN, Shape file for the location of Gas, Road, Water, pump station inside BSMSN, Master Plan of BSMSN, BEZA Organogram	Planning and Development, BEZA	Understanding risk profile of the area and management procedures at BEZA and BSMSN
3	Mirsarai Upazila Development Plan including Geology Report, Socio Economic Report, Flora Fauna Report, Traffic Survey Report, Structure Plan, Urban Area Plan, Rural Area Plan, Hydro Geological Map and Physical Feature Report	Social Consultant, BSMSN Development Project (PRIDE), Bangladesh Economic Zones Authority (BEZA)	For understanding the social, environmental, demographic, and other relevant parameters of the locations
4	GIS shape file existing physical features, proposed land use, road, waterbodies, DEM, Historical Disaster of “Development Plan for Mirsharai Upazila, Chattogram District: Risk Sensitive Land Use Plan”	Urban Development Directorate, Bangladesh	Understanding the area for geo-physical parameters associated with risk mapping and management
5	Industrial Sector Risk Profile: The Case Study of KEPZ and Kalurghat Industrial Area in Chattogram	NRP: PD, Planning Commission, Bangladesh	Industry-specific vulnerability and risk mapping

Sl.	Document Type/Title	Source of Documents	Purpose
6	Design of Khal (Bamonsundor, Ichakhali and Daborkhali Khal) at BSMSN	Social Consultant, BSMSN Development Project (PRIDE) Bangladesh Economic Zones Authority	Understanding the area for key infrastructure, utility, and flood risks
7	List of industries/enterprises at MIEZ and their basic information	Meghna Group of Industries	Understanding the Area for industry-specific vulnerability
8	IT infrastructure related information of MIEZ	Meghna Group of Industries	Understanding the Area for critical infrastructure and utilities
9	Drainage, Fire Hydrant, IT Infrastructure and Electric Line Network	Meghna Group of Industries	Understanding the Area for critical infrastructure and utilities
10	MIEZ Master Plan Map	Meghna Group of Industries	Understanding the Area
11	Climate data including Temperature, rainfall, humidity, and wind Direction	Bangladesh Meteorological Department (BMD) and CEGIS	Understanding the climate vulnerability
12	Historical Flood Information, Historical Cyclone Information, Earthquake risk Information	Bangladesh Agriculture Research Council (BARC), SPARSO, BNBC 2020	Risk assessment and mapping using historical data

The study has made use of information collected from consultations, interviews, field visits and secondary data. This study needed data such as: masterplan of the study areas; disaster scenarios of the study areas; nature of industries in the study areas; details of the services provided by BEZA in the study areas; location of the plant under pilot study; detailed plan of the plant; detailed product information about the plant; details of the supply chain of the plant; details of the production process of the plant etc. The methods employed for data collection are explained below.

- I. **Consultation:** The team of experts have made consultation with the BCP Committee formed by BEZA, other representatives of BEZA, MIEZ, BSMSN, and local communities and authorities for collection of data.
- II. **Key Informant Interviews/Focal Group Discussion:** The team has conducted several key informant interviews (KIIs) and focal group discussions (FGDs). Adequate study instruments, such as the KII/FGD checklist were developed and finalized upon consultation with other national experts, and the UNDP.
- III. **Field Visits:** The Consultant team conducted several field visits during the formulation of Business Continuity Plan. The lists of field visits are given below Table 3.2.

**Table 3.2: List of Field Visit During the Project Period**

SL No	Location of the Visit	Date	Purpose
1.	Meghna Industrial Economic Zone	14 <sup>th</sup> December, 2021	Site Visit, Present Condition, Utility Facilities,
2.	Bangabandhu Sheikh Mujib Shilpa Nagar	20 <sup>th</sup> April 2022	Site Visit, Present Condition. Utility Facilities, Risk Identification
3.	Meghna Industrial Economic Zone	22 <sup>nd</sup> August 2022	Investigation about the recent fire incident, Identifying risk level
4.	Meghna Industrial Economic Zone	22 <sup>nd</sup> September 2022	Tabletop Exercise, Piloting of the area specific and enterprise level business continuity plan

During the visit the consultants interacted with the following stakeholders:

- District administrator
- District Relief and Rehabilitation Office
- Service Providers
- Bangladesh Meteorological Department
- Fire Service and Civil Defense
- Bangladesh Police
- Department of Environment
- Chamber of Commerce
- BSMSN Authority
- MIEZ Authority

**IV. Defining Objectives of the BCP:** Based on the consultation with relevant stakeholders, objectives of the BCP are defined. The objectives have the following aspects: i) temporal, ii) business/financial, iii) social and iv) environmental.

**V. Analysis:** BCP is developed through analysis of the collected data, in three distinct phases and purposes - first for BSMSN, then for MIEZ, and then for the selected enterprise along with impact analysis and various assessment and reporting tools and checklists, which is described as follows:

**Phase 01: Threat and Risk Analysis:** In this analysis all the probable natural and man-made threats and risks are identified which may affect different economic zones of the country. In this study, the threats relevant to the study areas and the enterprise under study are analyzed.

Disaster risk is widely recognized as the consequence of the interaction between a hazard and the characteristics that make people, places, and institutions vulnerable and exposed. Risk assessments are produced to estimate possible economic, infrastructure, and social impacts arising from a



particular hazard or multiple hazards. The components of assessing risk and the associated losses include hazard, exposure, and vulnerabilities.

Understanding the area of concern or target region is the first step to the identification of hazards and threats. Secondary data is needed to identify information on natural and man-made events, present exposures, vulnerabilities, and future dangers, as well as prior disasters. Hazards affect a wide range of areas. To analyze the current scenario, physical characteristic data must be provided. The primary risk areas that have been examined are shown in Table 3.3.

<b>Table 3.3: Hazard and Risk Identification</b>		
<b>Natural Hazards</b>	Flood, cyclone/storm surges, salinity intrusion, earthquake, tsunami, landslide, lightning etc.	<ol style="list-style-type: none"> <li>1. Damages assessment in respect of physical (Infrastructure leading to asset loss), economic, social, and other.</li> <li>2. Loss of Human Resources and consequences,</li> <li>3. Disrupt Operation – Production, Logistics, Marketing etc.</li> <li>4. Recovery from past experiences.</li> </ol>
<b>Health Crisis</b>	Outbreak of infection – CD, Loss of Key Staff due to Illness.	<ol style="list-style-type: none"> <li>1. Loss of Human Resources and consequences</li> <li>2. Disrupt Operation – Production, Logistics etc.</li> <li>3. Recovery from recent experiences.</li> </ol>
<b>Security</b>	Cyber Attacks, Terrorist Attack, Theft or Vandalism	<ol style="list-style-type: none"> <li>1. Loss of Human Resources</li> <li>2. Disrupt Operation – Production, Logistics etc.</li> <li>3. Damage Assets.</li> </ol>
<b>Man-Made Hazards</b>	Accidents - Machine Damage, Infrastructure Damage, Fire, Movement Restrictions – Hartals.	<ol style="list-style-type: none"> <li>1. Damage assessment in respect of physical (Infrastructure leading to asset loss), economic, social, and other.</li> <li>2. Loss of Human Resources and consequences,</li> <li>3. Disrupt Operation – Production, Logistics etc.</li> <li>4. Recovery from past experiences (if else)</li> </ol>
<b>NaTech Disaster</b>	Technological disasters triggered by natural disasters	<ol style="list-style-type: none"> <li>1. Damage assessment in respect of physical (Infrastructure leading to asset loss), economic, social, and other.</li> <li>2. Loss of Human Resources and consequences,</li> <li>3. Disrupt Operation – Production, Logistics etc.</li> <li>4. Recovery from past experiences (if else)</li> </ol>
<b>Support System Failures</b>	Energy Source Failure e.g., Power Cut, IT & Technological System Failure	<ol style="list-style-type: none"> <li>1. Disrupt Operation – Production, Logistics etc.</li> <li>2. Damage Assets</li> </ol>

<b>Access to Essential GoB Services</b>	Crises affecting Ctg. Port, EPZ, BSCIC, Customs etc.	<ol style="list-style-type: none"> <li>1. Disrupt Operation – Production, Logistics, Marketing etc.</li> <li>2. Recovery measures from past experiences</li> </ol>
<b>Operational (External Forces Influence)</b>	Crises affecting Key Stakeholders (Suppliers & sourcing destinations (foreign), Reputational Damage.	<ol style="list-style-type: none"> <li>1. Disrupt Operation – Production, Logistics, Marketing etc.</li> </ol>

Among the hazards mentioned above cyber security and terrorism related hazards are out of the scope of the present assignment. Maps for specific hazards are presented in the GIS environment and GIS database using the individual hazard assessment subject to availability of authentic and recent data; the above elements at risk are integrated to determine the exposure. Vulnerability assessment is carried out using the exposure data and the damage curves. Individual risk of the components at risk are analyzed using the hazard and vulnerability assessment. Comprehensive hazard risk assessment maps can help with disaster preparedness by assessing the impact and prioritizing the assistance needed to better disaster management and recovery. Furthermore, the results of collected data are used to develop a response and recovery strategy.

**Phase 02: Business Impact Analysis:** Critical services that are offered in the economic zones by BEZA are identified. Specific critical business activities particular to the study areas and the enterprise under study are highlighted. Impacts of different threats and risks on these activities are examined.

**Phase 03: Impact Scenarios:** Specific scenarios are developed for different threats of specific recurrence intervals in the study areas based on the risk analysis and impact analysis. Scenarios of impacts on critical business activities are developed from a resilience point of view.

**(a) Developing Strategies and Validation:** Based on the developed impact scenarios, probable measures for risk management and enhanced resilience of the industries are identified. The aim of such measures is to induce a higher capacity to manage risk through redundancy and adaptability of the system. An administrative and executive structure for the implementation of the developed strategies is proposed. The administrative structure along with the developed measures form the BCP. The developed BCP is validated both at the local level through consultation and with other stakeholders through a workshop.

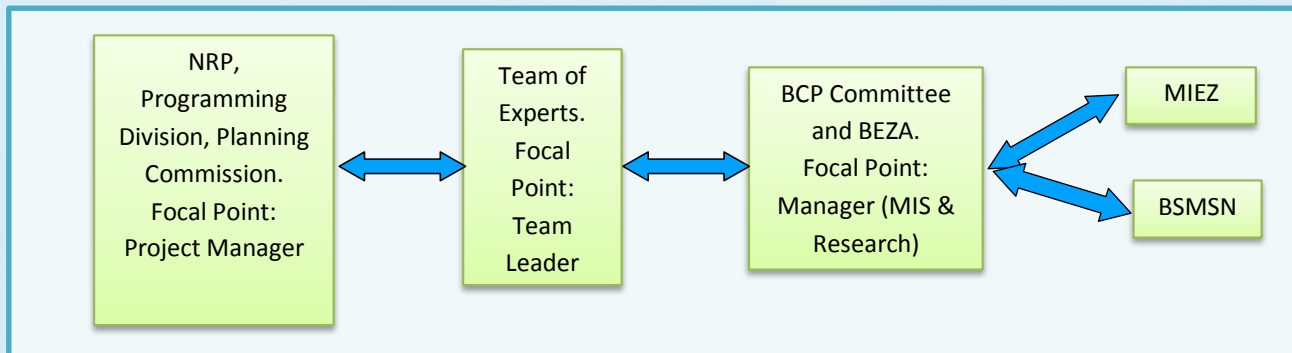
**(b) Piloting and Evaluation:** The developed BCP has been piloted in one of the enterprises at the MIEZ, namely, the Meghna Beverage Limited. Piloting involves the following tasks:

- i. Apprise the BCP to the enterprise under study.
- ii. Form a team for implementation of the BCP.
- iii. Assign tasks to different personnel of the team.
- iv. Present a particular impact scenario.
- v. Conduct a tabletop exercise to simulate the chain of command.

- vi. Activate team for immediate response in the field.
- vii. For medium term and long-term activities, conduct tabletop exercises.
- viii. Evaluate the activities, identify the weaknesses, and update the BCP.

**(c) Knowledge Sharing and Dissemination:** The BCP development process and gathered knowledge along with the final BCP is disseminated to the stakeholders through a final workshop.

**(d) Coordination:** All the activities of the BCP development process are conducted in a participatory approach. The key stakeholders guide, suggest and decide the objectives, methodology and final form of the BCP. The team leader has conducted the activities through coordination with the NRP and Programming Division on one hand and the BCP Committee and BEZA on the other hand. Through BEZA the team leader coordinated activities at the field level at the MIEZ and BSMSN (Figure 3.2).



**Figure 3.2: Scheme of Coordination for the BCP Project**

### 3.3.2 Key Informant Interview

Based on the literature review, desk research, and meetings with BEZA, key stakeholders or informant have been identified who are currently playing pivotal roles in the smooth operation of the BSMSN and MIEZ. The stakeholders for a business continuity plan are both internal and external. However, like with many aspects of the business, the business continuity planning compliance requirements are managed by internal stakeholders, and they vary greatly depending on the ownership type of the company or industry. After the COVID 19 pandemic, business continuity planning is considered a critical need for all types of industries. Thus, it is important for every organization to understand its stakeholders and how their interests affect business continuity planning.

A tentative list of stakeholders for economic zones is as follows:

- i. Key Government Agencies: Bangladesh Economic Zone Authority (BEZA), Ministry of Industries, Ministry of Labour and Employment, Ministry of Commerce, Bangladesh Investment Development Authority (BIDA), Bangladesh Export Processing Zones Authority (BEPZA).

- ii. Regulatory Bodies: Department of Inspection for Factories and Establishments (DIFE), Department of Environment (DoE).
- iii. Transportation Related Government Agencies: Bangladesh Bridge Authority (BBA), Roads and Highways Department (RHD), Local Government Engineering Department (LGED), Bangladesh Railway (BR), Bangladesh Inland Water Transport Authority (BIWTA).
- iv. Ports and Trade Facilitation Bodies: Chittagong Port Authority (CPA), Bangladesh Land Port Authority (BLPA), National Board of Revenue (NBR).
- v. Utility Agencies: Power Grid Company Bangladesh (PGCB), Bangladesh Rural Electrification Board (BREB), Titas Gas Transmission and Distribution Company Limited, Karnaphuli Gas Distribution Company Limited.
- vi. Disaster Management Agencies (Government): Department of Disaster Management (DDM), Bangladesh Fire Service and Civil Defence (FSCD), Armed Forces Division (AFD), Bangladesh Coast Guard, Directorate General of Health Services.
- vii. Disaster Management Agencies (Non-Government): Bangladesh Red Crescent Society, NGOs.
- viii. Scientific Agencies (Government): Bangladesh Water Development Board (BWDB), Bangladesh Meteorological Department (BMD), Geological Survey of Bangladesh (GSB).
- ix. Scientific Agencies (Non-Government): Institute of Water Modeling (IWM), Centre for Environment and Geographic Information System (CEGIS).
- x. Local Government Agencies: Mirsharai Upazila Parisad, Sonargaon Upazila Parisad.
- xi. Trade Organization: The Federation of Bangladesh Chambers of Commerce and Industry (FBCCI), The Chittagong Chamber of Commerce and Industry (CCCI).
- xii. Local Community.
- xiii. Investors and Potential Factory Owners.

Several stakeholder meetings, workshops and field visits were held during the project period for the effective engagement of stakeholders throughout the Business Continuity Planning lifecycle.

### ***3.3.2.1 Stakeholder Engagement through Meetings***

Several meetings of the technical committee on formulation of the Business Continuity Plan for the Economic zones were held at BEZA conference room in the project period. The members of the technical committee, representatives from UNDP, and the Consultant team were present at those meetings. The Meetings were chaired by Mohammad Erfan Sharif, executive member (Planning and Development) of the BEZA. The list of the meetings during the project period are shown in Table 3.4.



**Table 3.4: Meeting List to Develop the Business Continuity Plan**

SL#	Meeting Name	Meeting Date	Meeting Venue
1.	1 <sup>st</sup> Technical Committee Meeting on formulation of Business Continuity Plan at BEZA	14 <sup>th</sup> December 2021	Conference Room, BEZA
2.	Inception workshop on Business Continuity Plan	3 <sup>rd</sup> March 2022	Hotel Intercontinental, Dhaka
3.	Meeting with Project Director of BSMSN	31 <sup>st</sup> March 2022	BEZA
4.	Meeting with technical personnel of BSMSN	20 <sup>th</sup> April 2022	BSMSN
5.	Stakeholder Consultation Meeting in Chittagong	21 <sup>st</sup> April 2022	Circuit House, Chittagong
6.	2 <sup>nd</sup> Technical Committee Meeting on formulation of Business Continuity Plan at BEZA	10 <sup>th</sup> May 2022	Conference Room, BEZA
7.	Related documents and Information on the Bangabandhu Sheikh Mujib Shilpa Nagar	12 <sup>th</sup> May 2022	ES Consultants Room, BEZA
8.	3 <sup>rd</sup> Technical Committee Meeting on formulation of Business Continuity Plan at BEZA	31 <sup>st</sup> May 2022	Conference Room, BEZA
9.	Consultation with Technical personnel of MIEZ	23 <sup>rd</sup> June 2022	Conference Room of MGI, Dhaka
10.	Stakeholder Meeting on recent fire incident at MIEZ	22 <sup>nd</sup> August 2022	Conference Room, MIEZ
11.	4 <sup>th</sup> Technical Committee Meeting on formulation of Business Continuity Plan at BEZA	30 <sup>th</sup> August 2022	Conference Room, BEZA
12.	5 <sup>th</sup> Technical Committee Meeting on formulation of Business Continuity Plan at BEZA	31 <sup>st</sup> August 2022	Conference Room, BEZA
13.	Consultation Meeting and Piloting at MIEZ	22 <sup>nd</sup> September 2022	Conference Room of MIEZ
14.	Stakeholders' Workshop on Formulation of Business Continuity Plan for the Economic Zone	25 <sup>th</sup> September 2022	Conference Room of BEZA

### 3.3.3 Consultation Workshops

As part of BCP development, several workshops were held in Dhaka and Chattogram. The main agenda on these workshops were:

- Evaluate the various types of business continuity strategies.
- Identify the most relevant for the relevant economic zones.
- Understanding the area specific risks.

- Understand the roles and responsibilities of stakeholders.
- Conduct a business impact analysis, and best utilization of the results of BCP.

### ***3.3.3.1 Inception Workshop***

An Inception Workshop on Business Continuity Plan on 03 March 2022 at hotel Intercontinental, Dhaka organized by the Programming Division of Bangladesh Planning Commission in association with Bangladesh Economic Zones Authority (BEZA). Mst Nasima Begum, Member, Socio-Economic Infrastructure Division of Bangladesh Planning Commission attended the meeting as Chief Guest and Mr. Sudipto Mukerjee, Resident Representative, UNDP was present as Special Guest. A total of 50 officials from different ministries and agencies took part in this workshop. Dr. Shaikh Jobayed Hossain, Deputy Secretary and Manager (MIS & Research) BEZA moderated the session.

The team leader of the consultant team presented the inception plan. He mentioned that the key objective of the BCP is to protect the investment in economic zones from disaster-related losses and develop an institutional mechanism for promoting resilience in business.

The participants expressed the following comments and suggestions:

- Difference of risk in different economic zones need to be considered in developing BCP.
- For implementation of BCP, roles and responsibilities of concerned agencies need to be identified and institutional arrangement for effective coordination need to be in place.
- BCP need to be operational, not much academic.
- Continuity of ICT, HR and Finance need to be well addressed in BCP.
- Role of financing organizations needs to be mentioned in BCP such as insurance, special provision for financing the investors in overcoming the crisis time.
- Local administration needs to be consulted and local disaster management plan and contingency plan with different organizations in economic zones need to be reviewed.
- External example /practice may not be applicable locally due to difference in nature of hazards.
- Feasibility of NGO engagement for BCP need to be considered.
- ISO document and other global standards such as Environmental / Social / Fire Protocol need to be reviewed for developing BCP.
- Standard fire safety rules and Local Disaster Risk Reduction Fund (LDRRF) initiatives need to be considered during risk analysis.
- Legal and regularity related issues need to be followed for developing BCP action plan.
- Capacity development for concerned official in maintaining BCP need to be prioritized for sustainability of such plans.
- Relevant documents from BEZA such as Climate Resilient Guideline need to be reviewed for making integrated action plan.

### **3.3.3.2 Stakeholder Consultation at Dhaka and Chattogram**

On 21st April 2022, a stakeholder consultation meeting was held at the conference hall of circuit house Chattogram. Mohammad Mominur Rahman, Deputy Commissioner, Chattogram district presided over the consultation meeting. The Chair of the meeting welcomed the heads and representatives from different departments and agencies and called to start the meeting. The team leader presented information on business continuity planning as per the agenda of the following meeting. Total twenty-two government and non-government stakeholders were present in the consultation meeting.

The major outcomes from the stakeholder consultation meeting are:

- The project area is disaster prone therefore business continuity plans need to be formulated keeping in mind all kinds of natural and man-made disasters including cyclones, floods, fires, and waterlogging.
- The nearest fire station in the project area is at least 15 km away. Therefore, it should be made mandatory to have a fire station with state-of-the-art facilities inside the project.
- Each factory must have its own fire safety plan within the project.
- A modern fire station requires a maximum 2 acres of land. In addition, there should be a ladder system capable of working in a multi-storey high-rise building. An application needs to be submitted through the Economic Zone Authority to the Director General of Fire Service and Civil Defense (FSCD). Then the fire service will try to provide all kinds of assistance to construction a modern fire station in the BSMSN.
- The project should have alternative or multiple power sources to avoid any emergency situations. The power line must be underground.
- The BMD and other concerned authorities have to send the disaster forecast in due course. Need to increase communication with internal government and non-government departments and agencies.
- Regular coordination meetings should be organized between the concerned departments for formulation and implementation of business continuity plan.
- In addition to formulating appropriate legislation for the implementation of business continuity planning, adequate skilled manpower needs to be recruited.

Another stakeholder consultation meeting was held on 25<sup>th</sup> September 2022 at the conference room of BEZA. The main target of the workshops was the investors' presence. The more intensive techniques were applied to get the best outcome from the investors. The sequence of the workshop as follows:

- A combined presentation by the Team Leader
- Group Discussion in three or four groups (considering the number of participants) with facilitation of the consultants.
- Presentation by the Groups
- Response by the Consultants
- Closing Remarks by the Chair

### **3.4 Piloting BCP Template**

The main objective of the piloting was to test the level of understanding of the BCP framework at the area and enterprise levels and implement ability of the framework during a time of disaster. For that purpose, all the relevant persons were involved in the piloting program both in the area and enterprise levels. At the very beginning of the program, the basic concept of the BCP was explained to the participants of the piloting exercise. Then the chain of command proposed in the BCP was validated. Then a disaster scenario was introduced to the participants. The participants engaged in a Tabletop Exercise (TTX) where they simulated the instructions that are supposed to be delivered during an actual disaster situation following the proposed chain of command. After the TTX, field exercises were conducted for firefighting, route selection for vehicles, evacuation, assembly, medical services etc. Finally, feedback was received from the MIEZ Authority. The sequence of activities conducted during piloting is shown Figure 8.3 in Chapter 8.

### **3.5 Report Finalization**

The team of consultants submitted an inception report in February 2022. The inception report was later presented in a workshop on 03 March 2022. A literature review report and an environmental and social screening checklist were submitted by respectively the BCM Expert and the Environmental and Social Analysis Expert on 18 April 2022. The IPE Expert and the Team Leader submitted a risk mapping report and a BCP template respectively on 22 April 2022. These reports were accepted in the 2nd Technical Committee Meeting of BEZA on 10 May 2022.

The Piloting Plan Report, BIA Template, Area Disaster Response and Recovery Plan, Enterprise Level Disaster Response and Recovery Plan and Review Report on Policy, Acts, Laws, Guidelines in Relation with Green BCP & Institutional Arrangement were submitted by the Consultants on 30 August 2022. These reports were presented and accepted in the 5th and 6th Technical Committee meetings on 30 and 31 August 2022 respectively.

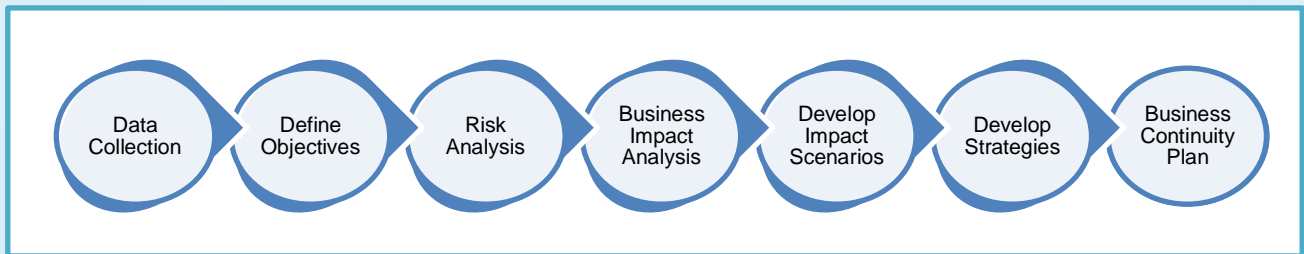
Then the 7th meeting of the Technical Committee was held on 29 November 2022 and discussed the final version of the report and provided feedback, which has been incorporated. Including the meetings of the Technical Committee, a total of 14 official meetings were held with various stakeholders in Dhaka, Chattogram, Mirsarai, and Sonarganon for preparing this report. The present report proposes BCP frameworks both for area and enterprise levels. Two sample area BCPs are then presented for BSMSN and MIEZ and a sample for enterprise level BCP is presented for the Meghna Beverage Limited.



# CHAPTER 4 BCP FRAMEWORK

## 4.1 Introduction

According to the methodology of the study presented in Chapter 1, the study was conducted following the seven steps shown in Figure 4.1. A draft template of the BCP framework based on the seven steps is presented in this chapter.

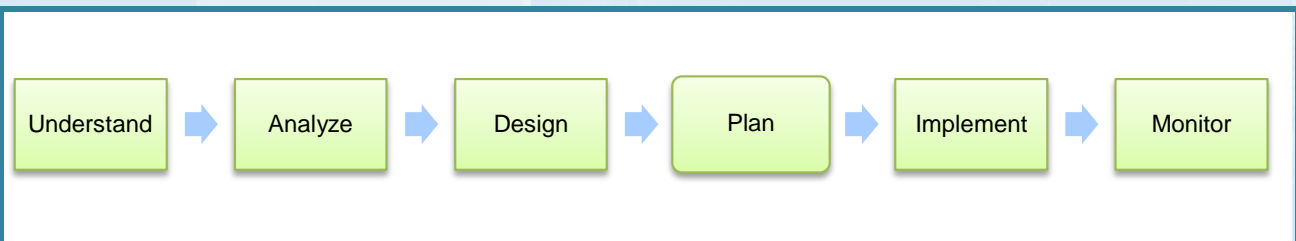


**Figure 4.1: Steps of Business Continuity Plan**

Two types of BCP frameworks are developed in this study, namely, Area BCP and Enterprise BCP. As an authoritative document, BS EN ISO 22301: 2019 [1] has been followed as a broader guideline for both the Area and Enterprise types BCPs. The ISO standard has been customized to contextualize the BCP frameworks to the realities of the economic zones of BEZA. The BCP frameworks are prepared here in such a manner so that they can easily be translated into a web-based portal. The sentences in italics and within quotes in the following sections are example statements. An example Area BCP is described in Section 2 for an arbitrary economic zone “ABC” and an example of Enterprise BCP is described in Section 3 for an arbitrary enterprise “DEF.” All the numerical values mentioned in the following sections are hypothetical for the purpose of giving instances.

## 4.2 Area BCP Framework

The Area BCP framework will consist of six phases: i) Understand ii) Analyze iii) Design iv) Plan v) Implement and vi) Monitor (Figure 4.2).



**Figure 4.2: Phases of Area BCP framework**

#### 4.2.1 Area BCP Phase-1: “Understand”

The phase “Understand” will involve understanding the context of the organization, its leadership, preferences in the planning process and supporting resources. The following sections will describe these items one by one.

##### 4.2.1.1 Context of the Organization

This section of the BCP will contain the basic information about the organization, its legal and regulatory context, and the scope of the BCP. Following texts are examples statements to demonstrate the content of BCP.

- i. **Organization:** In this section the organization, for which the Area BCP is presented, will be introduced. Following is an example:

*Example: “The present Business Continuity Plan is for the “ABC” economic zone of Bangladesh Economic Zones Authority (BEZA). The economic zone is located at “XYZ” with total area of “123” acres.”*

A regional map may be placed to show the location of the economic zone.

- ii. **Legal and regulatory context:** This section will describe the legal authority of the organization. Following is an example:

*Example: “BEZA was established by the Bangladesh Economic Zones Act 2010. The “ABC” economic zone was planned by the “αβγ” regulatory document.”*

- iii. **Scope of the BCP:** This section will define the scope of the Area BCP giving a broader objective of the BCP. Following is an example.

*“The scope of the present BCP is to provide plans for continuity of critical operations of the economic zone authority in case of a natural or man-made disaster so that the down time of operations of the enterprises within the economic zone is minimum and the entire system returns to its normal operation level within a reasonable time frame.”*

##### 4.2.1.2 Leadership

This section will describe the hierarchy of the organization and the intended chain of command for the BCP along with roles and responsibilities of different positions within the hierarchy. A BCP policy will be suggested in this section.

- i. **Organogram:** An organogram of the organization will be placed here showing the hierarchy. A specific chain of command for administering the BCP will also be suggested at the level of BEZA, the economic zones thereunder including the ones which are licensed out to be managed by the private sector, and enterprises therein. However, for the purpose of the assignment and report here, only two economic zones, i.e., BSMSN, and MIEZ are specifically addressed, when applicable.
- ii. **BCP policy:** The policy under which the BCP will be administered will be mentioned in this section. This may be an existing policy, or a new policy may be proposed to be adopted. Following is an example.

*Example [proposed for consideration by the BEZA authority]: “Bangladesh Economic Zones Authority considers Business Continuity Plan (BCP) as an integral part of managing all the economic zones, including those which are directly under its authority and management, and the ones licensed out to the private sector for operations. The Purpose of the BCP Policy is to (i) create value for the investors, (ii) improve preparedness, and responsiveness to disasters, (iii) facilitate quicker recovery to business as usual with the minimum possible damage to life, property, and critical functions, services, and infrastructure, and (iv) promote responsible management practices. The BCP Policy will be subject to regular and periodic review and monitoring and will adhere to international and national norms and standards. The BEZA will oversee the implementation of BCP Policy at all levels of the economic zones and enterprises and will assign the specific responsibilities to designated officials as deemed appropriate. This BCP Policy is and will remain in tune with the major national policy objectives stated in various national policy documents, e.g., Bangladesh Delta Plan 2100, Mujib Climate Prosperity Plan, Vision 2041, the 8th 5-Year Plan, SDGs, etc.”*

The Proposed BCP Framework developed under this assignment will be considered as a guideline, after it is approved by BEZA.

- iii. **Roles and responsibilities:** An organizational set up will be described in this section of the Area BCP who will be responsible for administering and implementing the BCP. The organizational set up will depend on the present organogram of the organization. The BCP administering body may be constituted from the existing human resources or a new cell/unit may be created. Examples of such organizational set up are available in Chapters 5 and 6.

#### **4.2.1.3 Planning**

Understanding the nature of the economic zone, its critical functions, risks and threats, objectives of the BCP will be determined in this section.

- i. **Profile of the organization:** The nature of the economic zone will be described here. The number of industries located in the economic zone will be mentioned here. A list of the industries will be presented here. An example of the list is given in below.

*Example: “List of industries:*

Name of industry	Type of industry	Environmental class	Area (m <sup>2</sup> )	No. of people employed	Assets	Product	Critical input from BEZA
DEF	Beverage	Orange	789	222	Buildings, machines, ETP	Cold drinks	Water, Power
GHI	Garment accessories	Orange	456	111	Buildings, machines	Hanger	Power, Internet
...	...	...	...	...	...	...	...

“

- ii. **Social and environmental setting:** Demographic and environmental information of the surrounding area will be mentioned here.
- iii. **Critical functions:** All the critical functions, continuation of which, are essential for the continuity of the core business of the organization will be identified in this section. The BCP objectives will later be developed based on the identified critical functions. Following are example statements for this section.

*Example: "The critical functions performed by the economic zone are listed below:*

Table 4.2: List of Functions		
Function	Allowable complete down time (days)	Allowable partial downtime (days)
<i>Providing security</i>	<i>0</i>	<i>2</i>
<i>Maintaining road infrastructure</i>	<i>0</i>	<i>15</i>
<i>Providing water</i>	<i>1</i>	<i>5</i>
<i>Providing electricity</i>	<i>2</i>	<i>4</i>
<i>Providing gas</i>	<i>4</i>	<i>7</i>
<i>Internet service</i>	<i>5</i>	<i>10</i>
...	...	

- iv. **Critical infrastructure:** All the infrastructure that are required to continue the critical functions of the organization will be listed in this section. Following is an example list.

*Example: "A list of critical infrastructure are listed below.*

Table 4.3: List of Critical Infrastructure	
Critical infrastructure	Facilities
<i>Fire station</i>	<i>2 fire trucks ...</i>
<i>Health Centre</i>	<i>2 beds, 1 doctor ...</i>
<i>Road infrastructure</i>	<i>33 km ...</i>
<i>Multipurpose building</i>	<i>1 no. 10 storied building with ...</i>
<i>CETP</i>	<i>2000 cubic meter per day ...</i>

- v. **Risks and threats:** All the threats that can disrupt business operations of the organization will be identified and listed in this section. Following is an example of such a list.

*Example: "Probable risks and their perception by the organization are listed below.*

Table 4.4: List of Risks and Threats		
Risk or threat	Perception of likelihood (1-5)	Perception of intensity (1-5)
<i>Natural Hazards</i>		
<i>River Flood</i>	<i>2</i>	<i>3</i>
<i>Flash Flood</i>	<i>5</i>	<i>4</i>



Risk or threat	Perception of likelihood (1-5)	Perception of intensity (1-5)
<i>Cyclone</i>	5	2
<i>Storm Surge</i>	3	3
<i>Salinity Intrusion</i>	3	2
<i>Earthquake</i>	3	5
<i>Landslide</i>	1	1
<i>Tsunami</i>	1	1
<i>Health Crisis</i>		
<i>Communicable Diseases</i>	3	2
<i>Loss of key staff due to illness</i>	2	1
<i>Security</i>		
<i>Cyber attacks</i>	2	3
<i>Terrorist attack</i>	1	2
<i>Theft</i>	4	1
<i>Vandalism</i>	3	2
<i>Man-Made Hazards</i>		
<i>Accidents – Machine damage</i>	5	3
<i>Poisonous gas emission</i>	2	5
<i>Infrastructure damage</i>	3	5
<i>Fire</i>	3	5
<i>Movement restriction</i>	1	4
<i>Natech Disaster</i>	2	3
<i>Support System Failure</i>		
<i>Power cut</i>	4	3
<i>Gas supply disruption</i>	3	3
<i>Water supply disruption</i>	3	3
<i>ETP malfunction</i>	5	1
<i>Internet support failure</i>	5	2
<i>Access to Essential GoB Services</i>		
<i>Inaccessibility to Sea port</i>	2	3
<i>Inaccessibility to Land port</i>	3	2
<i>Inaccessibility to Airport</i>	1	1
<i>Unavailability of Custom service</i>	2	3
<i>Unavailability of Banking service</i>	1	4
<i>External Forces Influence</i>		
<i>Supply chain disruption</i>	4	4
<i>Reputational damage</i>	1	2

“

A risk perception matrix, based on perceptions of likelihood and intensity, will be placed here.

#### **4.2.1.4 BCP Objectives**

The objectives of the BCP will be developed based on the identified risks, critical functions, and critical infrastructures. An example of the BCP objectives is given below.

Example: “Based on the critical activities and assets, the BCP objectives are listed below

<b>Table 4.5:BCP Objectives</b>					
<b>Category</b>	<b>Critical Activities/ Assets/Items</b>	<b>Measurement</b>	<b>Max. Allowable Damage</b>	<b>Recovery Time Objective</b>	<b>Recovery Level Objective</b>
<i>Critical functions</i>	<i>Security</i>	<i>No. of unsecured points</i>	6	1d 2d	2 6
	<i>Roads</i>	<i>km of unusable roads</i>	60	7d 15d 3m	5 20 60
	...				
<i>Infrastructure / Assets</i>	<i>Fire station</i>	<i>Operationality</i>	<i>Non-operational</i>	2d	<i>Operational</i>
	<i>Health center</i>	<i>Operationality</i>	<i>Non-operational</i>	1d	<i>Operational</i>
	...				
<i>Social impacts</i>	<i>Displacement of people</i>	<i>No. of people</i>	300	7d 20d	100 300
	<i>Loss of employment</i>	<i>No. of jobs lost</i>	200	1m 3m	50 200
	...				
<i>Environmental impacts</i>	<i>Air pollution</i>	<i>AQI</i>	5	3d 15d	4 2 (Base level)
	<i>Water pollution</i>	<i>Water quality</i>	<i>Not satisfactory</i>	7d	<i>Satisfactory</i>
	...				
<i>Legal</i>	<i>Impact of violations of law</i>	<i>No. of litigations</i>	10	12 mon. 24 mon.	5 5
	...				
<i>Business</i>	<i>Impact on investors</i>	<i>Investment withdrawal</i>	20m USD	4 mon. 12 mon.	5m USD 20m USD
	<i>Impact on reputation</i>	<i>Media coverage</i>	<i>Overall negative</i>	4 mon.	<i>Overall positive</i>
	...				

“

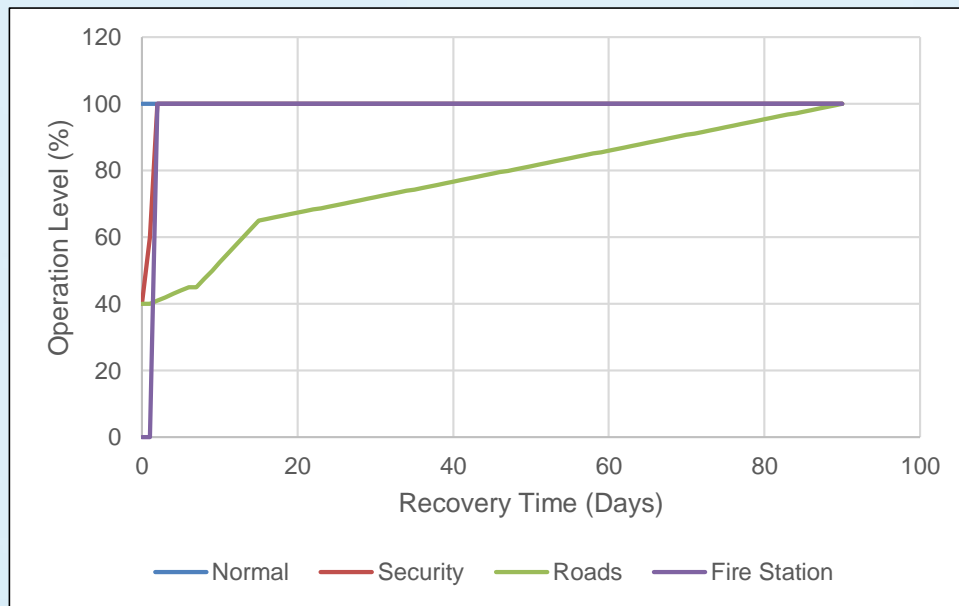
Graphs showing level of operation vs. time may be plotted for different items may be placed as Figure 4.3.

#### **4.2.1.5 Support**

Organizational support in terms of human resource and other resources needed particularly for administering BCP will be mentioned here.

#### **4.2.2 Area BCP Phase-2: “Analyze”**

In this phase, risk assessment is conducted in a methodical approach. For the assessed risks, impacts on business, in the present course of affairs, are estimated which provides a baseline value. Based on the assessed risks and business impacts, a business continuity plan is developed.



**Figure 4.3: Business Continuity Plan Objectives**

#### 4.2.2.1 Risk Assessment

Likelihood and intensity of each type of risk will be assessed quantitatively based on primary or secondary data. The findings of the assessment can be shown in a table. An example of such a table is given below.

*Example: "Risk assessment in terms of likelihood and intensity is tabulated below:*

**Table 4.6: Risk Assessment in terms of Likelihood and Intensity**

Risk/ Threat	Likelihood	Intensity
River flood	1 in 20 years	Inundation depth = 2m
Flash flood	1 in 5 years	Inundation depth = 2.5m
Cyclone	1 in 10 years	Wind speed = 100 km/h
Storm surge	1 in 50 years	Inundation depth = 6m
...	...	...

An assessed risk matrix may be presented here. Any major contraction between the assessed risk matrix and perceived risk matrix should be resolved through a stakeholders' consultation.

#### 4.2.2.2 Business Impact Assessment

Impacts on critical business functions and critical infrastructures by the assessed risks are evaluated in this section and different scenarios are developed. Examples of business impact scenarios are provided below.

*Example: "Impact on business activities for different types of risks are assessed and expressed in the table below which provides different scenarios.*

**Table 4.7: Impact on Business Activities for Different Types of Risks**

Category	Critical Activities/ Assets/ Items	Measure ment	Risk	Intensity	Damage level	Scenario	
A. Critical activities	1. Security	No. of unsecured points	1. Flash flood	1m 2m ...	2 5 ...	A.1.1.a A.1.1.b	
			2. Earthquake	0.2g 0.4g ...	3 6 ...	A.1.2.a A.1.2.b	
			...	...	...		
	2. Roads	km of unusable roads	1. Flash flood	1m 2m ...	5 15 ...	A.2.1.a A.2.2.b	
			2. Earthquake	0.2g 0.4g ...	3 20 ...	A.2.2.a A.2.2.b	
			...	...	...		
	...	...	...	...	...	...	
	B. Infrastructure / Assets	1. Fire station	Operationality	1. Flash flood	1m 2m	Operational Non-operational	B.1.1.a B.1.1.b
				2. Earthquake	0.2g 0.4g	Operational Non-operational	B.1.2.a B.1.2.b
				...	...	...	
2. Health centre		Operationality	1. Flash flood	1m 2m	Operational Non-operational	B.2.1.a B.2.1.b	
			2. Earthquake	0.2g 0.4g	Operational Operational	B.2.2.a B.2.2.b	
			...	...	...	...	
C. Social impacts	1. Displacement of people	No. of people	1. Flash flood	1m 2m ...	80 200 ...	C.1.1.a C.1.1.b	
			2. Earthquake	0.2g 0.4g ...	200 3000 ...	C.1.2.a C.1.2.b	
			...	...	...		
	2. Loss of employment	No. of jobs lost	1. Flash flood	1m 2m ...	0 20 ...	C.2.1.a C.2.1.b	
			2. Earthquake	0.2g 0.4g ...	50 500 ...	C.2.2.a C.2.2.b	
			...	...	...		
	...	...	...	...	...		



Category	Critical Activities/ Assets/ Items	Measurement	Risk	Intensity	Damage level	Scenario	
D. Environmental impacts	1. Air pollution	AQI	1. Flash flood	1m 2m	2 2	D.1.1.a D.1.1.b	
			2. Earthquake	0.2g 0.4g	3 5	D.1.2.a D.1.2.b	
			...	...	...		
	2. Water pollution	Water quality	1. Flash flood	1m 2m	Unsatisfactory Unsatisfactory	D.2.1.a D.2.1.b	
			2. Earthquake	0.2g 0.4g	Satisfactory Unsatisfactory	D.2.2.a D.2.2.b	
			...	...	...		
	...	...	...	...	...	...	
	E. Legal	1. Impact of violations of law	No. of litigations	1. Flash flood	1m 2m ...	0 2 ...	E.1.1.a E.1.1.b
				2. Earthquake	0.2g 0.4g ...	3 10 ...	E.1.2.a E.1.2.b
...				...	...		
...		...	...	...	...		
F. Business	1. Impact on investors	Investment withdrawal	1. Flash flood	1m 2m ...	1m USD 5m USD ...	F.1.1.a F.1.1.b	
			2. Earthquake	0.2g 0.4g ...	5m USD 20m USD ...	F.1.2.a F.1.2.b	
			...	...	...		
	2. Impact on reputation	Media coverage	1. Flash flood	1m 2m	Positive Negative	F.2.1.a F.2.1.b	
			2. Earthquake	0.2g 0.4g	Negative Negative	F.2.2.a F.2.2.b	
			...	...	...		
...	...	...	...	...			

#### 4.2.3 Area BCP Phase-3: "Design"

Strategies for the Business Continuity Plan will be designed in this phase. "Different strategies for business continuity are described below.

- i. **Avoidance:** The risk is eliminated by withdrawing and not getting involved in the risky situation. For instance, structures of an economic zone are constructed away from a steep slope so that land slide does not cause damage.
- ii. **Reduction:** This is about mitigating the potential impact of the disaster by bringing it to a lower level of magnitude that you (and the stakeholders) deem acceptable and affordable. If it is in an

earthquake prone area, the structures can be retrofitted to make them more resistant to earthquakes.

- iii. **Sharing or transfer:** This is when the management decides to transfer part of the risk to an external counterpart who accepts it. This is what typically happens when an organization gets insurance or when certain activities are outsourced.
- iv. **Retention:** This is the approach adopted when the consequences of a disaster can be afforded to sustain and budgeted for the expected costs. For example, flood is allowed to happen to a certain level and excess water is pumped out.
- v. **Redundancy:** Alternative measures are prepared for services that can be disrupted during a disaster. For example, during a flooding event the fiber optic backbone of internet network may be damaged. In that case, satellite-based internet service can provide an alternative.
- vi. **Diversification:** Alternate sources of supply can be secured so that if a source is unable to supply due to an external disaster, supplies from alternate sources can be availed.
- vii. **Back-up:** During a disaster, the supply chain of an organization may be disrupted when input raw materials may be unavailable. In such situations, a stockpile of raw materials can keep production/service running just after a disaster.
- viii. **Distribution:** Some critical business activities may be conducted from different sites so that if one site is affected by a disaster the activities may be conducted from other sites. Similarly, inventories can also be located at different sites so that if one site is impacted inventories can be supplied from other sites.
- ix. **Teleworking:** Desk jobs of an organization can be continued after a disaster from home or out of station through on-line communication and cloud sharing.
- x. **Prior personnel development:** Alternate personnel can be trained beforehand who can take place of personnel involved in critical activities so that there is no shortage of human resource to continue critical activities after a disaster.
- xi. **Collaboration:** A collaborative relationship can be maintained with customers and suppliers so that there is enough understanding during a disaster.
- xii. **Budgeting:** It is the activity that allows understanding the cash flows and therefore the financial needs to carry out different activities. A budget helps to figure out what should be the revenues coming from economic activities and what are the different expenses faced. In the case of a disaster, having this information at hand, helps an organization to take quick decisions that enable business continuity. Once the budgeting activity is carried out the organization can evaluate what are the different financial institutions providing services in their location. Three different financial services can be used in order to manage economic activities. These three

products are (a) savings, (b) credit and (c) insurance. The right understanding of each product and its utilization should allow for better risk prevention planning and mitigation for business continuity.

- xiii. **Savings:** Savings are made to be secure, with low transaction costs, an appropriate design, and, if possible, with real returns. Savings can be targeted to the realization of an objective, in this case, for an unpredictable event. While insurance can cover for asset replacement, savings can be used for the working capital or to bridge the loss of income before the activity recovery.
- xiv. **Emergency credit:** is an immediately available loan (given by a bank to a non-bank institution or organization when no other source of credit is available) to assist an organization to cope with unexpected expenses. It can be used interchangeably with savings though not always accessible neither advisable as it can lead the organization into over indebtedness.
- xv. **Insurance:** can provide different sets of products that allow covering from the losses incurred when a risk materializes. Property insurance for example covers the losses for damages in case of fire, floods, theft, and other perils both in the property as well as stocks of materials that may be needed for production.”

#### 4.2.4 Area BCP Phase-4: “Plan”

Specific action plans are developed to mitigate the risk scenarios developed in the earlier phase of the BCP. Different strategies may be adopted for mitigation of the risks. The action plans may be classified based on the strategies. Examples of action plans based on some scenarios of Section 4.2.2.2 are given below.

Example: “For the scenarios developed in Section 4.2.2.2 plans are chalked out based on the strategies mentioned in Section 4.2.3 to achieve business continuity objectives stated in Section 4.2.1.4. Action plans for different scenarios are tabulated below

“

**Table 4.8: Business Continuity Plan**

Scenario	Strategy	Action Plan
A.1.1.a	Budgeting	1. Budget will be allocated to recover in the event of damages due to 1m inundation after assessment of damage.
A.1.1.b	Retention	2. Pumps will be installed. 1m inundation will be allowed and excess water will be pumped out of the zone.
A.1.2.a	Reduction	3. Earthquake vulnerability will be reduced by retrofitting structures.
A.1.2.b	Insurance	4. Structures will be insured against damages due to earthquakes of intensity 0.4g or greater.
...	...	...

“

#### 4.2.5 Area BCP Phase-5: “Implement”

In this phase Implementation plan, exercise & testing and training & awareness plans are specified.

#### 4.2.5.1 Implementation Plan

Resources required for each of the action plans are described in this section. Examples are given below for some action plans of Section 4.2.4.

*Example: “For implementation of each of the action plans of the BCP stated in Section 4.2.4 required human resources, goods, works, finance, and communication are mentioned in the following table.*

**Table 4.9: Implementation plan**

Action plan	Implementation component	Implementation plan
1.	Human resource	4 engineers will be assigned for the purpose of damage assessment in the event of a flood.
	Finance	Allocate BDT 1234547.89 in the annual budget for recovery from damages from flood.
	Communication	The assigned engineers have to be trained on damage assessment.
2.	Human resources	4 pump operators and a supervisor are to be recruited.
	Goods	12 pumps of 1000 HP to be procured.
	Works	10 Pump stations to be constructed.
	Finance	BDT 23456.78 to be allocated for implementing this action plan.
	Communication	People have to be made aware that there may be inundation of 1m depth.
...	...	...

“

#### 4.2.5.2 Exercise & Testing Plan

*“Modalities of exercise and testing of each of the action plans are given in the following table.*

**Table 4.10: Exercise & Testing Plan**

Action plan	Exercise/ testing type	Exercise/ testing	Frequency of exercise
1.	Desktop exercise	Engineers will assess damage using asset inventory and fictitious flood survey data.	Once in a year
2.	Desktop exercise	Instructions will be issued through proper chain of command to start the pumps.	Once in two years
	Field exercise	The operators will run the pumps.	
	Testing	Condition of the pumps will be tested.	
...	...	...	...

“

#### 4.2.5.3 Training & Awareness Plan

*“To make the BCP effective all the stakeholders should be aware of it. Moreover, for its proper implementation, different education and training programs should be introduced for different sections of stakeholders. Relevant education, training & awareness programs are listed below.*



**Table 4.11: Training & Awareness Plan**

Campaign type	Target Audience	Program	Frequency
Awareness	All stakeholders	Introduction to the basic concept of BCP.	Once in a year
Training	Economic zone engineers	Risk mapping	Once in two years
Training	Economic zone business professional	Business Impact Assessment	Once in two years
...	...	...	...

#### 4.2.6 Area BCP Phase-6: “Monitor”

Performance of the entire BCP is evaluated in this phase. This includes monitoring of the action plans, exercise & testing program, training & awareness program. Necessity of modifications of the business continuity objectives, risk matrix and business impacts are also assessed by an internal audit. Top management will also review the entire process of BCP.

##### 4.2.6.1 Performance Monitoring

Performance of each action plan in a disaster situation will be monitored in this phase. Depending on the nature of the action plan, there will be different indicators for monitoring. The indicators will have specific measurement methods and a threshold value below which the performance of an action plan will be considered unsatisfactory. If performance of an action plan is unsatisfactory, the reasons for such poor performance will be investigated and corrective measures will be suggested. A format for performance monitoring is given below as an example. *Example: “The yearly monitoring activities are listed below.*

**Table 4.12: Monitoring Activities**

Action to be monitored	Satisfactory? Yes/ No	If No, Reasons	Corrective Measure
Action plan 1	Yes		
Action plan 2	No	Budget was not adequate	Increase the budget
...	...	...	...
Exercise & testing plan 1	Yes		
Exercise & testing plan 2	No	Quality of pumps was not satisfactory	Change the specification of the pumps
'''	'''	'''	'''
Training & Awareness plan 1	No	Some stakeholders did not participate	The method of communication can be changed.
Training & Awareness plan 2	Yes		
...	...	...	...

##### 4.2.6.2 Internal Audit

In every two years there will be an internal audit by the Economic Zone to determine if any change is needed in the BCP objectives, risk matrix or probable business impacts.

#### 4.2.6.3 Management Review

Every five years the top management of BEZA will review the BCP framework and suggest modifications.

### 4.3 Enterprise BCP Framework

The Enterprise BCP Framework will be similar to the Area BCP framework consisting of the same six phases: i) Understand ii) Analyze iii) Design iv) Plan v) Implement and vi) Monitor. However, there will be differences in details of the phases as discussed below.

#### 4.3.1 Enterprise BCP Phase-1: "Understand"

The phase "Understand" will involve understanding the context of the enterprise, its leadership, preferences in the planning process and supporting resources. The following sections will describe these items one by one.

##### 4.3.1.1 Context of the Organization

This section of the BCP will contain the basic information about the enterprise, its legal and regulatory context, and the scope of the BCP. Following texts are examples statements to demonstrate the content of BCP.

- i. **Organization:** The enterprise for which the BCP will be prepared will be introduced in this section. Following is an example statement for that purpose.

*Example: "The present Business Continuity Plan is for the "DEF" enterprise located in the "ABC" Economic Zone of Bangladesh Economic Zones Authority (BEZA). The economic zone is located at "XYZ." The leased land area of the enterprise is "123" acres."*

A regional map may be placed to show the location of the economic zone.

- ii. **Legal and regulatory context:** The legal status of the enterprise will be explained in this section. An example statement is given below.

*Example: "The land was leased to the "DEF" enterprise through a contract signed between the enterprise and BEZA on "11/11/2011.""*

- iii. **Scope of the BCP:** The broader objective of preparing the BCP for the enterprise will be summarily presented in this section. An example statement is given below.

*Example: "The scope of the present BCP is to provide plans for continuity of critical operations of the enterprise in case of a natural or man-made disaster so that the down time of operations of the enterprise is minimum and the entire system returns to its normal operation level within a reasonable time frame."*

#### 4.3.1.2 Leadership

This section will describe the hierarchy of the organization and the intended chain of command for the BCP along with roles and responsibilities of different positions within the hierarchy. A BCP policy will be suggested in this section.

- i. **Organogram:** An organogram of the enterprise will be placed here showing the hierarchy. A possible chain of command for administering the BCP will also be suggested.
- ii. **BCP policy:** The policy of the economic zone under which enterprises will prepare their BCPs will be referred here. An example statement is provided here.

*Example: "The present BCP will be administered in the "DEF" enterprise according to the "BCP" policy document of the enterprise, derived from BCP Policy of BEZA referred to under Paragraph 4.2.1.2 (ii)."*

Such policy document can be made mandatory by contractual agreement with BEZA.

- iii. **Roles and responsibilities:** An organizational set up will be described here who will be responsible for administering and implementing the BCP. Example of such organizational set up is given in Chapter 7.

#### 4.3.1.3 Planning

Understanding of the nature of the enterprise, its critical functions, risks and threats, objectives of the BCP will be described in this section.

- i. **Profile of the organization:** The profile of the enterprise in terms of volume of production, sales, yearly turnover, total manpower employed etc. will be described here. A list of products will be presented here. *"An example of the list is given below:*

Name of product	Type of product	Daily production
<i>ijk</i>	<i>Beverage</i>	<i>Orange</i>
<i>lmn</i>	<i>Beverage</i>	<i>Orange</i>
<i>...</i>	<i>...</i>	<i>...</i>

A layout drawing of the enterprise may be included here.

- ii. **Social and environmental setting:** Demographic and environmental information of the surrounding area will be mentioned here.
- iii. **Critical functions:** The critical functions of the enterprise which are essential for the continuity of business operations of the enterprise will be identified in this section. Examples are provided below.

*Example: "The critical functions performed by the economic zone are listed below:*

**Table 4.14: List of Functions**

Function	Allowable down time (days)
<i>Purchasing</i>	7
<i>Production</i>	3
<i>Marketing and sales</i>	10
<i>Finance</i>	15
<i>Information management and communication</i>	1
<i>Human resources management</i>	1
<i>Public relations</i>	4
...	...

- iv. **Critical infrastructure:** The infrastructures that provide the basis for the critical functions will be described here. Examples are shown below.

*Example: "A list of critical infrastructure are listed below.*

**Table 4.15: List of Critical Infrastructure**

<i>Critical infrastructure</i>	<i>Facilities</i>
<i>Building 1</i>	<i>1234 sqm 1 storied ...</i>
<i>Building 1</i>	<i>5678 sqm 2 storied ...</i>
...	...
<i>Equipment 1</i>	<i>specification ...</i>
<i>Equipment 2</i>	<i>specification ...</i>
...	...
<i>Electric substation</i>	<i>123 kVA ...</i>
<i>ETP</i>	<i>Capacity ...</i>
...	...

- v. **Risks and threats:** Risk mapping will be presented in this section. A risk perception matrix, based on perceptions of likelihood and intensity, will be placed here. An example of the risk perception matrix is presented below.

*Example: "Probable risks and their perception by the organization are listed below.*

**Table 4.16: List of Risks and Threats**

<i>Risk or threat</i>	<i>Perception of likelihood (1-5)</i>	<i>Perception of intensity (1-5)</i>
<i>Natural Hazards</i>		
<i>River Flood</i>	2	3
<i>Flash Flood</i>	5	4
<i>Cyclone</i>	5	2
<i>Storm Surge</i>	3	3
<i>Salinity Intrusion</i>	3	2
<i>Earthquake</i>	3	5
<i>Landslide</i>	1	1
<i>Tsunami</i>	1	1



<i>Risk or threat</i>	<i>Perception of likelihood (1-5)</i>	<i>Perception of intensity (1-5)</i>
<i>Health Crisis</i>		
<i>Communicable Diseases</i>	3	2
<i>Loss of key staff due to illness</i>	2	1
<i>Security</i>		
<i>Cyber attacks</i>	2	3
<i>Terrorist attack</i>	1	2
<i>Theft</i>	4	1
<i>Vandalism</i>	3	2
<i>Man-Made Hazards</i>		
<i>Accidents – Machine damage</i>	5	3
<i>Poisonous gas emission</i>	2	5
<i>Infrastructure damage</i>	3	5
<i>Fire</i>	3	5
<i>Movement restriction</i>	1	4
<i>Natech Disaster</i>	2	3
<i>Support System Failure</i>		
<i>Power cut</i>	4	3
<i>Gas supply disruption</i>	3	3
<i>Water supply disruption</i>	3	3
<i>ETP malfunction</i>	5	1
<i>Internet support failure</i>	5	2
<i>Access to Essential GoB Services</i>		
<i>Inaccessibility to Sea port</i>	2	3
<i>Inaccessibility to Land port</i>	3	2
<i>Inaccessibility to Airport</i>	1	1
<i>Unavailability of Custom service</i>	2	3
<i>Unavailability of Banking service</i>	1	4
<i>External Forces Influence</i>		
<i>Supply chain disruption</i>	4	4
<i>Reputational damage</i>	1	2

“

A risk perception matrix, based on perceptions of likelihood and intensity, will be placed here.

#### **4.3.1.4 BCP Objectives**

BCP objectives will be defined in terms of maximum allowable damage level and recovery time of the critical functions and assets within the scope outlined in Section 4.3.1.1. Some hypothetical examples are given below.

*Example: “Based on the critical activities and assets, the BCP objectives are listed below.*

**Table 4.17: BCP Objectives**

Category	Critical Activities/ Assets/Items	Measurement	Max. Allowable Disruption	Recovery Time Objective	Recovery Level Objective
Critical functions	Purchasing	Monetary	10,000 USD	3d 7d	3,000 USD 10,000 USD
	Production	No. of days	3	3d	
	...				
Infrastructure / Assets	Building 1	Operationality	Non-operational	2d	Operational
	...	...	...	...	...
	Equipment 1	Operationality	Non-operational	1d	Operational
	...				
Social impacts	Displacement of people	No. of people	30	7d 20d	10 30
	Loss of employment	No. of jobs lost	12	15 30	5 12
	...				
Environmental impacts	Air pollution	AQI	5	3d 15d	4 2 (Base level)
	Water pollution	Water quality	Not satisfactory	7d	Satisfactory
	...				
Legal	Impact of violations of law	No. of litigations	4	12 mon. 24 mon.	2 4
	...				
Business	Impact on investors	Investment withdrawal	2m USD	4 mon. 12 mon.	0.5m USD 2m USD
	Impact on reputation	Media coverage	Overall negative	4 mon.	Overall positive
	...				

“

Graphs showing level of operation vs. time may be plotted for different items.

#### 4.3.1.5 Support

The resources available and required for implementation of BCP will be provided here.

#### 4.3.2 Enterprise BCP Phase-2: “Analyze”

In this phase, risk assessment will be conducted in a methodical approach. For the assessed risks, impacts on business, in the present course of affairs, will be estimated which provides a baseline value. Based on the assessed risks and business impacts, the business continuity plan will be developed.

#### 4.3.2.1 Risk Assessment

Likelihood and intensity of each type of risk will be assessed quantitatively based on primary or secondary data. The findings of the assessment can be shown in a table.

Example: “Risk assessment in terms of likelihood and intensity is tabulated below:

Risk/ Threat	Likelihood	Intensity
River flood	1 in 20 years	Inundation depth = 2m
Flash flood	1 in 5 years	Inundation depth = 2.5m
Cyclone	1 in 10 years	Wind speed = 100 km/h
Storm surge	1 in 50 years	Inundation depth = 6m
...	...	...

An assessed risk matrix may be presented here. Any major contradiction between the assessed risk matrix and perceived risk matrix should be resolved through a stakeholders’ consultation.

#### 4.3.2.2 Business Impact Assessment

“Impact on business activities for different types of risks are assessed and expressed in the table below which provides different scenarios.

Category	Critical Activities / Assets/ Items	Measurement	Risk	Intensity	Damage Level	Scenario
A. Critical functions	1. Purchasing	Monetary	1. Flash flood	1m	1,000 USD	A.1.1.a
				2m	5,000 USD	A.1.1.b
				...	...	
			2. Earthquake	0.2g	6,000 USD	A.1.2.a
				0.4g	10,000 USD	A.1.2.b
				...	...	
	2. Production	No. of days	1. Flash flood	1m	3	A.2.1.a
				2m	7	A.2.2.b
				...	...	
			2. Earthquake	0.2g	7	A.2.2.a
0.4g	30	A.2.2.b				
...	...	...	...	...		
...	...	...	...	...		

Category	Critical Activities / Assets/ Items	Measurement	Risk	Intensity	Damage level	Scenario	
B. Infrastructure / Assets	1. Building -1	Operationality	1. Flash flood	1m 2m	Operational Non-operational	B.1.1.a B.1.1.b	
			2. Earthquake	0.2g 0.4g	Operational Non-operational	B.1.2.a B.1.2.b	
			...	...	...	...	
	...	...	...	...	...	...	
	2. Equipment -1	Operationality	1. Flash flood	1m 2m	Non-Operational Non-operational	B.2.1.a B.2.1.b	
			2. Earthquake	0.2g 0.4g ...	Operational Non-Operational ...	B.2.2.a B.2.2.b	
			...	...	...	...	
	...	...	...	...	...	...	
	C. Social impacts	1. Displacement of people	No. of people	1. Flash flood	1m 2m ...	8 20 ...	C.1.1.a C.1.1.b
				2. Earthquake	0.2g 0.4g ...	20 300 ...	C.1.2.a C.1.2.b
...				...	...	...	
2. Loss of employment		No. of jobs lost	1. Flash flood	1m 2m ...	0 2 ...	C.2.1.a C.2.1.b	
			2. Earthquake	0.2g 0.4g ...	5 50 ...	C.2.2.a C.2.2.b	
			...	...	...	...	
...		...	...	...	...	...	
D.Environmental impacts		1. Air pollution	AQI	1. Flash flood	1m 2m	2 2	D.1.1.a D.1.1.b
	2. Earthquake			0.2g 0.4g	3 5	D.1.2.a D.1.2.b	
	...			...	...	...	
	2. Water pollution	Water quality	1. Flash flood	1m 2m	Unsatisfactory Unsatisfactory	D.2.1.a D.2.1.b	
			2. Earthquake	0.2g 0.4g	Satisfactory Unsatisfactory	D.2.2.a D.2.2.b	
			...	...	...	...	



Category	Critical Activities / Assets/ Items	Measurement	Risk	Intensity	Damage level	Scenario
	...	...	...	...	...	
E. Legal	1. Impact of violations of law	No. of litigations	1. Flash flood	1m 2m ...	0 1 ...	E.1.1.a E.1.1.b
			2. Earthquake	0.2g 0.4g ...	2 6 ...	E.1.2.a E.1.2.b
			...	...	...	
	...	...	...	...	...	
F. Business	1. Impact on investors	Investment withdrawal	1. Flash flood	1m 2m ...	0.1m USD 0.25m USD ...	F.1.1.a F.1.1.b
			2. Earthquake	0.2g 0.4g ...	0.5m USD 2m USD ...	F.1.2.a F.1.2.b
			...	...	...	
	2. Impact on reputation	Media coverage	1. Flash flood	1m 2m	Positive Negative	F.2.1.a F.2.1.b
			2. Earthquake	0.2g 0.4g	Negative Negative	F.2.2.a F.2.2.b
			...	...	...	
	...	...	...	...	...	

#### 4.3.3 Enterprise BCP Phase-3: “Design”

Strategies for the Business Continuity Plan will be designed in this phase. The options of strategies will be similar to those mentioned in Section 4.2.3.

#### 4.3.4 Enterprise BCP Phase-4: “Plan”

“For the scenarios developed in Section 4.3.2.2 plans are chalked out based on the strategies mentioned in Section 4.3.3 to achieve business continuity objectives stated in Section 4.3.1.4. Action plans for different scenarios are tabulated below.

Scenario	Strategy	Action Plan
A.1.1.a	Back-up	1. Required supplies will be stockpiles beforehand.
...	...	...
A.1.2.a	Diversify	2. Alternate source of supply will be secured.
...	...	...
A.2.1.a	Reduction	3. Production area will be made resistant to 1m flooding in the surrounding area.
...	...	...

### 4.3.5 Enterprise Phase-5: “Implement”

In this phase Implementation plan, exercise & testing and training & awareness plans are specified.

#### 4.3.5.1 Implementation Plan

“For implementation of each of the action plans of the BCP stated in Section 4.2.4 required space, management, works, finance, and communication are mentioned in the following table. An example is given in the following table.

“

Table 4.21: Implementation Plan		
Action plan	Implementation component	Implementation plan
1.	Space	11m x 11m space to be allocated for the back-up.
	Management	Purchase and maintenance of the back-up.
	Finance	1000 USD budget to be allocated for the back-up.
2.	Management	Explore, communicate and make contract so that during disaster supplies may be availed from alternate sources.
	Finance	Finance has to be available if higher prices are needed for alternate sources.
...	...	...

“

#### 4.3.5.2 Exercise & Testing Plan

“Modalities of exercise and testing of each of the action plans are given in the following table.

Table 4.22: Exercise & Testing Plan			
Action plan	Exercise/ testing type	Exercise/ testing	Frequency of exercise
1.	Field exercise	Back-ups are inspected	Every six month
2.	Desktop exercise	Contracts with alternate sources are reviewed. Alternate sources are communicated to verify their commitment.	Once in a years
...	...	...	...

“

#### 4.3.5.3 Training & Awareness Plan

To make the BCP effective all the stakeholders should be aware of it. Moreover, for its proper implementation, different education and training programs should be introduced for different sections of stakeholders. Examples of education, training & awareness programs are provided below.

**“Table 4.23: Training & Awareness Plan**

Campaign type	Target Audience	Program	Frequency
Awareness	All stakeholders	Introduction to the basic concept of BCP.	Once in a year
Training	Enterprise engineers	Risk mapping	Once in two years
Training	Enterprise business professional	Business Impact Assessment	Once in two years
...	...	...	...

### 4.3.6 Enterprise Phase-6: “Monitor”

Performance of the entire BCP is evaluated in this phase. This includes monitoring of the action plans, exercise & testing program, training & awareness program. Necessity of modifications of the business continuity objectives, risk matrix and business impacts are also assessed by an internal audit. Top management will also review the entire process of BCP.

#### 4.3.6.1 Performance Monitoring

Performance of each action plan in a disaster situation will be monitored in this phase. Depending on the nature of the action plan, there will be different indicators for monitoring. The indicators will have specific measurement methods and a threshold value below which the performance of an action plan will be considered unsatisfactory. If performance of an action plan is unsatisfactory, the reasons for such poor performance will be investigated and corrective measures will be suggested. Examples of some yearly monitoring activities are shown below.

“The yearly monitoring activities are listed below.

**Table 4.24: Performance Monitoring**

Action to be monitored	Satisfactory? Yes/ No	If No, Reasons	Corrective Measure
Action plan 1	No	Back-up was not sufficient	Re-estimate the required back-up.
Action plan 2	Yes		
...	...	...	...
Exercise & testing plan 1	No	Back-up space was not sufficient	Increase the allocation of space for back-ups.
Exercise & testing plan 2	Yes		
'''	'''	'''	'''
Training & Awareness plan 1	No	Some stakeholders did not participate	The method of communication can be changed.
Training & Awareness plan 2	Yes		
...	...	...	...

#### **4.3.6.2 Internal Audit**

Every two years there will be an internal audit by the Enterprise to determine if any change is needed in the BCP objectives, risk matrix or probable business impacts.

#### **4.3.6.3 Management Review**

Every three years the top management of the enterprise will review the BCP framework and suggest modifications.

### **4. 4 Summary**

Two BCP frameworks, one for the economic zones under BEZA and the other for an individual enterprise within an economic zone have been proposed in this report. Both the frameworks follow an identical six step methodology. They essentially differ in the types of critical functions to be considered in the respective BCP frameworks. Both the frameworks include a monitoring phase. The BCP frameworks will perform in a loop starting from Understanding the context to Monitoring and return to Understanding the context in a three to five-year cycle.



# CHAPTER 5 AREA BUSINESS CONTINUITY PLAN FOR BANGABANDHU SHEIKH MUJIB SHILPA NAGAR

## 5.1 Introduction

Based on the Business Continuity Plan (BCP) framework proposed in Chapter 4, an Area BCP for Bangabandhu Sheikh Mujib Shilpa Nagar (BSMSN) is presented in this chapter as an example of the Area BCP. The framework is contextualized in this chapter for BSMSN. BSMSN is an example of an economic zone which is administered directly by Bangladesh Economic Zone Authority (BEZA). BSMSN is still being developed and a few enterprises have started operation. It is situated just on the coast of the Bay of Bengal. The following sections present the BCP in the same order as that of the framework of Area BCP presented in the previous chapter.

## 5.2 Area BCP of BSMSN Phase-1: “Understand”

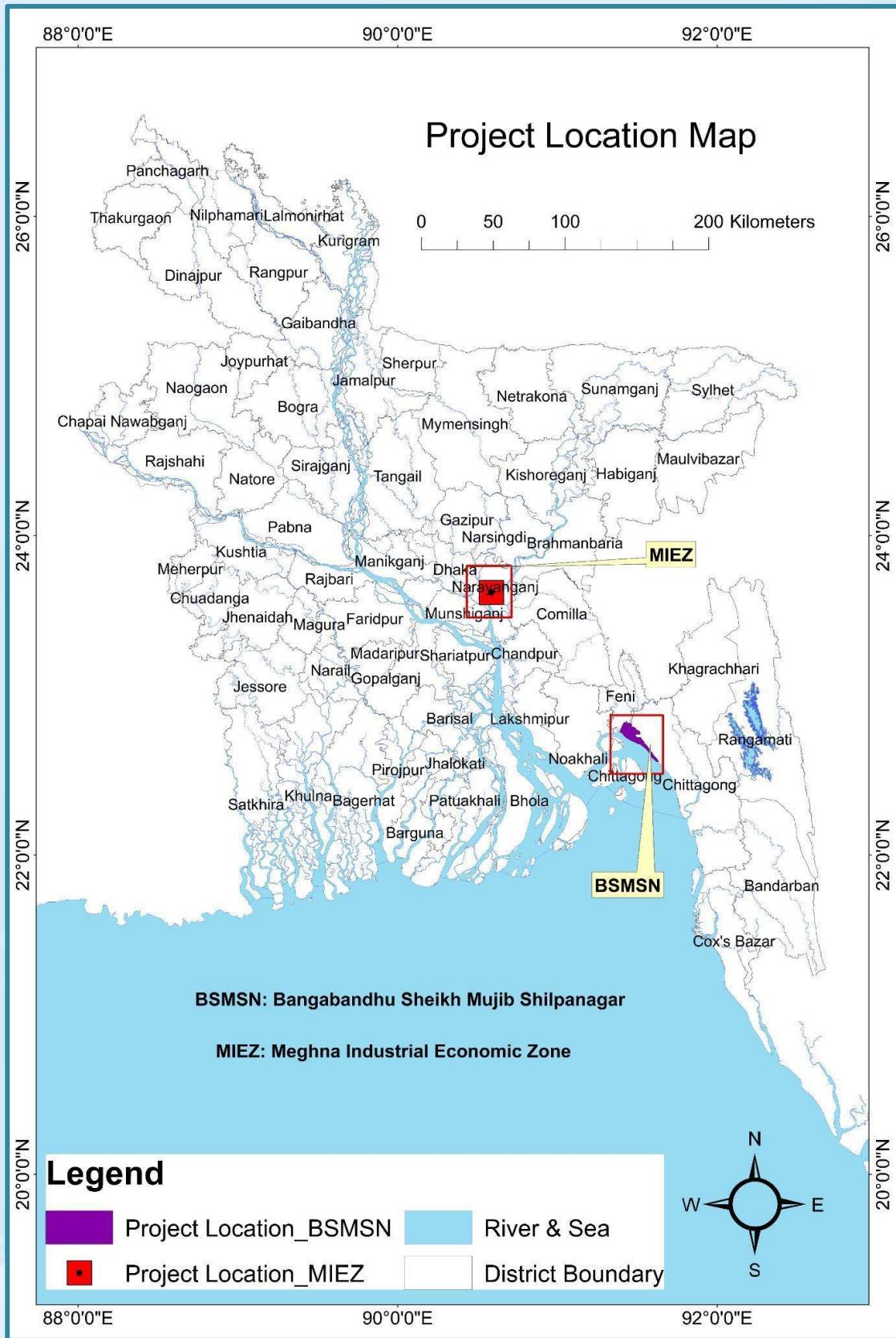
The phase “Understand” involves understanding the context of the organization, its leadership, preferences in the planning process and supporting resources. The following sections describe these items one by one.

### 5.2.1 Context of the Organization

This section of the BCP contains the basic information about BSMSN, its legal and regulatory context and the scope of the BCP.

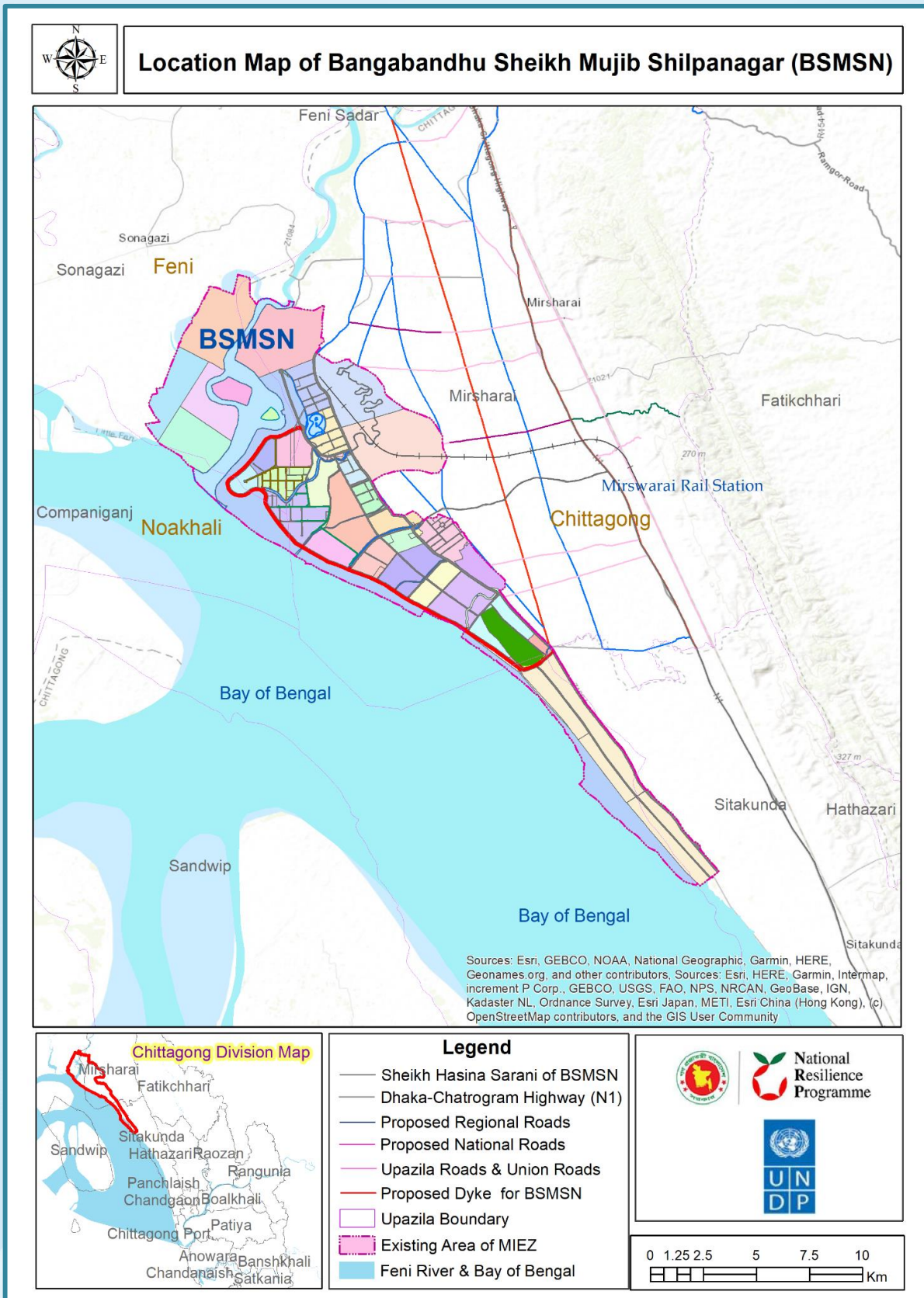
- i. **Location:** Bangabandhu Sheikh Mujib Shilpa Nagar (BSMSN) is a 25-kilometer stretch of coastline along the Sandweep channel of the Bay of Bengal, located in the Chattogram district's Mirsarai and Sitakunda Upazilas as well as the Feni district's Sonagazi Upazila (Figures 5.1 and 5.2). It is located at the mouth of the Feni River. 30000 acres of land have been marked out for the proposed Mirsarai EZ, and BEZA owns the entire region. There are 30 sub-zones that make up the whole area. Priority will be given to developing the sub-zones 2A, 2B, 3, 4, and 5, which together cover over 2,382 acres (Figure 5.3). Because of its proximity to waterways, the area is particularly strategically situated. The area is traversed by the Icchakhali waterway, which drains into the Bay of Bengal from the Feni River. The BSMSN site is situated 67 kilometers south of Chittagong City and 10 kilometers west of the Dhaka-Chittagong Highway. On the east, Barotakia Railway Station and Mirsarai Railway Station are separated by 9.5 and 10 kilometers, respectively.

The Area BCP here is prepared for sub-zones 2A and 2B (Figure 5.4).



**Figure 5.1: Location of BSMSN in Bangladesh Map**





**Figure 5.2: Location Map of Project Area (BSMSN)**

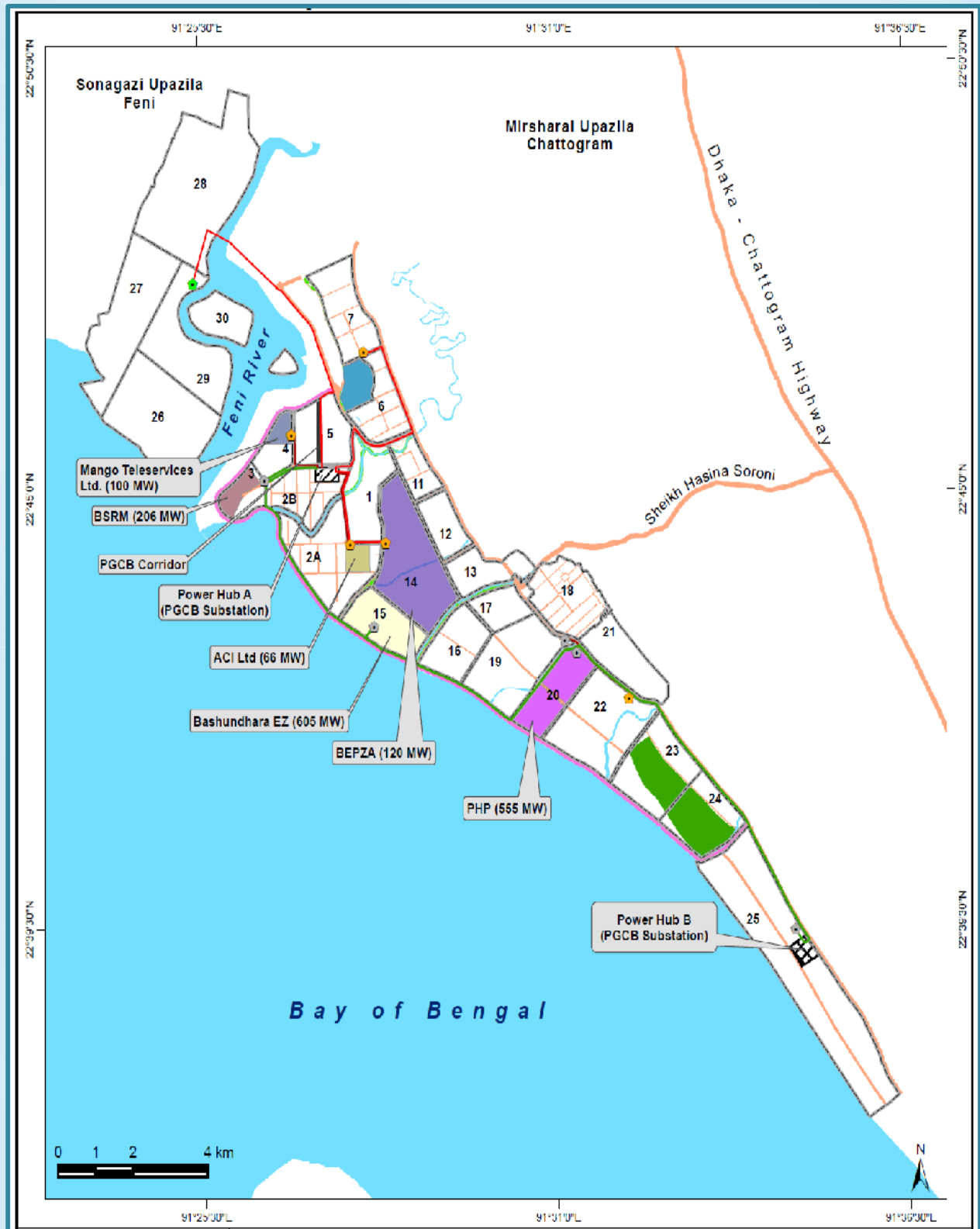
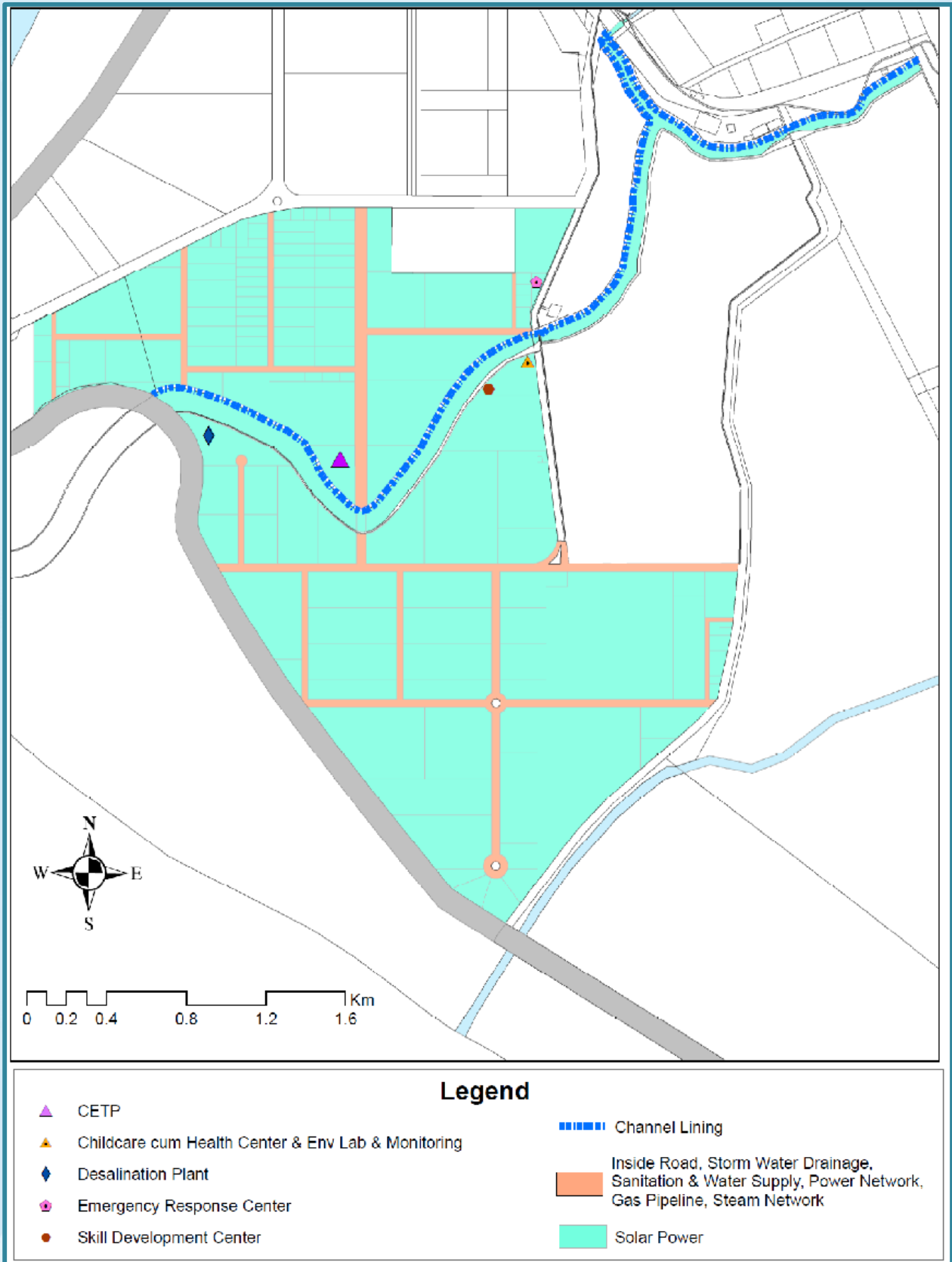


Figure 5.3: BSMSN Sub-Zones





**Figure 5.4: Inside Sub-Zones 2A-2B**

- ii. **Legal and regulatory context:** BSMSN was established by the Bangladesh Economic Zones Act 2010. In the first Governing Board Meeting in 2013 Mirsarai Economic Zone (1st phase) of Bangabandhu Sheikh Mujib Shilpanagar was approved, BEZA did not look back.
- iii. **Scope of the BCP:** The scope of the present BCP is to provide plans for continuity of critical operations of the economic zone authority in case of a natural or man-made disaster so that the down time of operations of the enterprises within the economic zone is minimum and the entire system returns to its normal operation level within a reasonable time frame.

### 5.2.2 Leadership

In line with the BCP Policy of BEZA provided in Paragraph 2.12 (ii) of BCP Framework in Chapter 4, BSMSN will adopt appropriate area-specific parameters of BCP and appropriate organogram, suggested as follows:

- i. **Organogram:**

BEZA is governed by a 3-level management structure (Figure 5.5):

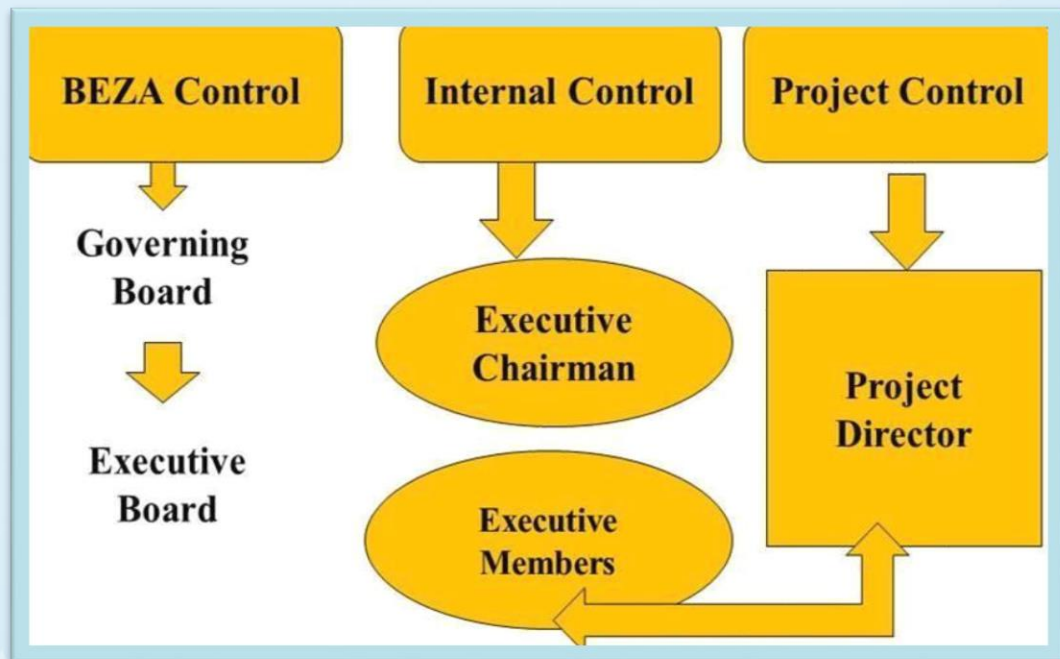
- a. Governing Board
- b. Executive Board
- c. BEZA Office/Secretariat.

The Governing Board is the highest body that undertakes overall policy decisions. It is headed by the Honorable Prime Minister with top-level representations from Ministries or Divisions of Industries, Commerce, Finance, Planning, Science and Information and Communication Technology, Power, Energy and Mineral Resources, Communications, Labour and Employment, Environment and Forests, Agriculture, Posts and Telecommunications, Foreign Affairs, Home, Shipping, and the Prime Minister's Office including the apex chambers and private sectors.

The Executive Board consists of an Executive Chairman (as Chief Executive) and three Executive Members to oversee day to day operation of BEZA. The Executive Board exercises all powers and performs all functions as may be exercised and performed by the Authority.

The BEZA Office/Secretariat performs all day-to-day activities as guided by the Executive Board. BEZA has an approved staff strength of 130 officers and staff.

The existing detailed organogram of BEZA is shown in Figure 5.6. Some proposed modifications to the existing organogram which are already under consideration by BEZA are shown in Figure 5.7.



**Figure 5.5: BEZA Management**

ii. **BCP policy:**

Goal of the Bangladesh Economic Zones Authority Act 2010 is to promote inclusiveness and efficiency, and to expedite investment mobilization.

BEZA's stated mission is to persistently create value for the investors by establishing attractive investment facilities in the economic zones through One-Stop service and competitive incentive packages.

The objective of the Green and Resilient Economic Zone (GREZ) Guideline of BEZA is to establish a new national performance standard for EZs in Bangladesh in a manner that enhances not only the sustainability and resilience but also the competitiveness of EZs, their tenant firms and investors, and Bangladeshi industry sectors.

In line with national and international frameworks, the GREZ Guideline defines the following five core principles of green and resilient EZs:

- a) Economic zone development and management
- b) Environment
- c) Social
- d) Economic
- e) Emergency Preparedness and Response

The purpose of BCP is to establish a business continuity management system that enables areas and enterprises to be an economic, social, and environmental sustainability and resilience, capable of providing products or services whenever required.

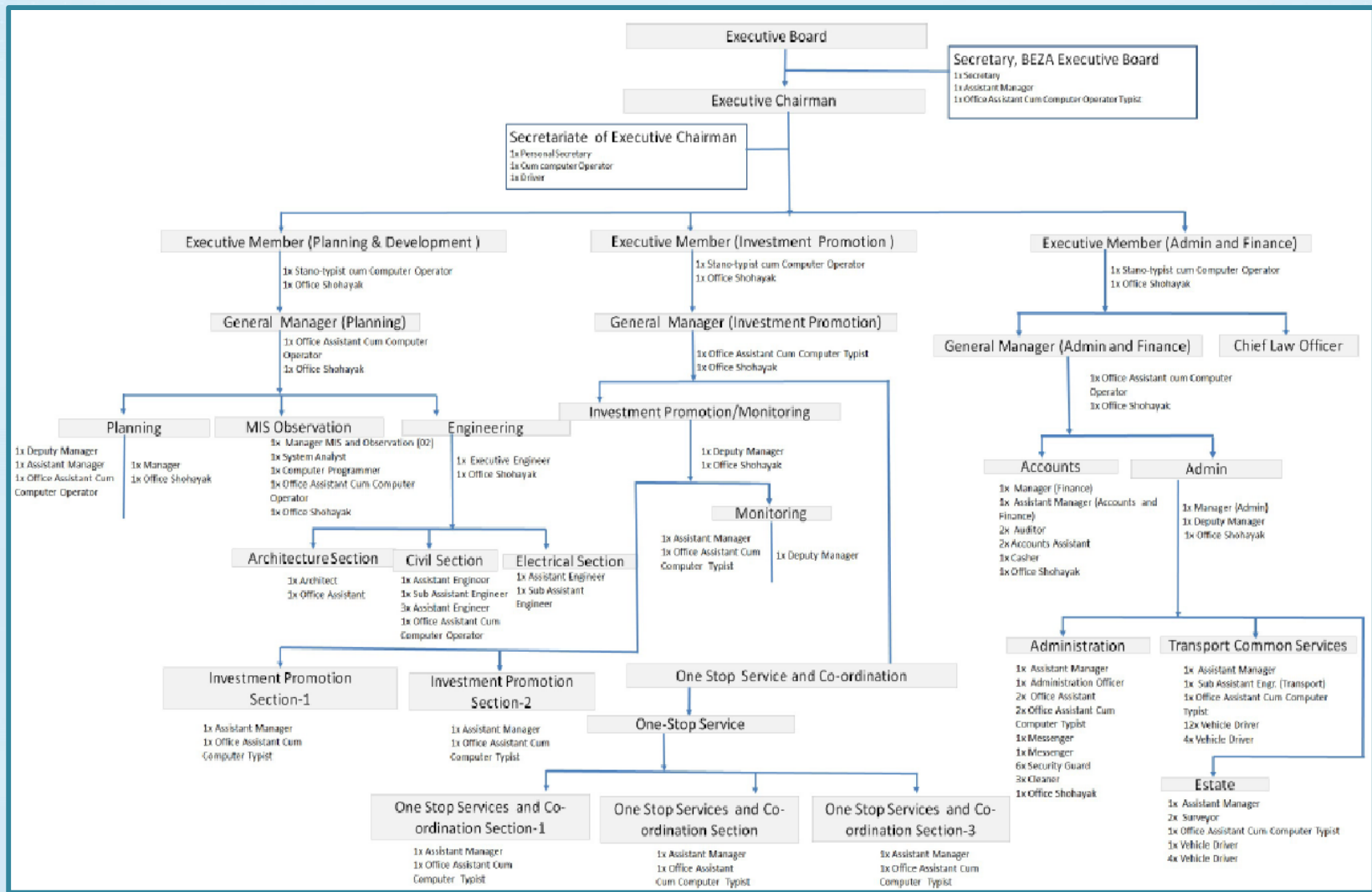


Figure 5.6: Existing BEZA Organogram





Following two policies are essential for an effective BCP policy.

- Insurance Policy - some of the natural hazards cannot be avoided such as cyclones, storms, earthquakes, and pandemic effects arising out of Force Majeure conditions. So, the Insurance Policy can be introduced to compensate for the financial losses.
- Business Continuation Plan - to keep the business running and unaffected due to natural disasters vis-à-vis while facing the effects of natural hazards, it should be made mandatory for the industries to have their own framework for Business Continuation Plan as a part of obtaining clearance/ license from the Government.

### iii. Roles and responsibilities:

To administer the BCP a Business Continuity Management (BCM) Committee is proposed here. The BCM Committee will be a five-member committee chaired by the Executive Member (Planning and Development). The other members are General Manager (Administration), General Manager (Finance and Budgeting), Chief Engineer and General Manager (BSMSN) as the member secretary. The proposed organizational structure inside BSMSN for management of BCP is shown in Figure 5.8. Response and recovery activities will be organized in accordance with the functional cluster system which has been used by the United Nations since the early 2000s. During the development of Risk Response, Preparedness and Recovery Planning Process, several formal and informal small consultative meetings were held with key stakeholders to discuss modifying the standard UN clusters to suit Bangladesh’s unique disaster management framework. The modified clusters include:

- Cluster 1: Command and Coordination
- Cluster 2: Rescue, Evacuation and Security
- Cluster 3: Healthcare Services
- Cluster 4: Logistics Support and Shelter Facilities
- Cluster 5: Restoration of Critical Facilities and Utility Services (Water Supply, Sanitation, Gas, IT Facilities)
- Cluster 6: Transportation

The responsible persons for each cluster and their responsibilities are given in the following tables.

<b>CLUSTER 1: COMMAND AND COORDINATION</b>		<b>Responsible Persons</b>	
<b>PRE-DISASTER PHASE</b>	<b>ACTIVITIES</b>		
	01.	Development of Standard Operation Procedure (SOP)	<ul style="list-style-type: none"> <li>• GM Technical</li> </ul>
	02.	Formation of a 24/7 Emergency Operation Center (EOC) for the Economic Zone, engagement in EOC operations, and reporting of readiness	<ul style="list-style-type: none"> <li>• DGM Admin</li> <li>• BSMSN SE</li> <li>• AGM Admin</li> </ul>

	03.	Setting up Earthquake and Fire Incident Command Systems (ICS) in place (establishment, training, and capacity building) where appropriate	<ul style="list-style-type: none"> <li>• AGM Communications</li> <li>• AGM Transportation</li> </ul>
	04.	Organizing Incident Command System (ICS) training and nominate representatives to participate in ICS established at various levels	
	05.	Establishment of a system for reporting disasters event responses by stakeholder organizations (impacts, resource requirements, activities taken by them to minimize the impact, challenges, opportunities, etc.) during earthquake and fire	
	06.	Facilitating informal education about disaster awareness and preparedness Plan all levels of operations and perform simulations	
	07.	Development of guidelines for media agencies on reporting disaster events, procedures for public information dissemination related to emergency declaration, announcements, and warnings on aftershocks, and disseminate public awareness and advocacy material to support Recovery Planning.	
EMERGENCY RESPONSE PHASE	01.	Facilitating mobilization of fire and earthquake Incident Command Systems (ICS) where necessary and networking with organizations under ICS	
	02.	Executing operation surveillance continuously covering all the disaster affected areas	
	03.	Mobilization of ICS teams at lower-level command structure	
	04.	Facilitating coordination of logistic supply management	
	05.	Assisting authorities for communications with media in relation to information dissemination on welfare of victims, missing and found, results on damage assessment surveys, results on need assessment surveys and facilitate media coverage by media agencies on reporting earthquake event	
	06.	Facilitating public information dissemination related to emergency declaration, announcements and warnings on aftershocks and repeat of occurrences of other collateral hazards due to aftershocks	
RECOVERY PLAN PHASE	01.	Coordinating Operation Surveillance to reduce impacts due to aftershocks	
	02.	Facilitating coordination of logistic supply management and deployment of resources to affected areas/ locations.	
	03.	Conducting Post disaster Evaluation of performance	
	04.	Facilitating continuation of EOC operations and periodic reporting during early recovery period to EOC	
	05.	Assisting authorities for communications with media in relation to information dissemination on welfare of victims, Missing and found, results on damage assessment surveys, results on need assessment surveys	
	06.	Review of the Response and Recovery Plans under the Cluster - Emergency Operations- Overall Command and Coordination and revise the same to include suitable modifications to improve the performance	

CLUSTER 2: RESCUE AND EVACUATION		Responsible Persons
PRE-DISASTER PHASE	<b>ACTIVITIES</b>	
	01.	Developing guidelines for rescue; procurement of equipment for special rescue and Capacity building for creating special units for rescue
	02.	Capacity building of community first responder groups in search and rescue operations, medical first response
	03.	Ensuring fire safety preparations (through pre-positioning of fire hydrants, fire stations, developing data base of sources of water, storage of material etc.)
	04.	Preparing resource inventory (equipment, tools, accessories, and manpower etc.) & Procurement of necessary tools and equipment for rescue operations
	05.	Preparing guidelines for logistic supply management and deployment of resources
	06.	Capability assessment of factories who could be involved in search and rescue operations
EMERGENCY RESPONSE PHASE	01.	Carry out the inter-agency coordination to optimize the efforts of rescue teams by providing necessary guidance and inputs
	02.	Mobilizing special teams of rescue with necessary additional manpower, tools, and equipment for rescue operation from other stations located outside the affected area
	03.	Mobilizing community based social volunteer networks and trained first responders from unaffected areas/ factories to support the rescue parties
	04.	Plan to obtain resource inventory and data base for rescue operations and provide information based on the spatial data on rapid loss estimation
RECOVERY PLAN PHASE	01.	Coordinating Operation Surveillance to reduce impacts due to aftershocks
	02.	Facilitating coordination of logistic supply management and deployment of resources to affected areas/ locations.
	03.	Conducting Post disaster Evaluation of performance
	04.	Facilitating continuation of EOC operations and periodic reporting during early recovery period to EOC
	05.	Assisting authorities for communications with media in relation to information dissemination on welfare of victims, Missing and found, results on damage assessment surveys, results on need assessment surveys
	06.	Review of the Response and Recovery Plans under the Cluster - Emergency Operations- Overall Command and Coordination and revise the same to include suitable modifications to improve the performance

- GM Zone
- DGM Admin
- DGM Technical 1
- BSMSN SE
- DGM Technical 2



CLUSTER 3: HEALTH SERVICES		Responsible Persons
<b>PRE-DISASTER PHASE</b>	<b>ACTIVITIES</b>	
	01.	Hospital preparedness planning and training for emergency operations including methodology development for handling casualties during emergencies
	02.	Developing networks with private & government hospitals within the area and in the neighborhood for support during emergencies like earthquakes
	03.	Developing alert system for medical center staff including doctors to report for work during emergencies such as earthquakes and fire including setting up of 24/7 state of the art ambulance services
	04.	Methodology development for epidemic surveillance and control Conduct operation surveillance training for all First Responder Organization for quick mobilization in earthquake events
05.	Methodology development for estimation of casualty and number of injured people and Administering initiatives to introduce burn unit in the adjacent government and private hospital with proper assistance and support.	
<b>EMERGENCY RESPONSE PHASE</b>	01.	Activating the alert system for medical center staff and voluntary groups to report to the incident place and medical centers as planned
	02.	Mobilizing health teams to provide first aid to displaced and injured when and where necessary and for setting up of temporary hospitals in suitable locations, when and where necessary to treat injured and sick after the earthquake or fire hazards.
	03.	Mobilizing trained Triage teams to affected city wards and control points, transportation of injured to hospitals and Mobilizing ambulance services to transport sick and injured
	04.	Get assistance from qualified professionals to conduct rapid damage assessment of all health infrastructure within the city and identify suitability for usage for treatment of injured and sick
	05.	Establishing counseling centers
<b>RECOVERY PLAN PHASE</b>	01.	Continue providing emergency medical care to displaced persons and Conduct the M&E and performance evaluation of Health cluster activities and introduce necessary modifications to improve the performance
	02.	Conducting evaluation of performance of medical first responder groups and improve the methodology for training, drilling and simulations
	03.	Conducting the evaluation of ambulance services to transport sick and injured during emergencies and introduce modifications to improve the services
	04.	Conducting evaluations of the level of preparedness & performance during emergency by all hospital and medical institutions
	05.	Conducting review of the Response and Recovery Plan for the Health Cluster agencies and revise to integrate the improvements

- DGM Admin
- DGM Technical 1
- BSMSN SE
- DGM Technical 2
- AGM Medical
- AGM Communications
- AGM Transportation

CLUSTER 4: LOGISTICS SUPPORT AND SHELTER FACILITIES		Responsible Persons
PRE-DISASTER PHASE	<b>ACTIVITIES</b>	
	01.	Developing guidelines and disseminate information on (01) Logistic supply management and deployment of resources, (02) Maintaining of temporary or permanent emergency shelters, (03) Distribution of welfare items and food with quality assurance for food and nutrition
	02.	Developing inventory of agencies within the city, next to EZ who possess stocks of welfare items, food and nutrition, temporary shelter and camps, water purification plants, generators, cooking facilities etc. to be used in case of emergencies
	03.	Preparing plan for temporary shelter provision and management along with security plan for temporary shelter camps
	04	Identification of potential open-air sites appropriate for temporary shelters for displaced population and conduct capacity assessment of these open-air sites
EMERGENCY RESPONSE PHASE	01.	Conducting damage analysis and need assessment survey in affected factories/ locations/ areas and preparation of estimates of items and other urgent needs. Networking with various financial institutions (funding agencies, for mobilization of contributions,)
	02.	Liaise with relevant govt. agencies, line departments, district authorities, civil society agencies to ensure welfare of other victims (those who are living in their own, those who are with friends and relatives etc.) and food supply
	03.	Activating the plan for temporary shelter provision and management
	04	Implementing the shelter security plan
	05.	Liaise with camp management team, to meet the needs on an on-going basis and obtain periodic situation reports and review the progress on shelter management
RECOVERY PLAN PHASE	01.	Conducting routine surveys for quality assurance for food and nutrition distributions carried out by government and non-government agencies
	02.	Periodic Stock taking of central Godowns to carry out qualitative and quantitative assessment of food items and facilitate efficient distribution
	03.	Assisting all agencies providing welfare, food and nutrition support for transportation and distribution of supplies to victims when and where necessary
	04	Developing early recovery Plans for setting up new Settlement programs and rehabilitation of partially damage settlement and housing for supply of permanent shelter for affected.
	05.	Reviewing Performance of Cluster - Shelter and introduce modifications to the Contingency Plan for better performance in future.

- GM Zone
- DGM Admin
- DGM Technical 2
- AGM Transportation
- AGM Logistics
- AGM Security

CLUSTER 5: RESTORATION OF CRITICAL FACILITIES AND UTILITY SERVICES (WATER SUPPLY, SANITATION, GAS, IT FACILITIES)		Responsible Persons
PRE-DISASTER PHASE	<b>ACTIVITIES</b>	
	01.	Conducting scenario-based need assessment survey for emergency services in cyclone, earthquake and fire prone factory buildings and report to authorities. Designing and implementing projects for pre-positioning of emergency water, electricity, gas supply, and telecommunication services for critical areas
	02.	Developing Risk Preparedness and Contingency Plans for Water, Gas Sanitation, Waste Management Systems, and IT Infrastructures at all levels covering disaster risk reduction agencies by respective managers
	03.	Developing procedure for vulnerability assessment of water supply system & infrastructure facilities, sewerage & drainage systems by respective managers
	04.	Developing guidelines for close surveillance in epidemic outbreak and conduct of preparedness measures such as immunization programs, awareness programs to prevent epidemic outbreaks
	05.	Identification of evacuation routes in high-risk areas and take actions to improve access to inaccessible areas for S&R actions.
	06.	Promoting factory level long term water conservation methods such as rainwater harvesting, water softening & SODIS techniques for water purification
	07.	Developing guidelines for vulnerability assessment of utilities and conduct training for utility sector staff for undertaking vulnerability assessments.
EMERGENCY RESPONSE PHASE	01.	Mobilizing pre-positioned/stand by essential emergency support units and facilities (stand-by generators, mobile kitchens, water supply and purification units, mobile hospitals, etc.) and mobilizing pre-positioned emergency utility supply services for critical factories.
	02.	Immediately activating the plan for shut off of all supplies of gas, electricity, waste disposal, IT infrastructures etc. at all shut off points
	03.	Conducting rapid damage assessment of water supply, sewerage & drainage system, and initiate actions for restoration
	04.	Obtaining periodic situation reports and review the progress on activation of Risk Preparedness, Response and Contingency Plans and restoration of services by utility agencies
	05.	Organize project teams to conduct rapid damage assessment of all essential utilities within the city by utility managers
RECOVERY PLAN PHASE	01.	Integrating mitigation and preparedness programs in recovery planning by utility agencies for reduction of future cyclone/ earthquake impacts during restoration of facilities
	02.	Carrying out performance evaluation of response actions under Cluster -water supply, sanitation, gas, it facilities and introduce suitable modifications to Contingency Plan to improve the performance. Assisting restoration of all essential utilities and services within the city by utility managers

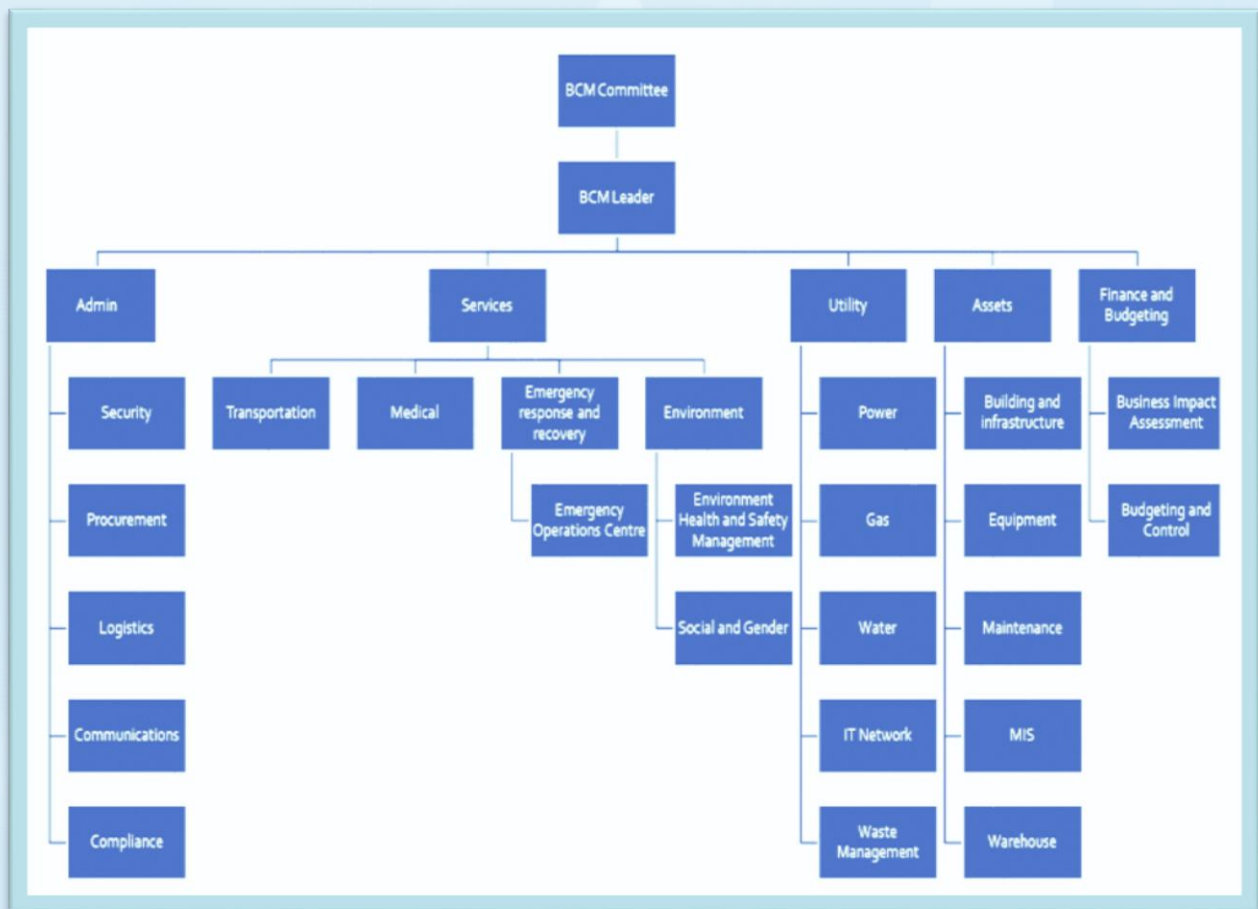
- DGM Admin
- BSMSN SE
- DGM Technical 2
- AGM Transportation
- AGM Emergency response and recovery

<b>CLUSTER 5: RESTORATION OF CRITICAL FACILITIES AND UTILITY SERVICES (WATER SUPPLY, SANITATION, GAS, IT FACILITIES)</b>		<b>Responsible Persons</b>
03.	Phase by phase restoration of disrupted electricity, gas, water supply and telecommunication through assessment of degree of damage	
04.	Conduct periodic quality check of water sources, portable water containers and disposal of waste	
05.	Conducting a review of performance of the Cluster - Restoration of critical facilities and utility service and revise the Contingency Plan accordingly.	

<b>CLUSTER 6: TRANSPORTATION</b>		<b>Responsible Persons</b>	
<b>PRE-DISASTER PHASE</b>	<b>ACTIVITIES</b>		
	01.	Developing coordination arrangements between different transport authorities (road, air, sea) to function during emergencies and developing emergency teams for restoration of facilities	<ul style="list-style-type: none"> <li>• DGM Admin</li> <li>• DGM Technical 1</li> </ul>
	02.	Making arrangements for storage of essential spare parts and making arrangements to fabricate temporary bridges or ladders.	
	03.	Developing a comprehensive plan for security arrangements and protection of properties, business and industries as well as for maintenance of law and order to be adopted during tidal surges and earthquake emergencies.	
	04.	Developing guidelines for control of entrance into damaged buildings, and restrict access to affected areas by unauthorized persons	
	05.	Developing guidelines for evaluation of security planning and operations for maintenance of law and order during emergencies	
06.	Developing procedures for management and maintenance of information on dead and missing as well as burial of dead, funeral rights, mortuary services etc.		
<b>EMERGENCY RESPONSE PHASE</b>	01.	Conducting rapid damage assessment survey and reporting by transport authorities for obtaining cooperation of other agencies for restoration of transportation systems. Also, Mobilization of resources for activation of alternate transport arrangements	
	02.	Carrying out the Plans for prevention and control of fire hazard due to main shock and aftershocks in temporary shelters, government buildings, private buildings, business enterprises, utilities & Services	
	03.	Activating the security plan for citizens and protection of properties, business, and industries as well as for maintenance of law and order. Also activating the Plan for handling of destitute and orphans	
	04.	Carrying out the plan for management and maintenance of information on dead and missing	
	05.	Carrying out the procedures for burial of dead, funeral rights, mortuary services etc.	



CLUSTER 6: TRANSPORTATION			Responsible Persons
RECOVERY PLAN PHASE	01.	Assisting actions by transport authorities to identify alternate routes for transportation of essential relief supplies, food stocks, welfare items etc.	
	02.	Reviewing of the performance of Cluster - Transportation during the emergency response period and revise the Contingency Plan to improve the performance	
	03.	Carrying out evaluation of security planning and operations for maintenance of law and order during emergency	
	04.	Conducting review of the Contingency Plan under Cluster – Security and Welfare and introduce suitable modifications in revising the Plan to improve the performance	



**Figure 5.8: BCM Organogram**

### 5.2.3 Planning

Understanding the nature of the economic zone, its critical functions, risks and threats, objectives of the BCP are determined in this section.

- i. **Profile of the organization:** The nature of the economic zone is described here. A list of industries in Sub-Zones 2A and 2B are provided in Tables 5.2 and 5.3 respectively.

**Table 5.2: List of Industries in Sub-Zone 2A**

Industry Category	Investment Sector	Investors at Zone 2A
Red Category	LPG Storage, Bottling & Distribution Plant.	Fawn International, GAS-1 Ltd., Jamuna Spacetech JV. Ltd.,
	Woven Fabric	Integra Apparels (Bangladesh) Ltd.
	MF Battery (Maintenance Free)	Hamco Corporation Ltd
	Textile, Knit Fabrics and RMG	Juhana Tex Ltd, Aswad Composite Mills Ltd
	Ribbon, Button,	Maheen Dizayn Etiket (BD) Ltd.
	Stainless Steel, Fabricated steel structural items & ready-mix concrete plant, Pipe	Jahangir Steel Mill Ltd, CCECC Bangladesh Limited
	Electricity Distribution	Energypac Power Generation Company
	Hot Rolled Coil, Cold Rolled Coil.	Surjin Tech Co., Ltd
Orange A	Plastic, Lami Tubes, Home Plastic, Food & Beverages	ACI Limited
Orange B	Snacks, Chips, Bakery items, Candy, Mineral Water, Food Grade Nets for meat	Arab Bangladesh Foods Ltd, Merchant Melbourne Pte Ltd
	Footwear, Leather Goods, Fabric and Readymade Garments, Denim, Steel and Aluminum Bicycle	Overses Marketing Corp. (Pvt) Ltd., Fakhruddin Textile Ltd/Urmi, Ratools Apparels Ltd, Well Composite Knit Ltd/Sanzy Textile, Raquef Apparels Washing & Packaging Industry Ltd., Aust-Bangla (JV) Accessories Industries Ltd., Quality Fashion Wear Ltd.,
	Active Pharmaceuticals Ingredients, Disposable Syringe, Switchgear, VCB, Blood bags, Urine bags. IV Cannula, Isolation gowns, surgical gowns, coverall, caps	Green Health Ltd, Vicar Electricals, Jiehong Medical Products (BD) Co., Ltd
	Woven Jacket, Romper, Bermuda, Denim Jeans, Twill Pants, Woven Shirts	Reza Fashion Ltd
	Knitting Spinning Cosmetics and Furniture	Aman Spinning Mills Limited, Metro Spinning Ltd, Maksons Spinning Mills Limited, Maksons Textiles Ltd
	Frozen Food, Bakery & Confectionery, Fried Food, Pickle, Jam Jelly, Paratha, Roti, Snacks, Sweet, Curd etc.	Eurasia Food Processing (BD) Ltd.
	Electronic accessories, assembling of electronic consumer goods, TV, AC, Refrigerator etc. Insulated Wire and Conductor, DOFC, Meter, Lighting Arrester, Fuse Link, Switch, Guy Accessories etc.	BDCOM Online Ltd., Techno Electrical Ltd.

Industry Category	Investment Sector	Investors at Zone 2A
	Plastic packaging (Paint's container, petroleum container, face wash, tooth paste tube, body lotion bottle etc.)	Astech Ltd.

**Table 5.3: List of Industries in Sub-Zone 2B**

Industry Category	Investment Sector	Zone 2B
Red Category	Electricity Distribution	Power Grid Company of Bangladesh (PGCB)
Orange B	Denim Bottom, T shirt, Polo Shirt, padded Jacket, jogging Shirt, Woven Tops, Woven Bottom, Ladies Panty, Tank top, boxer, Jacket Blazer, Fabric, Dyeing, Knit Fabric, Printing, Knitwear	Apparel Gallery Ltd., Columbia Garments Ltd Columbia Apparels Ltd, Uni Gears Ltd, RDM Apparels Ltd, Mars Sportswear Ltd., Babylon Garments Ltd, Babylon Casual Wear Ltd, Four H Fashions Ltd, Charm Fashion Shin Shin Apparels Ltd., Visual Knitwears Ltd., Sams Attire Ltd, Uranus, Apparels Ltd, TBH Fashion Tex (Pvt) Ltd., Advance World Ltd, Al-Ittefaq Textiles Ltd, B.L.P. Warm Fashion Ltd, Chowdhury Fashion Wear Ltd, Well Fashion Ltd, Epyllion Style Ltd, Graphics Textiles Ltd, S F Denim Apparels Ltd, SQ Celsius Limited, Impressive Knit, Composite Ltd, Afrah Dresses Ltd, Energypac Fashions Ltd., Denim Fashions Ltd, EH Fabrics Ltd, Global Shirts Ltd, Pacific Cotton Ltd, Clifton Cotton Mills Ltd, Clifton Apparels Ltd, Karim Textiles Ltd., Avant Garments Ltd, Shamsheer Rezia Fashion Ltd, Alps Apparels Ltd, Image Garments Ltd, Musk Trousers Ltd, Delicate Garments Ltd R.O Textile Mills (Pvt) Ltd, Sterling Denims Ltd, RNSCO Sweaters Ltd, Garments Home (pvt) Ltd, Tafof Apparels Ltd ARL Dresses Ltd, Majumdar Garments Ltd, Integra Apparels (Bd) Ltd, Towel Tex Ltd

- ii. **Social and environmental setting:** Demographic and environmental information of the surrounding area are mentioned in Table 5.4.

**Table 5.4: Social and Environmental Setting of BSMSN**

Social	
Area specific info	The 2A and 2B EZ sites are located in the Mirsarai Upazila and covers Ichhakhali, Mogadia & Saherkhali unions. The Upazila consists of 2 Pourashava, 18 wards, 41 mahallas, 16 unions, 109 populated mauzas and 208 villages. Currently, there is no settlement within the original project area. The average size of population of each ward and mahalla are 1546 and 679 respectively. On the other hand, the average size of population of each union, mauza and village are 23181,3403 and 1783 respectively according to the (District Statistics Chattogram & BBS Population Census 2011).
Demography	Total population in Mirsarai Upazila is 3,98,716. Total households of the Upazila are 7,954. According to the Census 2011 report, the total population

	in Ichhakhali Union is 27,980, Moghadia Union is 23406 and Saherkhali Union is 16912 (BBS Population Census, 2011)
Socio-cultural resources	There is no archaeological resource present within the study area. Archaeological resources within the Mirsarai upazila are Dhum Shila Pathar (Shantir Hat), Chhuti Khan Mosque, Paragal Khan Dighi, Nai Duari Mosque, Jagannath Dham (Abu Torab), Kali Mandir (Karerhat), Shantiniketan Vihara, Abhay Charan Vihara
Hospital/clinic	As per the Local Health Bulletin 2016 for Mirarsarai Upazila Health Complex, Mirsarai, Chattogram the Mirsari Upazila comprises following health care facilities: Upazila Health Complex-1, Union Health & Family Welfare Centers (belong to DGHS)-8, Community Clinics-39, Private Clinics/Facilities-6, NGO-1
Educational institution	Ichhakhali, Mogadia & Saherkhali union of Mirshari Upazila comprises following: GPS-5, High School 4, Colleges 3, Madrasa -6
Shelters for Disaster	There exists one cyclone shelters which are very old (about 30 years).
<b>Environmental</b>	
Water bodies (river, canal, ponds)	Major water body adjacent to section 2A & 2B are Feni River, Ichhakhali khal, Daborkhali khal and Bamon Sundar khal. Project site lies in the flood plain of Feni River. Ichhakhali khal passes within the project area (Zone 2A and Zone 2B).
Physical environment: Water quality (Surface and Underground), air quality, noise level	Reff. to Environmental and Social Assessment <sup>25</sup> (PRIDE, ) Ambient Noise Level: From the measured noise level, it was found that most of measured ambient noise levels were below 60 dBA.
<b>Disasters</b>	
Cyclone and storm surges	BSMSN site is located in southeast part of the coastal areas of Bangladesh in the Mirsharai Upazila, Chattogram District, which falls in the exposed coastal zone. The highest inundation depth having range between 5 m and 6 m lies in the Mirsharai area. However, the average level of the BSMSN (2A and 2B site) is quite high and full area is developed by sand filling therefore the current project area is free from tidal flooding. Moreover, the 2A and 2B area is protected by a super dyke of elevation 10 m MSL under construction. Last 56 years twenty-seven cyclones are recorded in that had hit the Chattogram District of Bangladesh. The maximum height of storm surge was 6.1 – 6.8 m during the cyclone attacked on 30 <sup>th</sup> May 1991 with wind speed 250km/hr. This devastating cyclone tolled 1,45,000 peoples live, 70,000 cattle and lot of crops

<sup>25</sup> <https://documents1.worldbank.org/curated/zh/380641580341401677/pdf/Revised-Environmental-and-Social-Impact-Assessment-Bangladesh-Private-Investment-amp-Digital-Entrepreneurship-Project-P170688.pdf>



Flood	The BSMSN site located at the sever tidal surge areas (according to the Flood Prone Areas Map 2000 BARC). The BSMSN Site is protected by super dyke having elevation abput 10MSL. To maintain water level in the 2A and 2B EZ sites, the Icchakhali khal and Bamansundar Khal is there maintained with sluice gates.
Earthquake	The 2A and 2 B EZ sites falls under the Zone 3, which is considered as severe seismic zone, with a seismic coefficient of 0.28.

**iii. Critical functions:** The critical functions performed by the economic zone are listed Table 5.5.

<b>Table 5.5: Critical Functions of BSMSN</b>
• Utility services (gas, electricity, water, waste management, telephone, internet)
• Emergency response services including alarm and warning systems
• Transport connectivity
• Telecommunications
• Security
• Fire prevention and protection
• Public health
• Evacuation plans
• Social and environmental setting
• Assets
• Financial mechanisms
• Supply chain
• Human resources
• Production processes
• Sales
• Information and data back up
• Designated personnel/team/leadership in charge of BCM
• Administrative set up of BEZA, BSMSN, MIEZ, and enterprises therein
• Engagement and partnership with local community

iv. **Critical infrastructure:** A list of critical infrastructures is given in Table 5.6.

<b>Table 5.6: List of Critical Infrastructure</b>		
<b>Serial No</b>	<b>Items</b>	<b>Description</b>
1.	Electricity	<ul style="list-style-type: none"> <li>● Power generation with 150MW electricity.</li> <li>● Another power plant by RPCL.</li> <li>● Electricity will add at national Grid.</li> <li>● 2 Substation by REB at Zone 2A.</li> <li>● 1 Substation by PGCB.</li> <li>● Dual Fuel based Power plant.</li> </ul>
2.	Water Supply	<ul style="list-style-type: none"> <li>● The freshwater level is 700-800ft in BSMSN.</li> <li>● At present 8 Deep Tube well at 2A and 9 at 2B.</li> <li>● Total 25 Tubewell will be installed with 50 MLD Capacity.</li> <li>● Underground water will be used temporary (for first three years).</li> <li>● 1 WTP at Azampur Patakot Mouza with 50 MLD Capacity (another 50 MLD will add in future).</li> <li>● Underground pipeline facility for water supply.</li> <li>● Total demand will be 900 MLD by using surface water.</li> <li>● 1 water reservoir at zone 2A (Sheikh Hasina Sarabor).</li> <li>● The area of Sheikh Hasina Sarabor will be 112 acres with 6.5m depth.</li> <li>● 1 desalinization plant with 15 MLD Capacity.</li> <li>● Another plan to collect surface water from Meghna River by pipeline (172km long).</li> <li>● Preservation of 7 natural canal in BSMSN.</li> </ul>
3.	ETP	<ul style="list-style-type: none"> <li>● 1 Central Effluent Treatment Plant (CETP) in 2A.</li> <li>● CETP installed by PPP basis.</li> <li>● Asian Paints will have their own ETP.</li> </ul>
4.	Super dike	<ul style="list-style-type: none"> <li>● 3km by BEZA (Height 9m).</li> <li>● 19.5km by Bangladesh Water Development Board (height 8m and 1m more in future).</li> </ul>
5.	Gas Supply	<ul style="list-style-type: none"> <li>● Gas network by KGDCL.</li> <li>● 1 CGS and 2 DRS.</li> <li>● Maintenance by KGDCL.</li> </ul>
6.	Industry	<ul style="list-style-type: none"> <li>● In 2A <ul style="list-style-type: none"> <li>▪ SQ Electricals (Production in 2023)</li> <li>▪ Zihong Medical Equipment</li> <li>▪ Total 40 industries</li> </ul> </li> <li>● In 2B <ul style="list-style-type: none"> <li>▪ BGMEA Garments Village (61 Industries)</li> </ul> </li> </ul>
7.	Security	<ul style="list-style-type: none"> <li>● 1 industrial Police Camp in zone 13.</li> <li>● 1 District Police Camp.</li> <li>● 1 Ansar Camp.</li> </ul>
8.	IT Facility	<ul style="list-style-type: none"> <li>● 1 BTCL Line.</li> <li>● Private internet line by Ispahani and Amra Network.</li> </ul>

Serial No	Items	Description
9.	Building Approval	<ul style="list-style-type: none"> <li>● Building approval by BEZA.</li> <li>● BEZA has own building approval committee.</li> <li>● Intermediate and Final Inspection during construction by BEZA.</li> </ul>
10.	Other Facilities	<ul style="list-style-type: none"> <li>● 1 Health Centre (Place not Fixed);</li> <li>● 1 Mosque at zone 6.</li> <li>● 1 Educational Area.</li> <li>● 1 City Centre.</li> </ul>

v. **Risks and threats:** Probable risks and their perception by the stakeholders are shown in Table 5.7.

**Table 5.7: Stakeholder Opinion about Hazard Probability and Impact**

Disaster Type	Hazard	Probability (likelihood) (1-5)	Impact (1-5)				Consequences	Required Risk Response Actions
			Staff (S)	Assets (P)	Factory (A)	Operations (O)		
NATURAL	Floods and Waterlogging	1	0	1	1	4	S –deterioration of health condition P – property damage, A – property damage, equipment, and machineries damages O – stagnant	<ul style="list-style-type: none"> <li>● Drainage plan</li> <li>● Upgrade roads and bridges</li> <li>● Flood control measures</li> <li>● Evacuation plan</li> </ul>
	Cyclone	5	1	2	1	4	S – N/A P – Property damage, A – property damage, equipment, and machineries damages O – stagnant	<ul style="list-style-type: none"> <li>● Construction of cyclone shelter</li> <li>● Capacity building</li> <li>● Drainage plan</li> </ul>
	Storm Surges	3	1	2	2	4	S – P – Property damage, A – property damage, equipment, and	<ul style="list-style-type: none"> <li>● Capacity building</li> <li>● Awareness building</li> <li>● Information system develop</li> </ul>

							machineries damages O – stagnant	
	Earthquake	3	2	2	2	3	S – Casualty, injuries, and trauma P – Property damage, A – property damage, equipment and machineries damages, rupture gas pipelines and other utility services, Physical & financial loss O – stagnant & disrupted	<ul style="list-style-type: none"> <li>• Utility services plan</li> <li>• Evacuation plan</li> <li>• Capacity building</li> <li>• Awareness building/Training</li> </ul>
	Tsunami	3	0	1	1	2	S – P – Property damage, A – property damage, equipment, and machineries damages O – stagnant	<ul style="list-style-type: none"> <li>• Construction of shelter</li> <li>• Capacity building</li> <li>• Drainage plan</li> </ul>
MAN MADE	Cyber attack	3	0	1	0	3	S – loss of job P – N/A A – financial loss, O – stagnant	<ul style="list-style-type: none"> <li>• Alternative operation plan prepares</li> <li>• Develop security system</li> </ul>
	Movement Restriction/ Strike/ Hartals	2	2	2	2	2	S – loss of life P – N/A A – Effect on economy, financial loss, O – stagnant	<ul style="list-style-type: none"> <li>• Alternative route plan</li> <li>• Training on risk control</li> </ul>
	Thief	2	1	2	2	0	S – Loss of Human Resources and resulting loss of job P – N/A A – financial loss, O – stagnant	<ul style="list-style-type: none"> <li>• Training on behavior</li> </ul>
	Accident-Machine Damage	3	3	2	2	1	S – loss of job & life P – N/A	<ul style="list-style-type: none"> <li>• Administration and Engineering efficiency dev</li> </ul>



						A – Financial loss, property damage O – Stagnant and Disrupt Operation	• Check the machineries frequently
Poisonous Gas Emission	3	2	1	1	2	S –loss of life P – N/A A – financial loss, O – stagnant	

#### 5.2.4 BCP Objectives

The following BCP objectives are considered for BSMSN

- Establish a Business Continuity Management (BCM) System
- Develop a cluster-based activity against response plan and Standard Operating Procedure (SOP) for the Incident Command System (ICS)
- Propose an Implementation Plan and Disaster Specific Recovery Plan
- Reduce risk of flood by physical planning
- Ensure safety of structures
- Ensure alternate transport route in case of a disaster
- Ensure emergency services

#### 5.2.5 Support

An organogram for implementation of BCP is provided Figure 5.9.

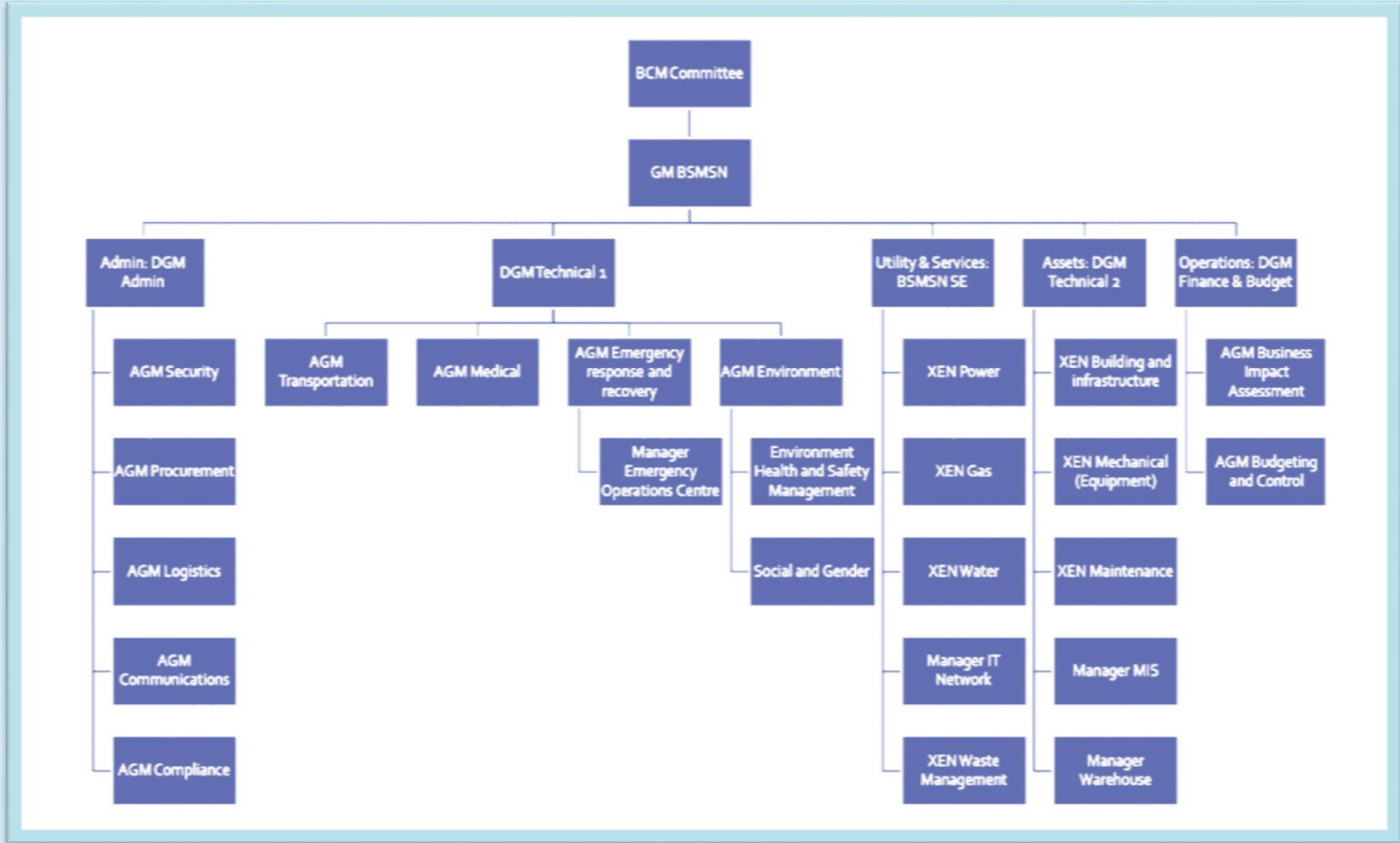


Figure 5.9: Organogram for implementation of BCP at BSMSN

## 5.3 Area BCP of BSMSN Phase-2: “Analyze”

### 5.3.1 Risk Assessment

Likelihood and intensity of each type of risk is assessed quantitatively based on secondary data. The findings of the assessment can be shown in the following sections.

#### Flood Risk and Water Logging Scenario

For this study, flood hazard has been assessed from the secondary data as well as analyzing the inundation and water extent, are presented in Figure 5.10. To identify the flood vulnerabilities for BSMSN, conventional vulnerability indicators were considered. Flood exposure has been assessed by measuring the water depth in a particular location, collected from MIDP study and other research data. This depth was calculated by subtracting the land elevation value from the flood water level return period.

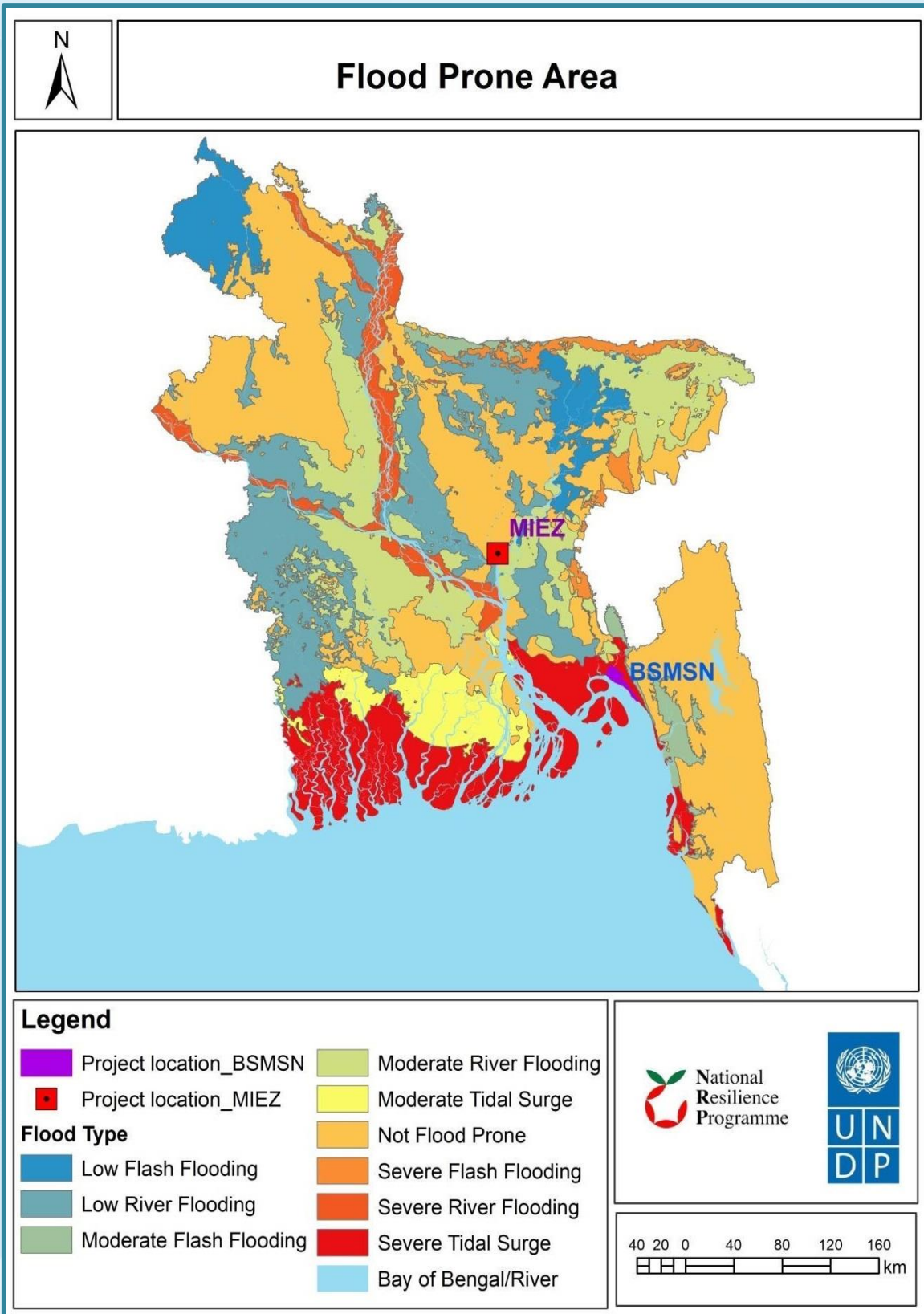
Water Logging hazard scoring in different return period were calculated in MIDP study and several vulnerability indicators were considered to identify the water logging vulnerability both for BSMSN study area. These indicators are: (a) Drainage Condition (b) Plinth height of existing establishment (c) State of maintenance (d) Structural typology (e) Number of basements (f) Number of floors (g) Construction year/age

The internal drainage network of BSMSN should be completely segregated from the other outside drainage network (until this segregation is done, a periodic removal of the sludge is proposed as a temporary solution).

#### Cyclone -Storm Surges – Tsunami scenario

Cyclone vulnerability is defined as how people or societies are likely to be affected by cyclone events, that is the sensitivity of the community, industries or people to cyclones considering the socioeconomic, environmental, and physical component. Distance from coastline is the important vulnerability indicator, which was considered to identify the cyclone vulnerability for BSMSN only. The MIEZ project site does not fall under cyclone risk zone or high wind area.

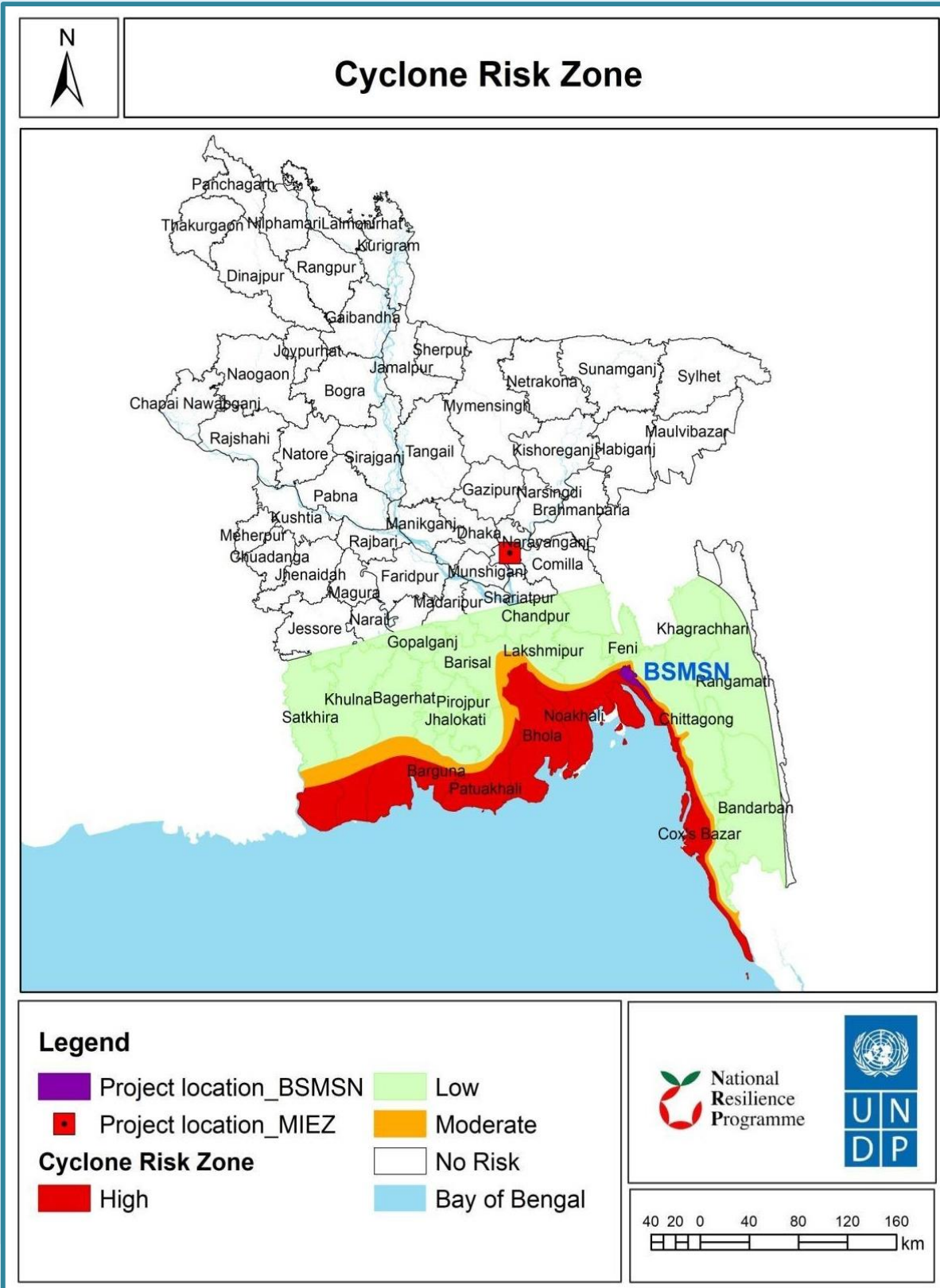
All over the areas of BSMSN especially Zone 2A and 2B are at the forefront to face the force of high-speed winds and storm surges associated with the cyclones originating from the Bay of Bengal. The closer the area to the coastline more is the probability of being affected and vice versa (Alam, Sammonds, & Ahmed - Science of The Total Environment - 2020). Industries located nearer to the coastline have been assigned the higher vulnerability exposure. Cyclone Risk is estimated by multiplying three indicators of Hazard, Vulnerability and Exposure. Cyclone Risk = Water Surge Hazard Score x Vulnerability score x Exposure (normalized). The Cyclone risk was categorized into 5 classes- Very low, low, medium, high & very high for mapping (Figure 5.11).



**Figure 5.10: Map of Flood Prone Area**

Source: Bangladesh Agriculture Research Council (2000)





**Figure 5.11: Map of Cyclone Risk Zone**  
 Source: SPARSO (2020)

### Earthquake Scenario

Earthquake vulnerability assessment may be conducted in various methods. In the CDMP study (2009) vulnerability and risk assessment was based on the HAZUS based approach. However, detailed numerical analysis of different types of structures is necessary to develop fragility curves to be used in that method. Detailed information of exposed value of the structure and the replacement cost are necessary. The HAZUS based approach is expensive both in terms of money and time.

The project area BSMSN falls under Zone III on the earthquake zone map (Figure 5.12), which implies that earthquakes of moderate intensities are expected here. So, special precaution is needed in considering the risk from earthquakes to establish any structure.

### Seismicity

Based on earthquake epicenters and morph tectonic characteristics, Bangladesh is divided into four seismic zones, namely zone-I, zone-II, zone-III and Zone-IV (Figure 5.12).

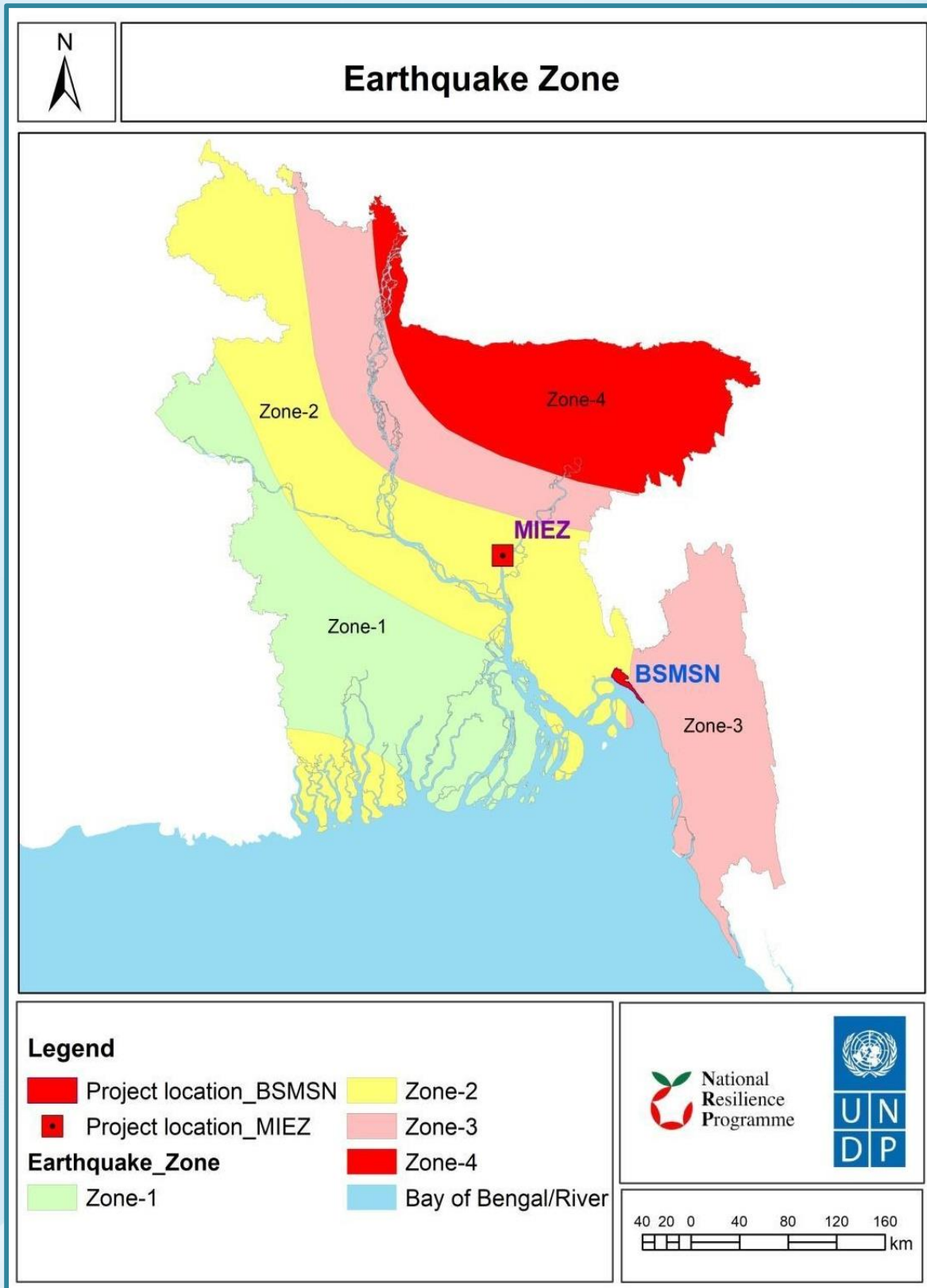
- To mitigate the Earthquake Risk:
- Site Specific Design Spectrum should be developed.
- liquefaction potential of sites has to be considered.
- Seismic Vulnerability of existing structures should be assessed; and
- structural retrofitting should be implemented for existing vulnerable structures.

Earthquake Hazard Reduction measures within the framework of a nationwide Earthquake Hazard Reduction Program should be taken (i.e to prepare earthquake risk profiles in the BSMSN areas on a priority basis, extensive sub-soil investigations and other seismic measures may be hunted for).

### Liquefaction

The topsoil near the BSMSN is mainly very soft to medium silt with clay or clay-laden silt and with a trace of fine sand (Figure 5.13). According to the sub-soil investigation record of this area (north-west of Chittagong District) the soil profile at shallow beyond shallow depth is mainly dominated by non-cohesive soil with a comparatively low SPT (Standard Penetration Test) value at the upper level.

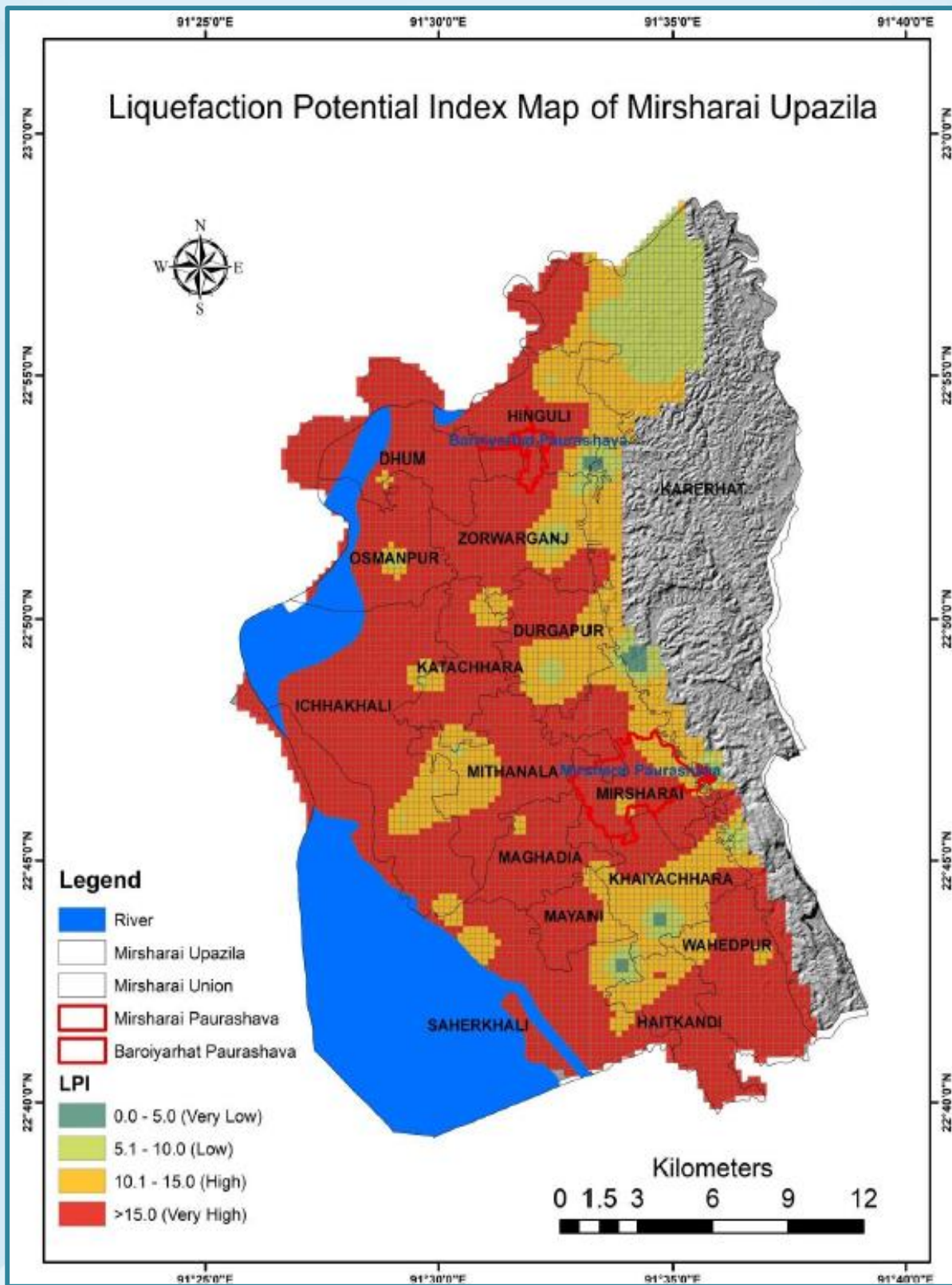
Chittagong City is mostly a hilly region, but it also consists of alluvial flood plain and sandy sea-shore area. Although the hilly region is less susceptible to liquefaction, it is formed by sandy and clayey soil and the area at the bottom of the hill also liquefy if the intensity of shaking is high. On the other hand, flood plains and seashore areas consist of fine sand and silt deposits with shallow water tables in most of the places, which may liquefy during a strong earthquake. In Mirershorai the liquefaction hazard rate is high. Below map (Figure 5.13) shows the liquefaction level.



**Figure 5.12: Map of Earthquake Zone**

Source: BNBC (2020)





**Figure 5.13: Liquefaction Hazard Map**

Source: Geological Study and Seismic Hazard Assessment, UDD (2018)



### Infrastructure Suitability

As per the soil profile study, it is observed that up to depth of 4 m soil is grey, very soft to medium silt, some clay and trace fine sand. Beyond 4 m up to 11 m, soil is grey, loose fine sand with some silt and trace clay. Beyond 11 m, soil is grey medium fine sand with some silt. Beyond 21 m soil is grey, medium to dense fine sand (Figure 5.14, Source: EIA Report- Mirershorai Economic Zone, 2015).

This zone has very weak foundation conditions, is affected by annual flooding and has the highest risk of being affected by liquefaction, it is therefore suggested to be used as Agricultural zone Wetland, Rural settlement, Park, and Recreation. If any type of infrastructure has to be constructed in this part, detailed on-site geotechnical investigations have to be done prior to any foundation planning. To reach a usable bearing load, the pile length has to be very long. In his case the construction of the foundation might be even more expensive than the infrastructure itself as a deep pile foundation is already essential for small and medium size infrastructures to avoid infrastructure failure. Heavier infrastructures require a specialized foundation design including very deep pile foundations.

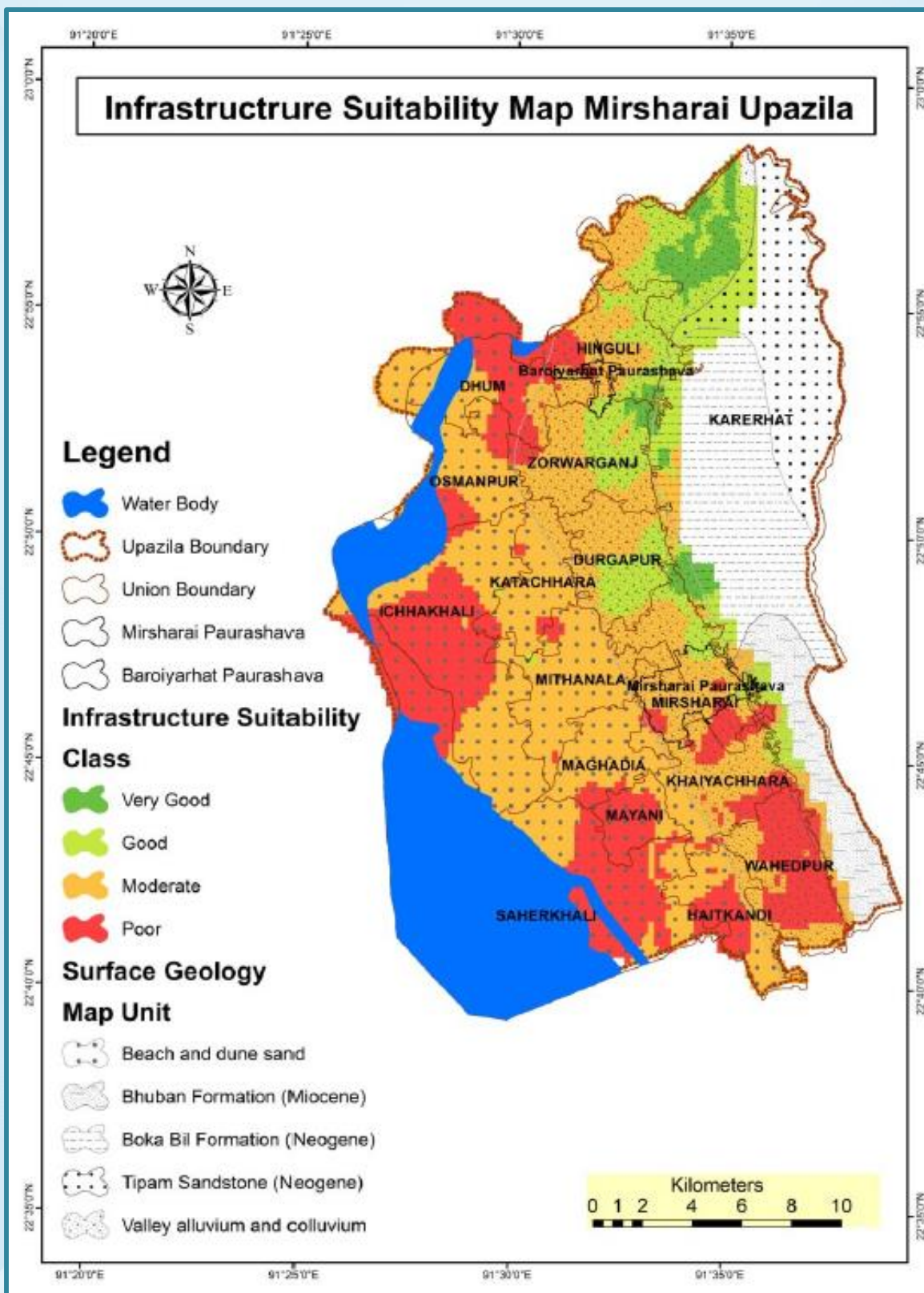
### Fire Risk

Significant loss to industries occurs through fire hazard. Whether large or small, fire causes personal suffering, damage to plants, equipment and buildings, and loss of business. Fire risk can be assessed in many ways. In this study the external investigation in terms of accessibility and industry type was implied to assess the risk of fire.

BSMSN area is not well established yet and was the subject to carry out the fire safety assessment. Two factors have to be considered to assess the fire risk:

1. Distance & travel time (along the road network) to the industries from the fire stations.
2. Risk of fire hazard based on industry type (raw materials and the products).

Accessibility of the industries has to be calculated by measuring the distance of industry structures from the numbers of fire stations along the road network considering the shortest path. Later these distances were converted to the travel time using vehicle speed per hour. Synthesizing the normalized travel time with the industry type factor, risk factors were calculated for each industry structure. This risk factor has been introduced as Fire Risk Factor (FRF).



**Figure 5.14: Infrastructure Suitability Map**

Source: Geological Study and Seismic Hazard Assessment, UDD (2018)

## Hazard

The hazard levels for different risks described above are categorized in five levels as shown in Tables 5.8 and 5.9.

**Table 5.8: Classification of Hazard Level**

Hazard Level	Color Code
Not Affected	Dark Green
Low	Bright Green
Moderate	Yellow
High	Orange
Very High	Red

**Table 5.9: Probability of Hazard in BSMSN Area**

Hazard Level	BSMSN
Land slide	Bright Green
Salinity	Bright Green
Flood	Yellow
Water logging/ Drainage	Yellow
COVID-19	Yellow
Lightning	Yellow
Fire incidences	Orange
Tidal Surges	Orange
Earthquake	Orange
Cyclone	Red

*Source: Stakeholder opinion & secondary sources*

### 5.3.2 Business Impact Assessment

Based on the stakeholder's field visit and feedback, above hazard risk profiles give an idea of probable risks from Flood, Cyclone and Tidal Surges, Water logging/ Drainage, Salinity, Earthquake, Fire and COVID-19 incidences.

For the above risk and damage scenario most likely to occur, the following Vulnerability Mapping Exercise (Table 5.10) can be used:

**Table 5.10: Vulnerability Map for Critical Hazards at BSMSN**

Hazard	BSMSN
<i>Land slide</i>	<ul style="list-style-type: none"> <li>• <i>Transport connectivity</i></li> <li>• <i>Social and environmental setting</i></li> </ul>
<i>Salinity</i>	<ul style="list-style-type: none"> <li>• <i>Production processes</i></li> <li>• <i>Public health</i></li> <li>• <i>Social and environmental setting</i></li> </ul>
<i>Flood</i>	<ul style="list-style-type: none"> <li>• <i>Transport connectivity</i></li> <li>• <i>Production processes</i></li> <li>• <i>Public health</i></li> <li>• <i>Supply chain</i></li> <li>• <i>Utility services (gas, electricity, water, waste management, telephone, internet)</i></li> <li>• <i>Evacuation plans</i></li> <li>• <i>Assets</i></li> <li>• <i>Sales</i></li> </ul>
<i>Water logging/ Drainage</i>	<ul style="list-style-type: none"> <li>• <i>Transport connectivity</i></li> <li>• <i>Public health</i></li> </ul>
<i>COVID-19</i>	<ul style="list-style-type: none"> <li>• <i>Production processes</i></li> <li>• <i>Public health</i></li> <li>• <i>Supply chain</i></li> <li>• <i>Sales</i></li> <li>• <i>Financial mechanisms</i></li> <li>• <i>Human resources</i></li> </ul>
<i>Lightning</i>	<ul style="list-style-type: none"> <li>• <i>Human resources</i></li> <li>• <i>Utility services (gas, electricity, water, waste management, telephone, internet)</i></li> </ul>
<i>Fire incidences</i>	<ul style="list-style-type: none"> <li>• <i>Key infrastructure in the area</i></li> <li>• <i>Utility services (gas, electricity, water, waste management, telephone, internet)</i></li> <li>• <i>Emergency response services including alarm and warning systems</i></li> <li>• <i>Transport connectivity</i></li> <li>• <i>Telecommunications</i></li> <li>• <i>Security</i></li> <li>• <i>Fire prevention and protection</i></li> <li>• <i>Public health</i></li> <li>• <i>Evacuation plans</i></li> <li>• <i>Assets</i></li> <li>• <i>Financial mechanisms</i></li> <li>• <i>Supply chain</i></li> <li>• <i>Human resources</i></li> <li>• <i>Production processes</i></li> <li>• <i>Sales</i></li> <li>• <i>Information and data back up</i></li> </ul>



Hazard	BSMSN
	<ul style="list-style-type: none"> <li>• Designated personnel/team/leadership in charge of BCM</li> <li>• Administrative set up of BEZA, BSMSN, MIEZ, and enterprises therein</li> <li>• Engagement and partnership with local community</li> </ul>
<b><i>Tidal Surges</i></b>	<ul style="list-style-type: none"> <li>• Key infrastructure in the area</li> <li>• Utility services (gas, electricity, water, waste management, telephone, internet)</li> <li>• Emergency response services including alarm and warning systems</li> <li>• Transport connectivity</li> <li>• Telecommunications</li> <li>• Security</li> <li>• Fire prevention and protection</li> <li>• Public health</li> <li>• Evacuation plans</li> <li>• Assets</li> <li>• Financial mechanisms</li> <li>• Supply chain</li> <li>• Human resources</li> <li>• Production processes</li> <li>• Sales</li> <li>• Information and data back up</li> <li>• Designated personnel/team/leadership in charge of BCM</li> <li>• Administrative set up of BEZA, BSMSN, MIEZ, and enterprises therein</li> <li>• Engagement and partnership with local community</li> </ul>
<b><i>Earthquake</i></b>	<ul style="list-style-type: none"> <li>• Key infrastructure in the area</li> <li>• Utility services (gas, electricity, water, waste management, telephone, internet)</li> <li>• Emergency response services including alarm and warning systems</li> <li>• Transport connectivity</li> <li>• Telecommunications</li> <li>• Security</li> <li>• Fire prevention and protection</li> <li>• Public health</li> <li>• Evacuation plans</li> <li>• Assets</li> <li>• Financial mechanisms</li> <li>• Supply chain</li> <li>• Human resources</li> <li>• Production processes</li> <li>• Sales</li> <li>• Information and data back up</li> <li>• Designated personnel/team/leadership in charge of BCM</li> <li>• Administrative set up of BEZA, BSMSN, MIEZ, and enterprises therein</li> <li>• Engagement and partnership with local community</li> </ul>

Hazard	BSMSN
<b>Cyclone</b>	<ul style="list-style-type: none"> <li>• Utility services (gas, electricity, water, waste management, telephone, internet)</li> <li>• Emergency response services including alarm and warning systems</li> <li>• Transport connectivity</li> <li>• Telecommunications</li> <li>• Security</li> <li>• Public health</li> <li>• Assets</li> <li>• Supply chain</li> <li>• Information and data back up</li> <li>• Designated personnel/team/leadership in charge of BCM</li> <li>• Administrative set up of BEZA, BSMSN, MIEZ, and enterprises therein</li> <li>• Engagement and partnership with local community</li> </ul>

Considering the vulnerability of the critical functions/services/infrastructure, BEZA can use the following checklist (Table 5.11) for Business Impact Analysis of BSMSN:

<b>Table 5.11: Checklist for Business Impact Analysis at BSMSN</b>			
Serial	Key Infrastructure/Function/Services	Disrupted? Yes/No (With examples)	Disruption Period (With Examples) 1 = Less than 4 hours 2 = 4 to 8 hours 3 = > 8 hours < 24 hours 4 = > 24 hours < 2 days 5 = more than 2 days
1	Key infrastructure in the area <ul style="list-style-type: none"> <li>• Fire Station</li> <li>• Power Substations</li> <li>• Central Effluent Treatment Plant</li> <li>• Water Reservoirs</li> <li>• Surface Water Transportation</li> <li>• Desalination Unit</li> <li>• Internal Roads</li> <li>• Warehouses</li> <li>• MIS</li> <li>• Canals</li> </ul>	N Y Y N N Y N Y N N Y N	– 2 2 – – 2 – 2 – – 4 –
2	Utility services <ul style="list-style-type: none"> <li>• Gas</li> <li>• Electricity</li> <li>• Water</li> <li>• Waste management</li> </ul>	N Y N Y	– 2 – 2
3	Emergency response services including alarm and warning systems	N	

Serial	Key Infrastructure/Function/Services	Disrupted? Yes/No (With examples)	Disruption Period (With Examples) 1 = Less than 4 hours 2 = 4 to 8 hours 3 = > 8 hours < 24 hours 4 = > 24 hours < 2 days 5 = more than 2 days
4	Transport connectivity <ul style="list-style-type: none"> <li>Road connectivity to National Highway</li> <li>Road connectivity to the Sea Port</li> <li>Railway connectivity</li> <li>Connectivity with Jetty</li> </ul>	N N	
5	Telecommunications <ul style="list-style-type: none"> <li>Telephone</li> <li>Internet</li> </ul>	N N	
6	Security	N	
7	Fire prevention and protection	N	
8	Public health <ul style="list-style-type: none"> <li>Waterborne diseases</li> <li>Contagious diseases</li> <li>Smoke, Dust, Noise related hazards</li> </ul>	N N Y	4
9	Evacuation plans	N	–
10	Social and environmental setting	N	–
11	Assets	Y	This part filled in will be shared by BSMSN with the affected enterprises, and BIA Template Part II needs to be used by the enterprises at BSMSN
13	Financial mechanisms	N	Liability arising from damage compensation needs to be considered here, review the insurance policy, claims settlement procedures
14	Supply chain	Y	Mostly a concern for the enterprises, but BEZA has obligations for keeping the supply chain infrastructure, i.e., road and transport connectivity usable
15	Human resources <ul style="list-style-type: none"> <li>BEZA level</li> <li>Enterprise level</li> </ul>	N Y	Primary care to be provided by the in-premise health center, and if needed, referral would be provided
16	Information and data back up	Y	Alternate Server remotely hosted should be in place
17	Designated personnel/team/leadership in charge of BCM		<ul style="list-style-type: none"> <li>Is it officially in the organization structure? Y/N - Yes, pending approval from BEZA</li> <li>Who are they? (As per proposed cluster-based approach and suggested changes in the BSMSN</li> </ul>

Serial	Key Infrastructure/Function/Services	Disrupted? Yes/No (With examples)	Disruption Period (With Examples) 1 = Less than 4 hours 2 = 4 to 8 hours 3 = > 8 hours < 24 hours 4 = > 24 hours < 2 days 5 = more than 2 days
			organogram, referring Figure 5.8 BCM Organogram for BSMSN)
18	Administrative set up at BEZA, and enterprises therein		<ul style="list-style-type: none"> <li>• Is it officially in the organization structure? Y/N, Yes, (cluster based approach and proposed changes in the Organogram is under active consideration)</li> <li>• Reporting and Communication channels existing now? Y/N - Yes, officially designated PRO/GM, BSMSN</li> </ul>
19	Engagement and partnership with local community		<ul style="list-style-type: none"> <li>• Is there a formal/informal channel set up now? Y/N - Yes</li> <li>• Who are they? - OC, Upazila Chairman, UNO</li> </ul>

The checklist, once the exercise is carried out by the BSMSN, will be shared with individual enterprises so that they can use it for enterprise level assessment of disasters on their business operations.

#### 5. 4 Area BCP for BSMSN Phase-3: “Design”

Following components are considered for a comprehensive response and recovery plan.

- **Establish a Business Continuity Management System-** The first step in developing a disaster recovery plan is to establish a business continuity management system (BCMS). The BCMS is a comprehensive system that includes the policies, procedures, and processes needed to prepare for, respond to, and recover from disruptions.
- **Identify Risk Elements-** The next step is identifying risk elements. After identifying the risks, begin to develop mitigation strategies.
- **Develop Mitigation Strategies-** Mitigation strategies are designed to reduce the impact of disruptions on business. Examples of mitigation strategies include backup power generation, off-site data storage, and alternative communications systems.
- **Develop Response and Recovery Plans-** After developing the mitigation strategies, need to develop response and recovery plans. The response plan outlines the steps that should be taken immediately after a disruption occurs. The recovery plan outlines the steps that should be taken.



#### 5.4.1 Establish a Business Continuity Management System

The plan should define who in the organization is responsible for disaster recovery processes, with their names and contact details. Critical responsibilities include-

- Ongoing backups and maintenance of business continuity systems
- Responsibility for declaring a disaster
- Responsibility for contacting third-party vendors
- Responsibility for reporting to management and liaising with customers, press, etc.
- Responsibility for managing the crisis and recovering from it.

#### 5.4.2 Identify Risk Elements

Disaster risk assessment is estimating the probability of a disaster occurring and the potential loss that could result. It is a crucial component of disaster preparedness and mitigation. It can help communities and businesses reduce the risk of disasters. The purpose of disaster risk assessment is to identify areas that are most at risk and to provide information that can be used to reduce the likelihood or impact of disasters occurring. To plan for recovery, one needs to understand the risk components. This assessment checklist will guide to identify the focus components which need to be incorporated in the plan. The risk elements are-

- Transport connectivity
- Production processes
- Public health
- Supply chain
- Utility services (gas, electricity, water, waste management, telephone, internet)
- Critical equipment failure
- Phone/Internet outage
- Assets

### 5. 5 Area BCP for BSMSN Phase-4: “Plan”

#### Training and education

- Develop a training plan and conduct training for all employees.
- Prepare and deliver training seminars and workshops to prepare all response and recovery personnel for their disaster roles and responsibilities.
- Prepare materials to guide response and recovery.
- Trained volunteers to rescue, evaluate and provide first aid.

#### Public Awareness

- All employee/owner/responsible committees involved in the plan must be made aware of the existence of the plan, their roles, and responsibilities.

## Land

- Land level should be elevated.
- Reserve retention area.
- Land filling should be done thus to avoid encroaching on and filling natural channels and retention areas.

## Critical Facilities (Power, Water, Drainage, Sanitation, and Waste Management)

Critical infrastructure, assets, equipment, and facilities should establish on higher elevations or away from water bodies. For floods, general structural measures to enhance resilience are to-

- Follow the Building Construction Rules.
- Take advanced measures (special drainage system, pumping, elevated) for core infrastructure assets and services.
- Ensure proper quality controls on construction methods, techniques, and supervision.
- Ensure establish and proper functioning of Drainage Infrastructure like-bridge, culvert, sludge gate, pump house, reservoir etc.
- Elevate key plant buildings and structures.
- Initiate for additional backup system.

## Road

Transport infrastructure should be sited in areas with low inundation risks. Construction of transport infrastructure must use national standards for resilience. The most protective standard should be used within BSMSN.

- Structural design must meet standards to ensure a longer service life.
- Ensure proper structural design.
- Ensure alternative Road connectivity.
- In the BSMSN, the slope direction is north-east to south-west and the land shape is linier to east-west. So, the east-west road could be the natural barrier for flood protection. So, a necessary drainage structure should be installed to the primary structure.
- Roads those are not used for heavy vehicles and surface area/footpath should be construct using permeable materials.
- Improved drainage to remove water during floods.

## Medical Assistance

- Training, education, and exercises for first responders-doctors, nurse etc.
- establish field medical centers.

## Emergency Supplies and Equipment

- Prepare a strategic plan for the storage and distribution facilitates.
- Identification and storage of emergency supplies and equipment.
- Storage Supporting tools.

## Solid waste and wastewater Disposal

- Plans and procedures for disposing of waste materials.
- Controlling run-off.
- System to treat wastewater.

## Communications

- Establish emergency communications system for warning & announcement.
- Identify alternative communication system.

## Utilities

- Estimate power needs to operate critical systems.
- Assess capabilities of system to perform under various hazard scenarios.

## Electricity

- Monitoring and relocating control systems of power stations to a higher position.
- Examining demand for electricity and determining areas that may require uninterrupted power supply in crisis moment.
- Investigating risky spots in factories that may be prone to danger from electricity usage.

## Shelter

- Increased number of shelters.
- Established mechanism to manage and maintain shelters.

## Coordination

- Coordinating with relevant authorities to help facilitating the operation to be smooth and efficient.
- Coordinating with agencies in operations, supporting and agencies outside the area to help support in various aspects.

## 5. 6 Area BCP of BSMSN Phase-5: “Implement”

In this phase response plan and disaster specific recovery plans are presented.

### 5.6.1 Management system, Personnel & Equipment

Recovery personnel, their roles and how they can be reached during an emergency is another important goal of this plan. Communicate roles and responsibilities to all key stakeholders and keep this documentation accessible to employees and updated regularly. The management team can be playing an important role in reducing the risk level. The team will train their employee time-to –time and they have knowledge about the response activities. The main responsibilities of the team are-

**Table 5.12: Management system and Personnel**

Procedure	Person in Charge
<b>Step 1. Warning</b>	
-Sending official correspondence (email, telephone)	AGM Communications
-Sending officers to the vulnerable areas.	GM Zone
-Issuing disaster alert warning by telephone. -Sending volunteers for on-site coordination.	DGM Admin

Procedure	Person in Charge
<b>Step 2. Quick Damages Reporting and Emergency Response</b>	
<ul style="list-style-type: none"> <li>-Commune risk report to authority</li> <li>-In case of serious disaster, the authority can directly report to the central authority</li> </ul>	<ul style="list-style-type: none"> <li>GM Zone</li> <li>BCM Committee</li> </ul>
<ul style="list-style-type: none"> <li>-Compiling and reporting all information about the disaster and plans to the BCM Committee.</li> <li>-Reporting about situation and results of DR to the BEZA and the other relevant agencies.</li> <li>-Organizing relief works.</li> <li>-Organizing the emergency response based upon damage assessments.</li> </ul>	<ul style="list-style-type: none"> <li>GM Zone</li> <li>BCM Committee</li> <li>DGM Admin</li> <li>AGM Emergency response and recovery</li> </ul>
<b>Step 3. Damage and Needs Assessment</b>	
<ul style="list-style-type: none"> <li>-Compiling information from local authority</li> <li>-Reporting to the central authority</li> <li>-Sending officers for joint damage/needs assessment</li> <li>-Collecting and compiling information</li> </ul>	<ul style="list-style-type: none"> <li>DGM (Technical 1)</li> <li>GM Zone</li> <li>DGM Finance &amp; Budget</li> <li>DGM Finance &amp; Budget</li> </ul>
<ul style="list-style-type: none"> <li>-Sharing information with related agencies.</li> <li>-Decision making on disaster response.</li> </ul>	<ul style="list-style-type: none"> <li>BCM Committee</li> <li>GM Zone</li> </ul>
<b>Step 4. Damage and Needs Reporting</b>	
<ul style="list-style-type: none"> <li>-Collecting and reporting damages, needs, and the on-site response.</li> </ul>	<ul style="list-style-type: none"> <li>BSMSN SE</li> <li>AGM Business Impact Assessment</li> </ul>
<ul style="list-style-type: none"> <li>-Sharing with BEZA and other agencies</li> <li>-Decision making on DR and relief activities.</li> </ul>	<ul style="list-style-type: none"> <li>BCM Committee</li> <li>GM Zone</li> </ul>
<b>Step 5. Coordinating Emergency Supplies</b>	
<ul style="list-style-type: none"> <li>-Developing the emergency relief plan and coordinating relief resources based on needs assessment</li> <li>-Making decisions on provision of aid.</li> <li>-Monitoring, supervising, and evaluating the relief performance</li> </ul>	<ul style="list-style-type: none"> <li>AGM Procurement</li> <li>DGM Admin</li> <li>DGM (Technical 1)</li> </ul>



Procedure	Person in Charge
-Providing guidelines and implementing emergency and recovery relief. -Monitoring and evaluation.	DGM (Technical 1) DGM Finance & Budget
-Developing Disaster Reduction Plans. -Locating and selecting beneficiaries. -Preparing beneficiary lists and distributing relief supply -Distributing relief supplies.	DGM (Technical 2) BSMSN SE Manager (MIS) Manager (MIS) AGM Logistics
<b>Step 6. Recovery Needs Assessment</b>	
-Participating in needs assessment for the recovery period. -Preparing the assessment report and proposal on plans and recommendations on implementation	DGM Finance & Budget AGM Business Impact Assessment
-Compiling Zone needs for recovery. -Sharing information with stakeholders. -Reporting -Mobilize resources and fundraising.	DGM Admin AGM Communications GM Zone

### Shelter & Food, Medical Care

- ◆ Hospitals nearby and in the surrounding will functioning during a disaster. In the hospital, proper facilities must be ensured, notably in the burn unit with appropriate burn treatment-related arrangements.
- ◆ Open field medical facilities.
- ◆ Offer ongoing medical assistance and initiate treatment.
- ◆ Perform water supply system maintenance.

### Route Plan

- ◆ To minimize disaster risk in the project area, two regional highways toward Feni and Port Connecting Road should be recommended in addition to the national highway, which is already overloaded and might be used as a backup route during a disaster.
- ◆ This architecture may possibly be rethought because the rail connectivity layout (curvature) may not be realistic.
- ◆ A backup route should be in place during an emergency Shelter.
- ◆ Schools in the area or nearby will serve as the primary shelter.

### Emergency Supplies and Equipment

- ◆ There should be a storage building for equipment in every block.
- ◆ Create an inventory and keep your warehouse for quick action.

## Coordination

- ◆ Coordinate activities for all parties involved and set up a system for reporting based on a checklist for performing this task on a regular basis at various intervals.
- ◆ Schedule regular emergency management committee meetings.
- ◆ Ongoing monitoring and evaluation.

### 5.6.2 Disaster Specific Recovery Plan

<b>Table 5.13: Disaster Specific Recovery Plan</b>	
<b>Flood</b>	<ul style="list-style-type: none"> <li>▪ Land level should be elevated considering the topography of the MSMSN and its adjacent area.</li> <li>▪ Reserve retention area (Canals or waterbody) in most of the block.</li> <li>▪ Land filling should be done thus to avoid encroaching on and filling natural channels and retention areas.</li> <li>▪ Elevate key buildings and structures (ETP, Treatment plant, Electric Power Station etc.).</li> <li>▪ Preparing boats and other vehicles for use in time of crisis.</li> <li>▪ School/administrative building/social structure and club house etc. will be used as shelter.</li> <li>▪ Establish field medical centers.</li> </ul>
<b>Earthquake</b>	<ul style="list-style-type: none"> <li>▪ Roads (80 feet &amp; above) will be marked as evacuation route.</li> <li>▪ Route name should be marked in a place visible at emergency period.</li> <li>▪ In every block there should be an open space as an assembly or emergency shelter place.</li> <li>▪ Establish field medical center.</li> <li>▪ The open space, park, playground etc. will develop as that way it can be perform as temporary shelter.</li> <li>▪ In every block there should be a storage house for emergency equipment accumulation.</li> <li>▪ Regular earthquake drill at least twice in a year.</li> </ul>
<b>Cyclone/storm surge</b>	<ul style="list-style-type: none"> <li>▪ Establish a field medical center.</li> <li>▪ School/administrative building/social structure and club house etc. will be used as shelter</li> </ul>
<b>Fire</b>	<ul style="list-style-type: none"> <li>▪ Within a certain distance (100 m) fire hydrant have to be installed.</li> <li>▪ The design should consider that, the evacuation route will relate to water body.</li> <li>▪ Monitoring system should be ensured in every 3-month interval for weir quality check.</li> <li>▪ The monitoring committee team member should be from- BEZA, Local authority in industrial zone, power distribution personnel etc.</li> <li>▪ Establish field medical centers.</li> <li>▪ In every block there should be a storage house for emergency equipment accumulate.</li> <li>▪ Regular fire drill at least twice in a year</li> </ul>
<b>Hacking</b>	<ul style="list-style-type: none"> <li>▪ Skilled and trained people should be recruited for update the process.</li> <li>▪ Enhance security system.</li> </ul>

# CHAPTER 6 AREA BUSINESS CONTINUITY PLAN FOR MEGHNA INDUSTRIAL ECONOMIC ZONE

## 6.1 Introduction

Based on the Business Continuity Plan (BCP) framework proposed in Chapter 4, an Area BCP for Meghna Industrial Economic Zone (MIEZ) is presented in this chapter as an example of the Area BCP. The framework is contextualized in this chapter for MIEZ. MIEZ is an example of a private economic zone which is administered by the Meghna Group of Industries. MIEZ is an already developed economic zone; however, it is still expanding on the outskirts. It is situated in an inland area which is far from the coastal areas. The following sections present the BCP in the same order as that of the framework of Area BCP presented in Chapter 4.

## 6.2 Area BCP of MIEZ Phase-1: “Understand”

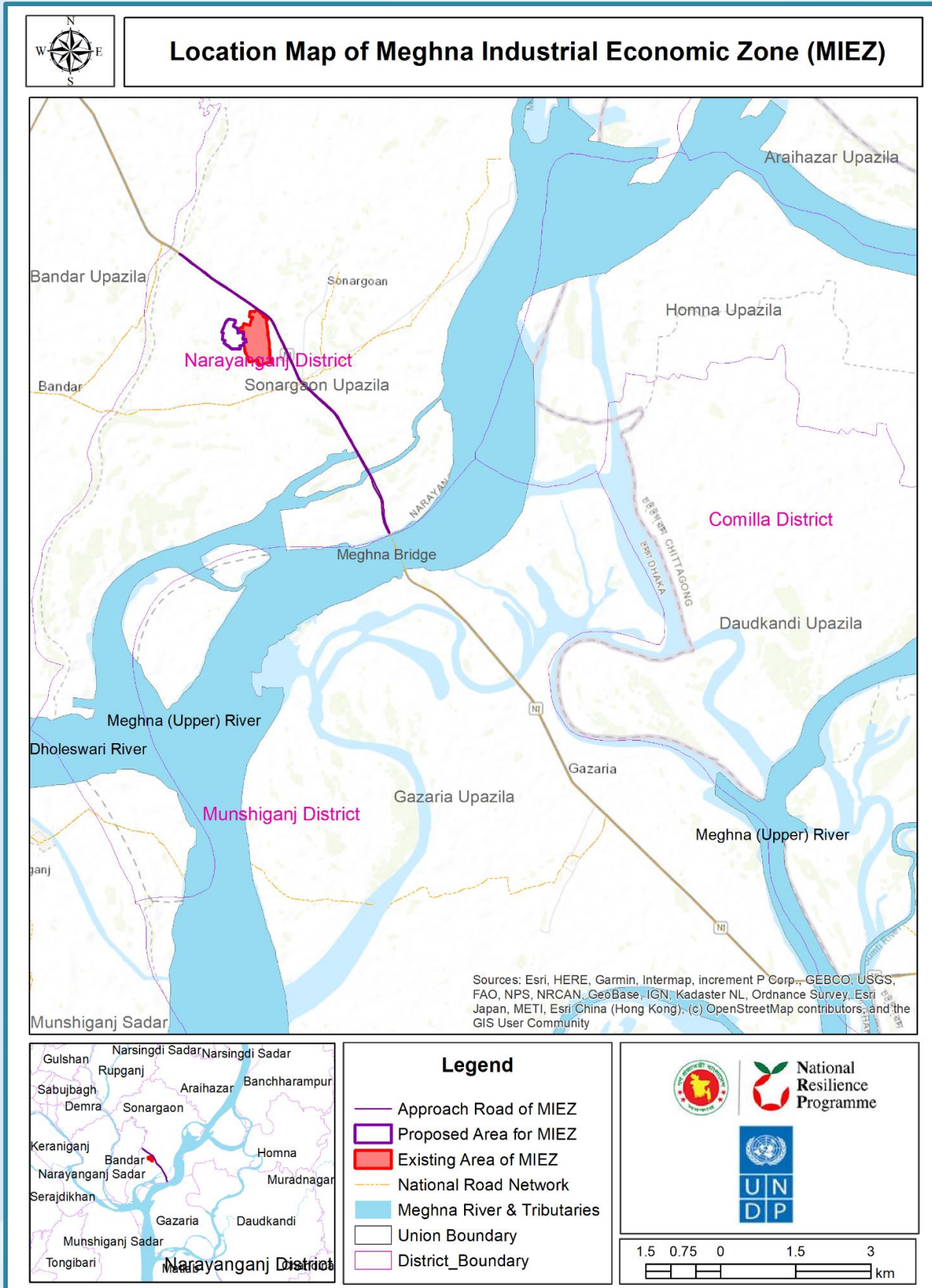
The phase “Understand” involves understanding the context of MIEZ, its leadership, preferences in the planning process and supporting resources. The following sections describe these items one by one.

### 6.2.1 Context of the Organization

This section of the BCP will contain the basic information about the organization, its legal and regulatory context, and the scope of the BCP.

- i. **Location:** Meghna Industrial Economic Zone (MIEZ) is situated right beside the Dhaka-Chittagong Highway in the Sonargaon Upazila of Narayanganj district (Figure 6.1). The area of this Economic Zone is 110 acres. Central geographical coordinate of the project area is  $23^{\circ} 38'47.63''N$  and  $90^{\circ}35'7.85''E$ . It stands on the north-west bank of the Meghna River. There is no settlement in the proposed project areas. It used to be a single crop low depression area before development for MIEZ. Other facilities in terms of infrastructure and utility services include one 132KV substation, Dhaka-Chittagong highway, and several other industries are situated very adjacent to the site. In the project area the land surface has a very gentle slope except for the places with some establishments like road, bridge, and settlement areas. The zone is fully developed for industrial construction and operation and is secured by boundary walls. The zone is ready with leveled-up land and road construction has already been completed, while construction for utility facilities like electricity, gas and water and others are progressing very fast. The priority sectors for MIEZ: Ready Made Garments (RMG), Food and Beverage, Electronics and Hi-Tech will cover more than 50% plots of the zone; other potential industries expected are leather products, Power plant, Pharmaceuticals, Ceramics, and specialized industries.





**Figure 6.1: Location of MIEZ**



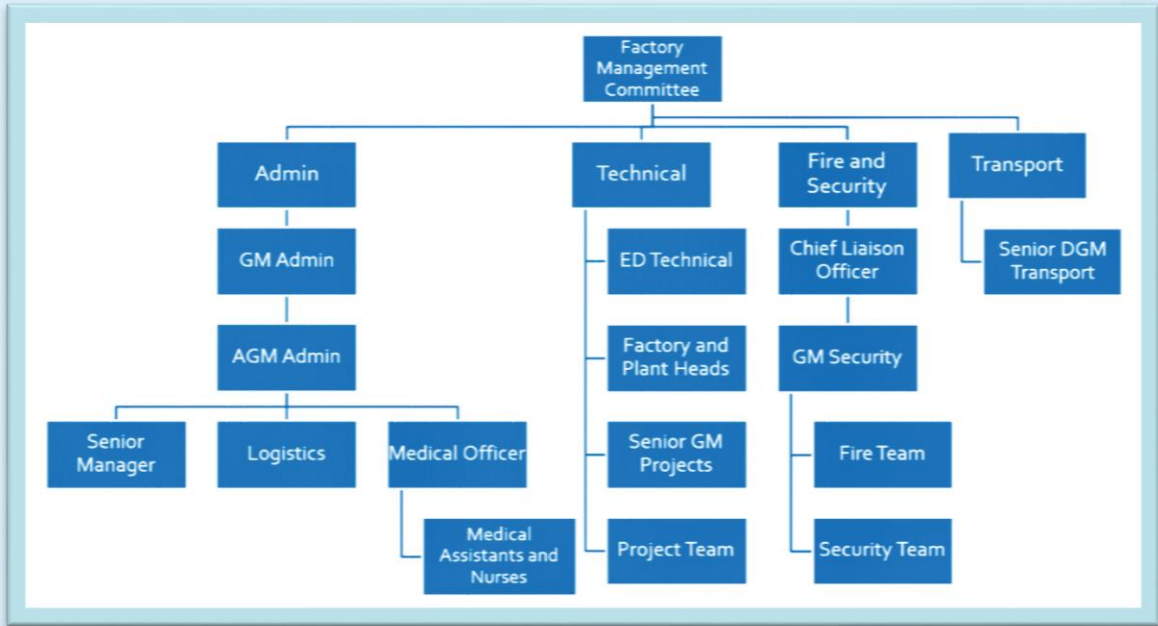
- ii. **Legal and regulatory context:** *Meghna Industrial Economic Zone (MIEZ)* was established as a privately operated economic zone on September 21, 2017, under license agreement with Bangladesh Economic Zones Authority (BEZA). The MIEZ presently has a total land area of 123 acres, currently with 16 operational factories belonging to 4 foreign, and 12 local enterprises. Out of the 12 local enterprises, 9 belong to the Meghna Group of Industries, the conglomerate owning and operating the private sector MIEZ under license from BEZA. The MIEZ is situated on the Dhaka-Chittagong Highway, the country's major highway, and within 4 kilometers of an inland river port and container terminal by the River Meghna, 22.5 kilometers from Kamlapur rail link, 38.9 kilometer from Dhaka airport, and 220 kilometers from Chattagram seaport. The zone is fully developed for industrial construction and operation and is secured by boundary walls. As per BEZA's website, MIEZ has created 1,451 employments, and has mobilized worth 600 million US dollars of investments.
- iii. **Scope of the BCP:** The scope of the present BCP is to provide plans for continuity of critical operations of the economic zone authority in case of a natural or man-made disaster so that the down time of operations of the enterprises within the economic zone is minimum and the entire system returns to its normal operation level within a reasonable time frame.

### 6.2.2 Leadership

In line with the BCP Policy of BEZA provided in Paragraph 4.2.1.2 (ii) of BCP Framework, MIEZ will adopt appropriate area-specific parameters of BCP and appropriate organogram, suggested as follows:

- i. **Organogram:**

The overall operations of MIEZ are monitored centrally by a Factory Management Committee at the head office of the Meghna Group. Four distinct chains of command are maintained for operations of MIEZ, e.g., administration, technical, fire & security and Transportation (Figure 6.2). The administration related affairs are looked after by the General Manager (Administration). The technical issues are addressed by the Executive Director (Technical). Fire and security related matters are taken care of by the Chief Liaison Officer (CLO) and those related to the transport are managed by a separate company of the Meghna Group.



**Figure 6.2: Chains of command at MIEZ**

ii. **BCP policy:**

Goal of the Bangladesh Economic Zones Authority Act 2010 is to promote inclusiveness and efficiency, and to expedite investment mobilization.

BEZA's stated mission is to persistently create value for the investors by establishing attractive investment facilities in the economic zones through One-Stop service and competitive incentive packages.

The objective of the Green and Resilient Economic Zone (GREZ) Guideline of BEZA is to establish a new national performance standard for EZs in Bangladesh in a manner that enhances not only the sustainability and resilience but also the competitiveness of EZs, their tenant firms and investors, and Bangladeshi industry sectors.

In line with national and international frameworks, the GREZ Guideline defines the following five core principles of green and resilient EZs:

- a) Economic zone development and management
- b) Environment
- c) Social
- d) Economic
- e) Emergency Preparedness and Response

The BCP is to establish a business continuity management system that enables areas and enterprises to be an economic, social, and environmental sustainability and resilience, capable of providing products or services whenever required.

Following two policies are essential for an effective BCP policy.

- ◆ Insurance Policy - some of the natural hazards cannot be avoided such as cyclones, storms, earthquakes, and pandemic effects arising out of Force Majeure conditions. So, the Insurance Policy can be introduced to compensate for the financial losses.
- ◆ Business Continuation Plan - to keep the business running and unaffected due to natural disasters vis-à-vis while facing the effects of natural hazards, it should be made mandatory for the industries to have their own framework for Business Continuation Plan as a part of obtaining clearance / license from the Government; and

iii. **Roles and Responsibilities:**

Response and recovery activities that are being implemented at EOC will be organized in accordance with the functional cluster system which has been used by the United Nations since the early 2000s. During the development of Risk Response, Preparedness and Recovery Planning Process, several formal and informal small consultative meetings were held with key stakeholders to discuss modifying the standard UN clusters to suit Bangladesh’s unique disaster management framework. The modified clusters include:

- Cluster 1: Command and Coordination
- Cluster 2: Rescue, Evacuation and Security
- Cluster 3: Healthcare Services
- Cluster 4: Logistics Support and Shelter Facilities
- Cluster 5: Restoration of Critical Facilities and Utility Services (Water Supply, Sanitation, Gas, IT Facilities)
- Cluster 6: Transportation

**Table 6.1: Responsible Persons Cluster and Their Responsibilities**

CLUSTER 1: COMMAND AND COORDINATION		Responsible Persons	
PRE-DISASTER PHASE	ACTIVITIES		
	01.	Development of Standard Operation Procedure (SOP)	<ul style="list-style-type: none"> <li>• ED</li> <li>• Technical</li> <li>• Plant Heads</li> <li>• GM</li> <li>• Admin</li> <li>• AGM</li> <li>• Admin</li> <li>• Senior Manager</li> <li>• Admin Staff</li> </ul>
	02.	Formation of a 24/7 Emergency Operation Center (EOC) for the Economic Zone, engagement in EOC operations, and reporting of readiness	
	03.	Setting up Earthquake and Fire Incident Command Systems (ICS) in place (establishment, training, and capacity building) where appropriate	
	04.	Organizing Incident Command System (ICS) training and nominate representatives to participate in ICS established at various levels	
	05.	Establishment of a system for reporting disasters event responses by stakeholder organizations (impacts, resource requirements, activities taken by them to minimize the impact, challenges, opportunities, etc.) during earthquake and fire	

	06.	Facilitating informal education about disaster awareness and preparedness Plan all levels of operations and perform simulations
	07.	Development of guidelines for media agencies on reporting disaster events, procedures for public information dissemination related to emergency declaration, announcements, and warnings on aftershocks, and disseminate public awareness and advocacy material to support Recovery Planning.
<b>EMERGENCY RESPONSE PHASE</b>	01.	Facilitating mobilization of fire and earthquake Incident Command Systems (ICS) where necessary and networking with organizations under ICS
	02.	Executing operation surveillance continuously covering all the disaster affected areas
	03.	Mobilization of ICS teams at lower-level command structure
	04	Facilitating coordination of logistic supply management
	05.	Assisting authorities for communications with media in relation to information dissemination on welfare of victims, missing and found, results on damage assessment surveys, results on need assessment surveys and facilitate media coverage by media agencies on reporting earthquake event
	06.	Facilitating public information dissemination related to emergency declaration, announcements and warnings on aftershocks and repeat of occurrences of other collateral hazards due to aftershocks
<b>RECOVERY PLAN PHASE</b>	01.	Coordinating Operation Surveillance to reduce impacts due to aftershocks
	02.	Facilitating coordination of logistic supply management and deployment of resources to affected areas/ locations.
	03.	Conducting Post disaster Evaluation of performance
	04	Facilitating continuation of EOC operations and periodic reporting during early recovery period to EOC
	05.	Assisting authorities for communications with media in relation to information dissemination on welfare of victims, Missing and found, results on damage assessment surveys, results on need assessment surveys
	06.	Review of the Response and Recovery Plans under the Cluster - Emergency Operations- Overall Command and Coordination and revise the same to include suitable modifications to improve the performance



CLUSTER 2: RESCUE AND EVACUATION			Responsible Persons
PRE-DISASTER PHASE	ACTIVITIES		<ul style="list-style-type: none"> <li>• Chief Liaison Officer</li> <li>• Plant Heads</li> <li>• GM Security</li> <li>• Fire Team (DGM, Fire)</li> <li>• Security Team</li> </ul>
	01.	Developing guidelines for rescue; procurement of equipment for special rescue and Capacity building for creating special units for rescue	
	02.	Capacity building of community first responder groups in search and rescue operations, medical first response	
	03.	Ensuring fire safety preparations (through pre-positioning of fire hydrants, fire stations, developing data base of sources of water, storage of material etc.)	
	04.	Preparing resource inventory (equipment, tools, accessories and manpower etc.) & Procurement of necessary tools and equipment for rescue operations	
	05.	Preparing guidelines for logistic supply management and deployment of resources	
	06.	Capability assessment of factories who could be involved in search and rescue operations	
EMERGENCY RESPONSE PHASE	01.	Carry out the inter-agency coordination to optimize the efforts of rescue teams by providing necessary guidance and inputs	
	02.	Mobilizing special teams of rescue with necessary additional manpower, tools and equipment for rescue operation from other stations located outside the affected area	
	03.	Mobilizing community based social volunteer networks and trained first responders from unaffected areas/ factories to support the rescue parties	
	04.	Plan to obtain resource inventory and data base for rescue operations and provide information based on the spatial data on rapid loss estimation	
RECOVERY PLAN PHASE	01.	Coordinating Operation Surveillance to reduce impacts due to aftershocks	
	02.	Facilitating coordination of logistic supply management and deployment of resources to affected areas/ locations.	
	03.	Conducting Post disaster Evaluation of performance	
	04.	Facilitating continuation of EOC operations and periodic reporting during early recovery period to EOC	
	05.	Assisting authorities for communications with media in relation to information dissemination on welfare of victims, Missing and found, results on damage assessment surveys, results on need assessment surveys	
	06.	Review of the Response and Recovery Plans under the Cluster - Emergency Operations- Overall Command and Coordination and revise the same to include suitable modifications to improve the performance	

CLUSTER 3: HEALTH SERVICES			Responsible Persons
PRE-DISASTER PHASE	ACTIVITIES		<ul style="list-style-type: none"> <li>• GM Admin</li> <li>• Plant Heads</li> <li>• AGM Admin</li> <li>• Medical Officer</li> <li>• Medical Assistants and Nurses</li> </ul>
	01.	Hospital preparedness planning and training for emergency operations including methodology development for handling casualties during emergencies	
	02.	Developing networks with private & government hospitals within the area and in the neighborhood for support during emergencies like earthquakes	
	03.	Developing alert system for medical center staff including doctors to report for work during emergencies such as earthquakes and fire including setting up of 24/7 state of the art ambulance services	
	04.	Methodology development for epidemic surveillance and control Conduct operation surveillance training for all First Responder Organization for quick mobilization in earthquake events	
	05.	Methodology development for estimation of casualty and number of injured people and Administering initiatives to introduce burn unit in the adjacent government and private hospital with proper assistance and support.	
EMERGENCY RESPONSE PHASE	01.	Activating the alert system for medical center staff and voluntary groups to report to the incident place and medical centers as planned	
	02.	Mobilizing health teams to provide first aid to displaced and injured when and where necessary and for setting up of temporary hospitals in suitable locations, when and where necessary to treat injured and sick after the earthquake or fire hazards.	
	03.	Mobilizing trained Triage teams to affected city wards and control points, transportation of injured to hospitals and Mobilizing ambulance services to transport sick and injured	
	04	Get assistance from qualified professionals to conduct rapid damage assessment of all health infrastructure within the city and identify suitability for usage for treatment of injured and sick	
	05.	Establishing counseling centers	
RECOVERY PLAN PHASE	01.	Continue providing emergency medical care to displaced persons and Conduct the M&E and performance evaluation of Health cluster activities and introduce necessary modifications to improve the performance	
	02.	Conducting evaluation of performance of medical first responder groups and improve the methodology for training, drilling and simulations	
	03.	Conducting the evaluation of ambulance services to transport sick and injured during emergencies and introduce modifications to improve the services	
	04	Conducting evaluations of the level of preparedness & performance during emergency by all hospital and medical institutions	
	05.	Conducting review of the Response and Recovery Plan for the Health Cluster agencies and revise to integrate the improvements	

CLUSTER 4: LOGISTICS SUPPORT AND SHELTER FACILITIES			Responsible Persons
PRE-DISASTER PHASE	ACTIVITIES		<ul style="list-style-type: none"> <li>• ED Technical</li> <li>• Senior GM Project</li> <li>• Plant Heads</li> <li>• Admin Team</li> <li>• Project Team</li> <li>• Security Team</li> </ul>
	01.	Developing guidelines and disseminate information on (01) Logistic supply management and deployment of resources, (02) Maintaining of temporary or permanent emergency shelters, (03) Distribution of welfare items and food with quality assurance for food and nutrition	
	02.	Developing inventory of agencies within the city, next to EZ who possess stocks of welfare items, food and nutrition, temporary shelter and camps, water purification plants, generators, cooking facilities etc. to be used in case of emergencies	
	03.	Preparing plan for temporary shelter provision and management along with security plan for temporary shelter camps	
	04	Identification of potential open-air sites appropriate for temporary shelters for displaced population and conduct capacity assessment of these open-air sites.	
EMERGENCY RESPONSE PHASE	01.	Conducting damage analysis and need assessment survey in affected factories/ locations/ areas and preparation of estimates of items and other urgent needs. Networking with various financial institutions (funding agencies, for mobilization of contributions,)	
	02.	Liaise with relevant govt. agencies, line departments, district authorities, civil society agencies to ensure welfare of other victims (those who are living in their own, those who are with friends and relatives etc.) and food supply	
	03.	Activating the plan for temporary shelter provision and management	
	04	Implementing the shelter security plan	
	05.	Liaise with camp management team, to meet the needs on an on-going basis and obtain periodic situation reports and review the progress on shelter management	
RECOVERY PLAN PHASE	01.	Conducting routine surveys for quality assurance for food and nutrition distributions carried out by government and non-government agencies	
	02.	Periodic Stock taking of central Godowns to carry out qualitative and quantitative assessment of food items and facilitate efficient distribution	
	03.	Assisting all agencies providing welfare, food and nutrition support for transportation and distribution of supplies to victims when and where necessary	
	04	Developing early recovery Plans for setting up new Settlement programs and rehabilitation of partially damage settlement and housing for supply of permanent shelter for affected.	
	05.	Reviewing Performance of Cluster - Shelter and introduce modifications to the Contingency Plan for better performance in future.	

CLUSTER 5: RESTORATION OF CRITICAL FACILITIES AND UTILITY SERVICES (WATER SUPPLY, SANITATION, GAS, IT FACILITIES)		Responsible Persons
PRE-DISASTER PHASE	<b>ACTIVITIES</b>	
	01.	Conducting scenario-based need assessment survey for emergency services in cyclone, earthquake and fire prone factory buildings and report to authorities. Designing and implementing projects for pre-positioning of emergency water, electricity, gas supply, and telecommunication services for critical areas
	02.	Developing Risk Preparedness and Contingency Plans for Water, Gas Sanitation, Waste Management Systems, and IT Infrastructures at all levels covering disaster risk reduction agencies by respective managers
	03.	Developing procedure for vulnerability assessment of water supply system & infrastructure facilities, sewerage & drainage systems by respective managers
	04.	Developing guidelines for close surveillance in epidemic outbreak and conduct of preparedness measures such as immunization programs, awareness programs to prevent epidemic outbreaks
	05.	Identification of evacuation routes in high-risk areas and take actions to improve access to inaccessible areas for S&R actions.
	06.	Promoting factory level long term water conservation methods such as rainwater harvesting, water softening & SODIS techniques for water purification
	07.	Developing guidelines for vulnerability assessment of utilities and conduct training for utility sector staff for undertaking vulnerability assessments.
EMERGENCY RESPONSE PHASE	01.	Mobilizing pre-positioned/stand by essential emergency support units and facilities (stand-by generators, mobile kitchens, water supply and purification units, mobile hospitals, etc.) and mobilizing pre-positioned emergency utility supply services for critical factories.
	02.	Immediately activating the plan for shut off of all supplies of gas, electricity, waste disposal, IT infrastructures etc. at all shut off points
	03.	Conducting rapid damage assessment of water supply, sewerage & drainage system, and initiate actions for restoration
	04.	Obtaining periodic situation reports and review the progress on activation of Risk Preparedness, Response and Contingency Plans and restoration of services by utility agencies
	05.	Organize project teams to conduct rapid damage assessment of all essential utilities within the city by utility managers
RECOVERY PLAN PHASE	01.	Integrating mitigation and preparedness programs in recovery planning by utility agencies for reduction of future cyclone/ earthquake impacts during restoration of facilities
	02.	Carrying out performance evaluation of response actions under Cluster -water supply, sanitation, gas, its facilities and introduce suitable modifications to Contingency Plan to improve the performance. Assisting restoration of all essential utilities and services within the city by utility managers

- ED Technical
- Plant Heads
- Project Heads
- Admin MIEZ
- Procurement Division (Factory wise)



03.	Phase by phase restoration of disrupted electricity, gas, water supply and telecommunication through assessment of degree of damage
04.	Conduct periodic quality check of water sources, portable water containers and disposal of waste
05.	Conducting a review of performance of the Cluster - Restoration of critical facilities and utility service and revise the Contingency Plan accordingly.

CLUSTER 6: TRANSPORTATION		Responsible Persons
<b>PRE-DISASTER PHASE</b>	<b>ACTIVITIES</b>	
	01. Developing coordination arrangements between different transport authorities (road, air, sea) to function during emergencies and developing emergency teams for restoration of facilities.	<ul style="list-style-type: none"> <li>● Plant Heads</li> <li>● Senior DGM Transport Team</li> <li>● Transport Team</li> <li>● Project Team</li> </ul>
	02. Making arrangements for storage of essential spare parts and making arrangements to fabricate temporary bridges or ladders.	
	03. Developing a comprehensive plan for security arrangements and protection of properties, business, and industries as well as for maintenance of law and order to be adopted during tidal surges and earthquake emergencies.	
	04. Developing guidelines for control of entrance into damaged buildings, and restrict access to affected areas by unauthorized persons	
	05. Developing guidelines for evaluation of security planning and operations for maintenance of law and order during emergencies	
	06. Developing procedures for management and maintenance of information on dead and missing as well as burial of dead, funeral rights, mortuary services etc.	
<b>EMERGENCY RESPONSE PHASE</b>	01. Conducting rapid damage assessment survey and reporting by transport authorities for obtaining cooperation of other agencies for restoration of transportation systems. Also, Mobilization of resources for activation of alternate transport arrangements	
	02. Carrying out the Plans for prevention and control of fire hazard due to main shock and aftershocks in temporary shelters, government buildings, private buildings, business enterprises, utilities & Services	
	03. Activating the security plan for citizens and protection of properties, business, and industries as well as for maintenance of law and order. Also activating the Plan for handling of destitute and orphans	
	04. Carrying out the plan for management and maintenance of information on dead and missing	

CLUSTER 6: TRANSPORTATION			Responsible Persons
	05.	Carrying out the procedures for burial of dead, funeral rights, mortuary services etc.	
RECOVERY PLAN PHASE	01.	Assisting actions by transport authorities to identify alternate routes for transportation of essential relief supplies, food stocks, welfare items etc.	
	02.	Reviewing of the performance of Cluster - Transportation during the emergency response period and revise the Contingency Plan to improve the performance	
	03.	Carrying out evaluation of security planning and operations for maintenance of law and order during emergency	
	04.	Conducting review of the Contingency Plan under Cluster – Security and Welfare and introduce suitable modifications in revising the Plan to improve the performance	

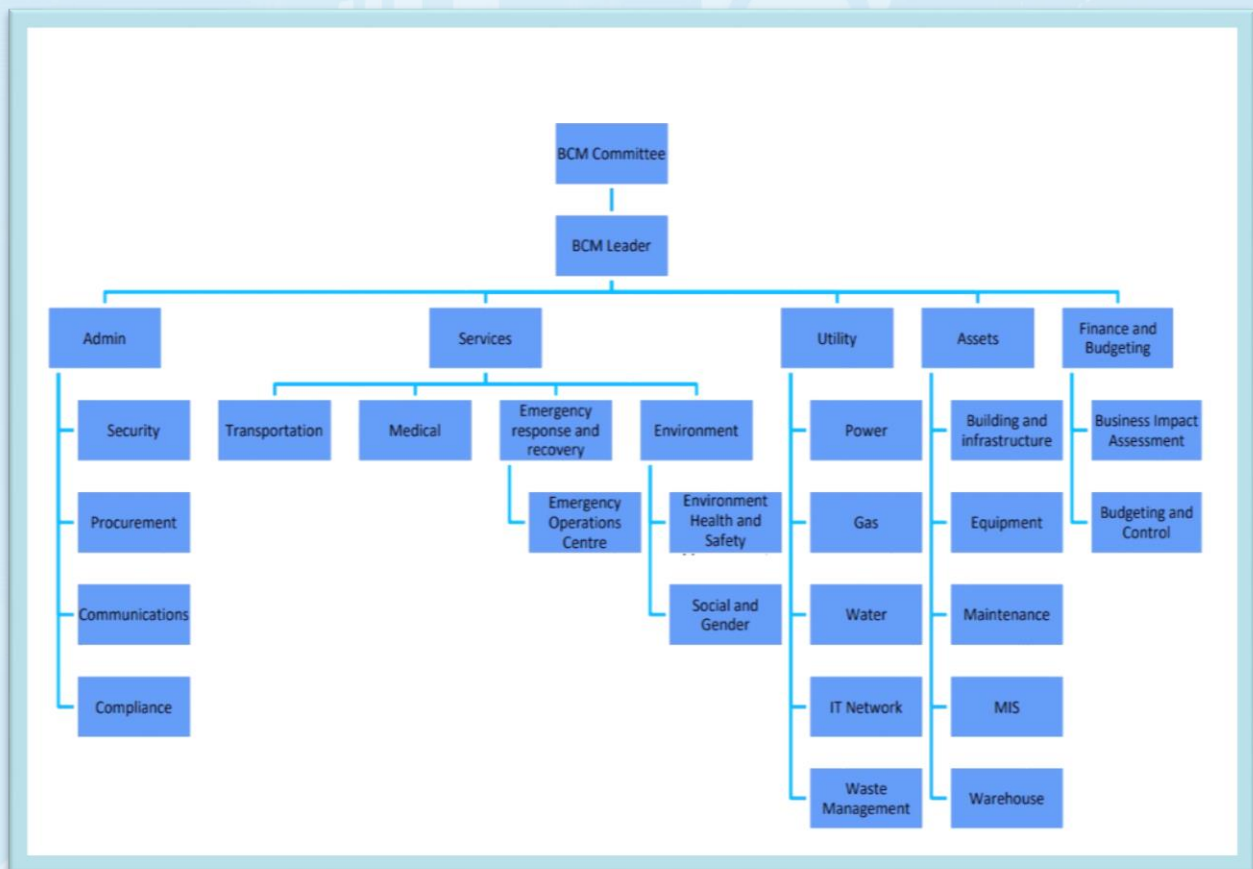


Figure 6.3: BCM Organogram

### 6.2.3 Planning

Understanding the nature of the economic zone, its critical functions, risks and threats, objectives of the BCP are determined in this section.

- i. **Profile of the organization:** A list of industries located in the economic zone is presented here.

**Table 6.2: Industries/Enterprises at MIEZ & their Basic information**

SL	Company Name	Country of Origin	Type of Operation
1	Sun Pharmaceutical (EZ) Limited	India	Medicine including API
2	Sika Bangladesh Ltd.	Switzerland	Industrial Adhesives, Sealants, and Acoustic Solutions
3	TIC Industries (Bangladesh) Pty Ltd.	Australia	Hnager manufacturing
4	TIC Manufacturing (Bangladesh) L	Australia	Hnager manufacturing
5	Jotun Bangladesh Ltd.	Norway	Building Interior and exterior colour
6	Transsion Bd LTD	China	Mobile Manufacturing
7	Siegwerk Bangladesh Ltd	Germany	Packeging ink
8	Sakata (Inx Bangladesh) Pvt. Limited	Japan	Printing Ink for paper and film
9	DIC Bangladesh pvt ltd	Japan	Printing Ink and adhesives.
10	CHT Bangladesh Ltd	Germany	Specialty Chemical solutions in textile paper and agriculture
11	MB Solutions	Germany	advanced chemical solutions for construction
12	Meghna Beverage Ltd.	Bangladesh	beverage manufacturing
13	Unique Cement Fiber Industries Ltd.	Bangladesh	2-ply Cement Bag, Jumbo Bag
14	Sonargaon Steel Fabricate Ltd.	Bangladesh	Steel Structure
15	Meghna Noodles and Biscuit Factory Ltd.	Bangladesh	Noodles and Biscuits and bakeries item
16	Sonargaon Printing and Packaging Industries Ltd.	Bangladesh	Corrugated Carton Box (Master & Inner Box), Sanitary Napkin, Baby Diaper
17	Meghna Bulk Bag Industries Ltd	Bangladesh	FIBC/jumbo bag of all types, liner FIBCs, food grade FIBCs, pharma grade FIBCs woven polypropylene bag/sack, laminated/non laminated pp woven fabric, PPMF yarn, belt, filler cord, PE Liner
18	Meghna Foil Packaging Ltd.	Bangladesh	Printed & Laminated foil for packaging, Printed & Laminated Offset paper for packaging & leveling, Disposal Item (Thermoforming items)
19	Meghna Star Cables Ltd.	Bangladesh	Different type of Wire & Cables
20	Tampaco Thi foil	Bangladesh	Foil pack for different industries
21	S2S chemical Ltd.	Bangladesh	calcium Carbonated Production

- ii. **Social and environmental setting:** Demographic and environmental information of the surrounding area is mentioned here.

**Table 6.3: Demographic and Environmental Information**

<b>Social</b>	
Area specific info	The MIEZ falls under the Sonargaon Upazila's Mograpara Union Total Household size is about 3629 those are located in 57 villages. The MIEZ and its surrounding site have semi-urban and rural socioeconomic aspects viz. concrete made single and multi-storied buildings, various types of industries, small cottage industries, various types of local markets, shops, hotels & restaurants.
Demography	Total population in Sonargaon Upazila is 416046 (Male =201450, Female = 166839) and under the Mograpara Union total population is 19883 (Male = 9883, Female = 10000) (BBS Population Census 2011). The literacy rate is about 55% in the Union. Total Household size is about 3629 those are located in 57 villages. (BBS Population Census, 2011)
Socio-cultural resources	The Sonargaon Panam City (Nagar), a historical heritage site and the old Capital of Bengal is only 3.1 km from the MIEZ. Baro-Bhuyan Palace of Lord Isa Khan, Graveyards, remnants of old ancient city are also existing in the this archaeological site. This area is a historical site housing a number of archeological monuments.
Hospital/clinic	One community clinic and 8 private clinics located in the Mograpara Union. But one hospital and childcare facility exist in the MIEZ
Educational institution	Government Primary School 7, Higher Secondary School2, College 2, Madrasa 10
Shelters for Disaster	There is no disaster related shelter/infrastructure available in the Mograpara union, but to rescue from disaster a Fire Service and Civil Defense unit is located within the MIEZ.
<b>Environmental</b>	
Water bodies (river, canal, ponds)	The River Meghna flows in the close proximity (3-4 km) of the MIEZ. Besides few ponds exist in the villages. In addition, a lake known as 'Central Lake' exists in the MIEZ.
Physical environment: Water quality (Surface and Underground), air quality, noise level	Ambient Noise Level measured in different industrial units/ enterprises of the MIEZ. The maximum level measured at daytime was 121 dBA while minimum level was 64 dBA. Again, the maximum noise level at night was 122.6 dBA and minimum were 47.2dBA. (Ref: Environmental and Social Impact Assessment (ESIA) of Meghna Industrial Economic Zone (MIEZ) Project Volume III: Annexes)
<b>Disasters</b>	
Cyclone and storm surge	During the period 1960 to 2021, twenty-five cyclones hit the coast of Bangladesh. The location of the project is not in the coastal area. So, there is no risk of the effects of storm surge.
Earthquake	MIEZ site falls under zone 2 which is a moderate earthquake zone. The Zone-II includes the greater districts of Dinajpur, Bogra, Dhaka and Chittagong, and the shocks of intensity of VIII are possible.



- iii. **Critical functions:** *“The critical functions performed by the MIEZ authority are listed below:*

**Table 6.4: List of Functions/Infrastructure/Services**

- Key infrastructure in the area
  - Utility services (gas, electricity, water, waste management, telephone, internet)
  - Emergency response services including alarm and warning systems
  - Transport connectivity
  - Telecommunications
  - Security
  - Fire prevention and protection
  - Public health
  - Evacuation plans
  - Social and environmental setting
  - Assets
  - Financial mechanisms
  - Supply chain
  - Human resources
  - Information and data back up
  - Designated personnel/team/leadership in charge of BCM
  - Administrative set up of MIEZ, and enterprises therein
  - Engagement and partnership with local community
- “

- iv. **Critical infrastructure:** *“A list of critical infrastructure are listed below.*

**Table 6.5: List of Critical Infrastructure**

Critical infrastructure	Facilities
<i>Fire station</i>	<i>1 no.</i>
<i>Childcare cum Health Center</i>	<i>1 No with: Medical Officer (1) Medical Assistant (3) Nurse (1)</i>
<i>Env Lab &amp; Monitoring</i>	<i>N/A</i>
<i>Road infrastructure</i>	<i>25 Wide Main Road, 16m and 14m wide road</i>

Critical infrastructure	Facilities
Facility building	N/A
CETP	1
Water Pumps	16 (8 Nos. Electric and 8 Nos. Diesel)
Sewerage Treatment plant	N/A
Water Treatment Plant	Industry Based
Emergency Response Centre	Fire Station work as Emergency Response Centre
IT Facilities	Broadband Network service provided by Tecleap Ltd. sister concern of Meghna Group of Companies. Intercom facility within the industry
Water bodies	Two canals beside the MIEZ. Existing Two Ponds (1+1 acres). Stormwater line is located beside the 2 primary road of MIEZ.

**Table 6.6: Details of Critical Infrastructure**

Serial No	Items	Discussion	Remarks
1.	Electricity	<ul style="list-style-type: none"> <li>REB with 15 MW.</li> <li>Another powerplant by Meghna Group.</li> <li>1 Substation by REB.</li> </ul>	
2.	Water Supply	<ul style="list-style-type: none"> <li>The fresh water from underground extraction.</li> <li>Water is supplied upon the demand of industries.</li> <li>05 water level measuring instrument are installed in the EZ.</li> <li>WTP installed as industry based.</li> </ul>	
3.	Drainage Pattern	<ul style="list-style-type: none"> <li>Two canals beside the MIEZ.</li> <li>Stormwater line is located beside the 2 primary road of MIEZ.</li> <li>The Discharge point located in the south of MIEZ (Near Main Dormitory).</li> </ul>	
4.	Fire Safety	<ul style="list-style-type: none"> <li>Alarm system is factory based.</li> <li>No central alarm system is installed into the EZ.</li> </ul>	
	Workers	<ul style="list-style-type: none"> <li>Number of total workers 6000-7000.</li> <li>Workers come from nearby villages.</li> <li>Few social unrests at the outside of the factory premises and zero causality since its beginning.</li> </ul>	
5.	IT Facility	<ul style="list-style-type: none"> <li>1 networking data center at MIEZ.</li> <li>Double internet line.</li> </ul>	

- v. **Risks and threats:** “Probable risks and their perception by the organization are listed below.

**Table 6.7: List of Risks and Threats**

Disaster Type	Hazard	Probability (likelihood) (1–5)	Impact (1–5)				Consequences	Required Risk Response Actions
			Staff (S)	Assets (P)	Factory (A)	Operations (O)		
NATURAL	Floods and Waterlogging	1	0	1	1	4	<p>S –deterioration of health condition  P – property damage,  A – property damage, equipment, and machineries damages  O – stagnant</p>	<ul style="list-style-type: none"> <li>• Drainage plan</li> <li>• Upgrade roads and bridges</li> <li>• Flood control measures</li> <li>• Evacuation plan</li> </ul>
	Cyclone	5	1	2	1	4	<p>S – N/A  P – Property damage,  A – property damage, equipment, and machineries damages  O – stagnant</p>	<ul style="list-style-type: none"> <li>• Construction of cyclone shelter</li> <li>• Capacity building</li> <li>• Drainage plan</li> </ul>
	Storm Surges	3	1	2	2	4	<p>S –  P – Property damage,  A – property damage, equipment, and machineries damages  O – stagnant</p>	<ul style="list-style-type: none"> <li>• Capacity building</li> <li>• Awareness building</li> <li>• Information system develop</li> </ul>
	Earthquake	3	2	2	2	3	<p>S –Casualty, injuries, and trauma  P – Property damage,  A – property damage, equipment and machineries damages, rupture gas pipelines and other utility</p>	<ul style="list-style-type: none"> <li>• Utility services plan</li> <li>• Evacuation plan</li> <li>• Capacity building</li> <li>• Awareness building/Training</li> </ul>

Disaster Type	Hazard	Probability (likelihood) (1-5)	Impact (1-5)				Consequences	Required Risk Response Actions
			Staff (S)	Assets (P)	Factory (A)	Operations (O)		
							services, Physical & financial loss O – stagnant & disrupted	
	Tsunami	3	0	1	1	2	S – P – Property damage, A – property damage, equipment, and machineries damages O – stagnant	<ul style="list-style-type: none"> <li>• Construction of shelter</li> <li>• Capacity building</li> <li>• Drainage plan</li> </ul>
MAN MADE	Cyber attack	3	0	1	0	3	S – loss of job P – N/A A – financial loss, O – stagnant	<ul style="list-style-type: none"> <li>• Alternative operation plan prepares</li> <li>• Develop security system</li> </ul>
	Movement Restriction/ Strike/Hartals	2	2	2	2	2	S – loss of life P – N/A A – Effect on economy, financial loss, O – stagnant	<ul style="list-style-type: none"> <li>• Alternative route plan</li> <li>• Training on risk control</li> </ul>
	Thief	2	1	2	2	0	S – Loss of Human Resources and resulting loss of job P – N/A A – financial loss, O – stagnant	<ul style="list-style-type: none"> <li>• Training on behavior</li> </ul>
	Accident- Machine Damage	3	3	2	2	1	S – loss of job & life P – N/A A – Financial loss, property damage O – Stagnant and Disrupt Operation	<ul style="list-style-type: none"> <li>• Administration and Engineering efficiency dev</li> <li>• Check the machineries frequently</li> </ul>
	Poisonous Gas Emission	3	2	1	1	2	S – loss of life P – N/A A – financial loss, O – stagnant	

“

A risk perception matrix, based on perceptions of likelihood and intensity, will be placed here.



#### 6.2.4 BCP Objectives

The Business Continuity Plan (BCP) is concerned with the continuation, resumption, and recovery of business operations while minimizing the potential impact of threats on business operations. The BCP implementation planning process should be carried out across the entire enterprise.

A business continuity plan (BCP) is a comprehensive approach that takes into account an enterprise's critical operations, critical equipment, key personnel, functional vulnerabilities, supply chain exposures, and proposed solutions. Thorough business impact analysis and risk assessment are the foundations of an effective BCP, and their effectiveness can only be validated through testing or practical application. Because it is a top-down risk management approach, the BCP requires top management commitment and buy-in for success. The BCP and test results should be subjected to an independent audit and reviewed by the board of directors. A BCP is a living document that requires repeated exercise, continuous improvement, and periodic updating to reflect and respond to changes in an enterprise.

Based on the critical activities and assets, the BCP objectives are listed below. The following BCP objectives are taken into account for MIEZ

- a) Develop a BCM (Business Continuity Management) System.
- b) Create a cluster-based activity in accordance with the incident command system's Standard Operating Procedure (SOP) and response plan (ICS).
- c) Provide a Disaster Specific Recovery Plan and an Implementation Plan.
- d) Physical planning can reduce the probability of flooding and ensure the safety of structures.
- e) Ensure a backup method of transportation in case of emergency.
- f) Establish emergency services.

#### 6.2.5 Support

The chain of command to be followed for implementation of BCP is shown in Figure 6.4. However, in general, for all economic zones the organogram shown in Figure 6.5 is proposed.

### 6.3 Area BCP Phase-2: “Analyze”

#### 6.3.1 Risk Assessment

Likelihood and intensity of each type of risk is assessed based on secondary data. The findings of the assessment are discussed in the following sections.

#### Flood Risk and Water Logging Scenario

For this study, flood hazard has been assessed from the secondary data as well as analyzing the inundation and water extent, are presented in the following Figure 6.6. To identify the flood vulnerabilities both for BSMSN and MIEZ, conventional vulnerability indicators were considered. Flood exposure has been assessed by measuring the water depth in a particular location,

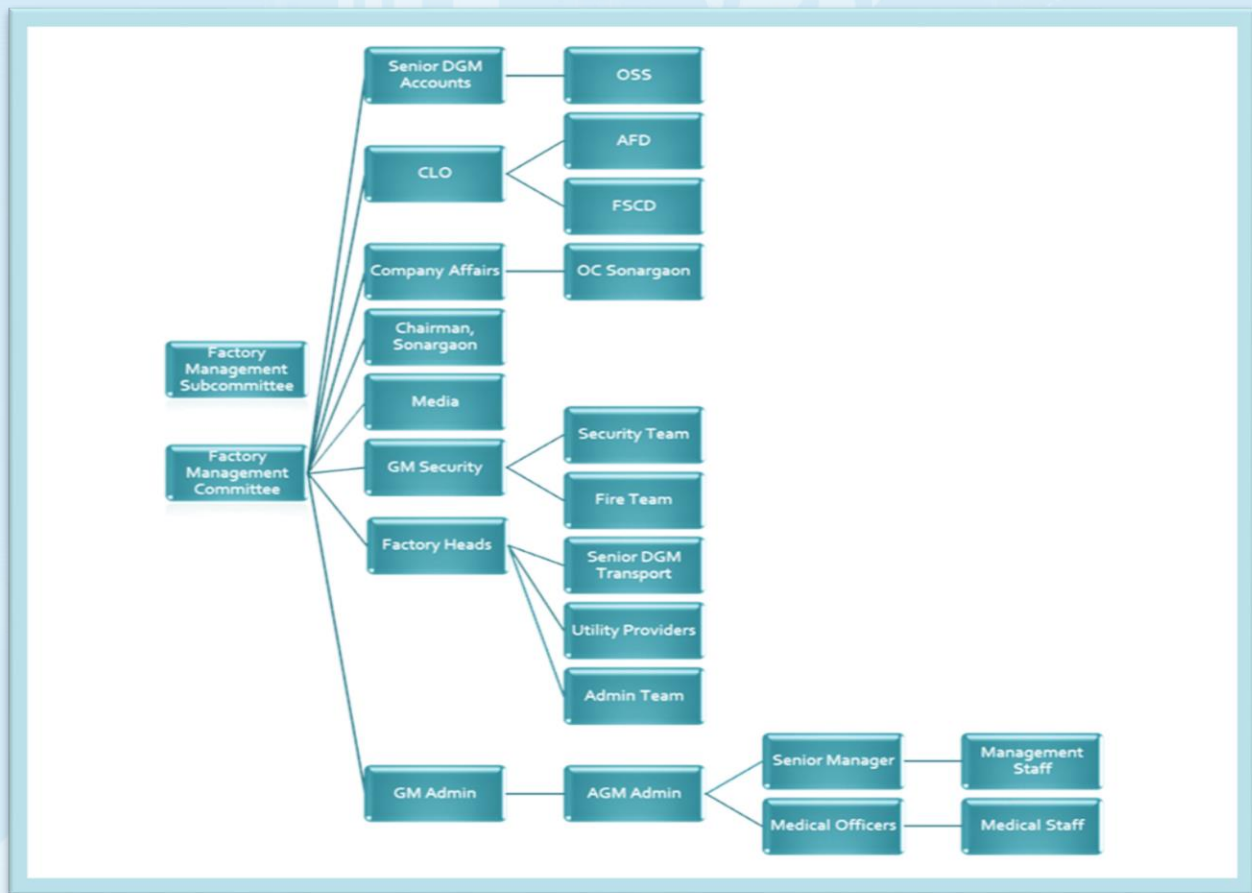
collected from MIDP study and other research data. This depth was calculated by subtracting the land elevation value from the flood water level return period.

Water Logging hazard scoring in different return period were calculated in MIDP study and several vulnerability indicators were considered to identify the water logging vulnerability both for BSMSN and MIEZ study area. These indicators are: (a) Drainage Condition (b) Plinth height of existing establishment (c) State of maintenance (d) Structural typology (e) Number of basements (f) Number of floors (g) Construction year/age.

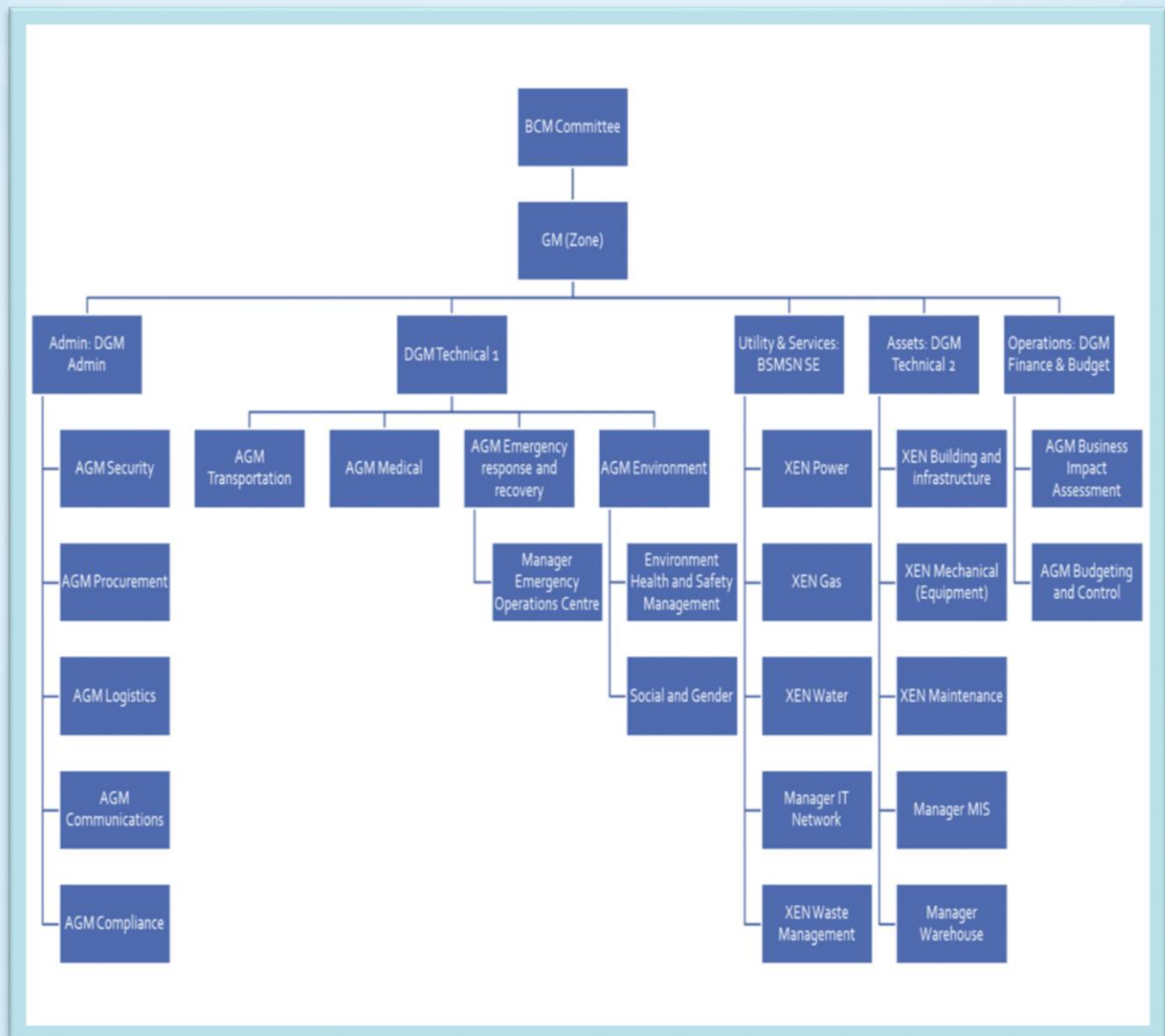
Water logging hazard was quantified by multiplying three indicators: Hazard, Vulnerability and Exposure. The water logging risks were categorized into 5 classes- Very low, low, medium, high & very high for mapping. These risk maps of BSMSN and MIEZ study Area are presented in the following figures.

The internal drainage network of BSMSN should be completely segregated from the other outside drainage network (until this segregation is done, a periodic removal of the sludge is proposed as a temporary solution).

The MIEZ area is less vulnerable for flood.



**Figure 6.4: Chain of command to be followed for implementation of BCP**

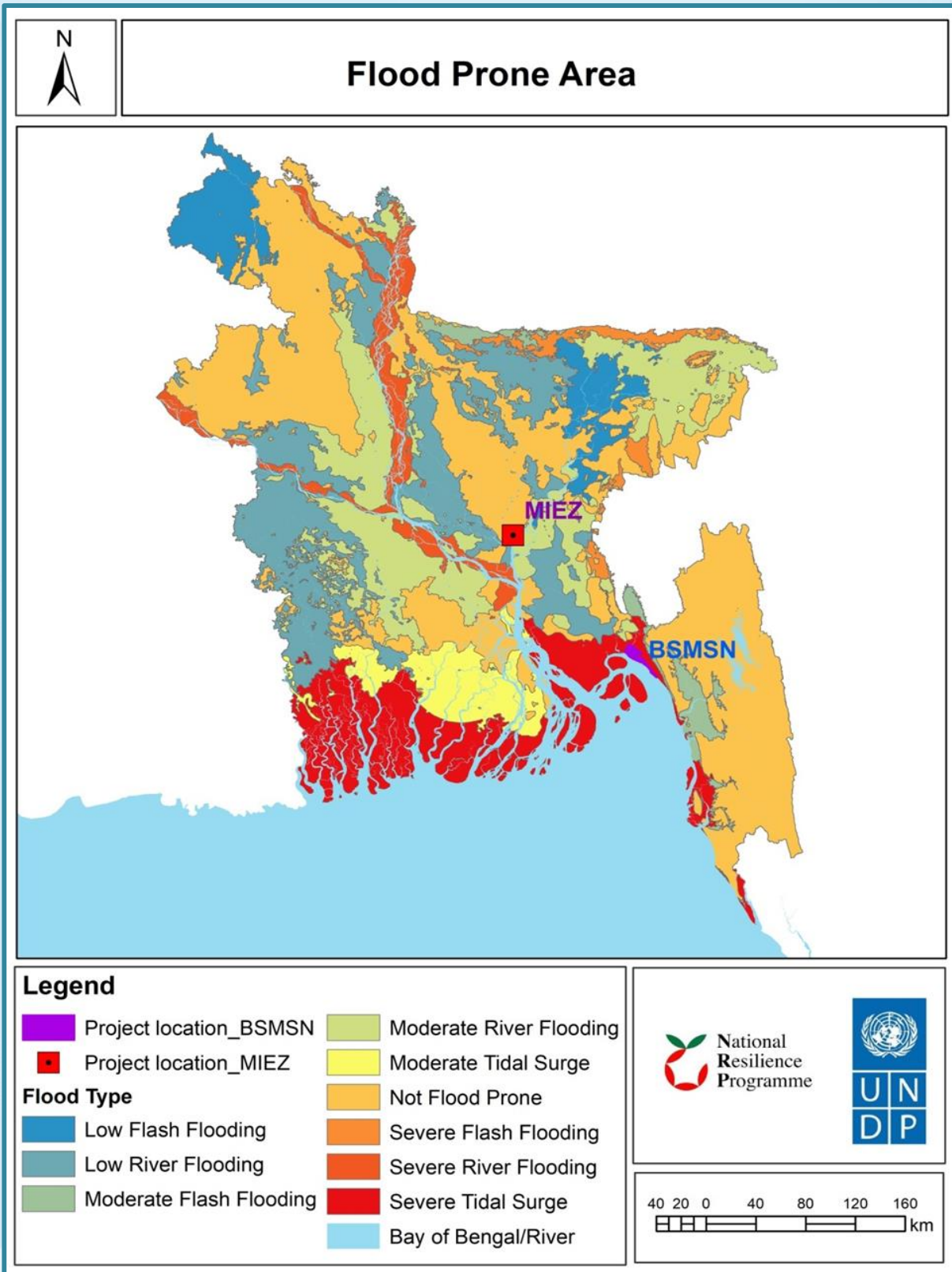


**Figure 6.5: General organogram proposed for all economic zones**

### Earthquake Scenario

Earthquake vulnerability assessment may be conducted in various methods. In the CDMP study (2009) vulnerability and risk assessment was based on the HAZUS based approach. However, detailed numerical analysis of different types of structures is necessary to develop fragility curves to be used in that method. Detailed information of exposed value of the structure and the replacement cost are necessary. The HAZUS based approach is expensive both in terms of money and time.

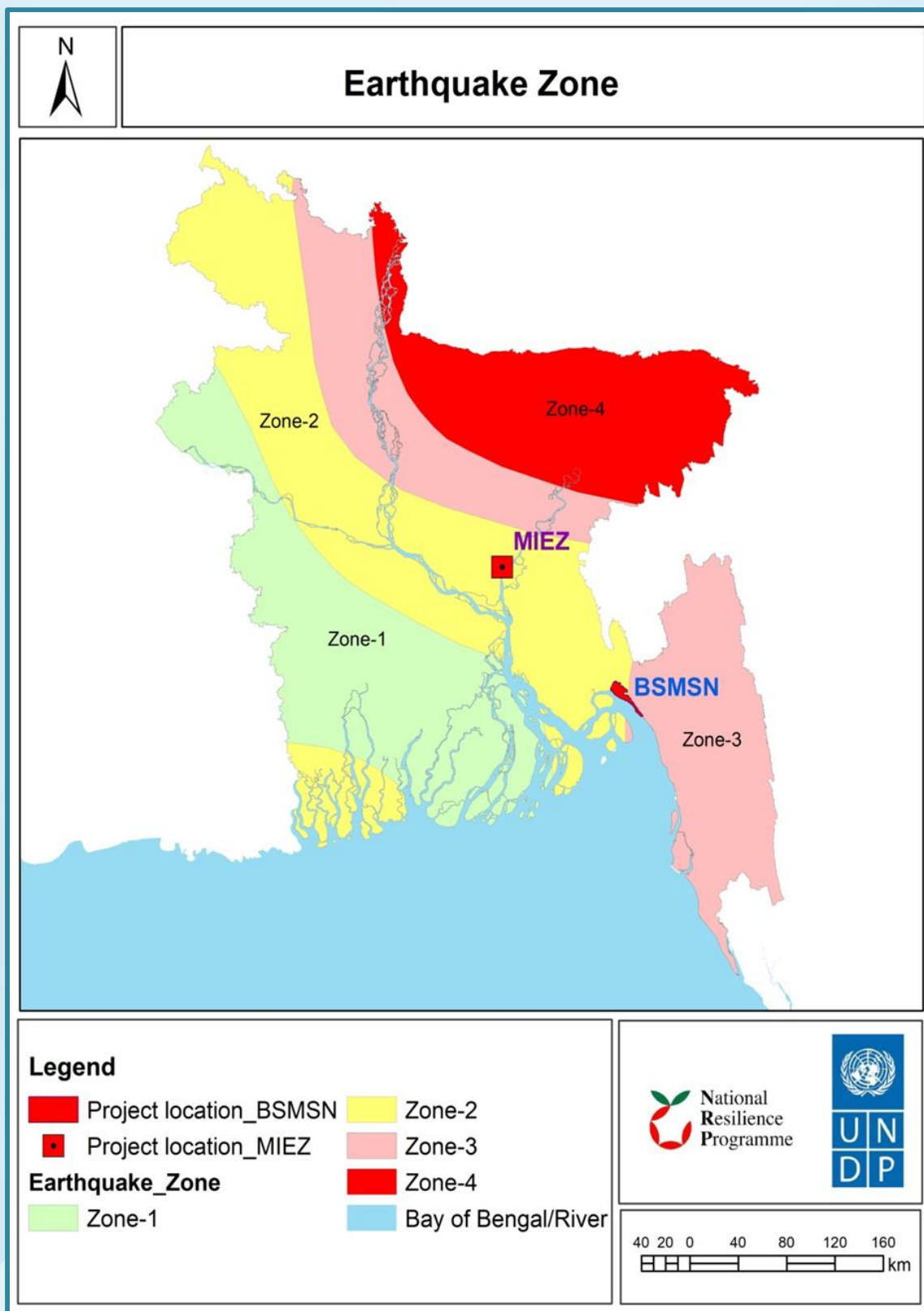
The project area MIEZ falls under Zone II on the earthquake zone map (Figure 6.7), which implies that earthquakes of moderate intensities are expected here. So, special precaution is needed in considering the risk from earthquakes to establish any structure.



**Figure 6.6: Map of Flood Prone Area**

Source: Bangladesh Agriculture Research Council (2000)





**Figure 6.7: Map of Earthquake Zone**

Source: BNBC (2020)

## Seismicity

Based on earthquake epicenters and morph tectonic characteristics, Bangladesh is divided into four seismic zones, namely zone-I, zone-II, zone-III and Zone-IV (Figure 6.7).

- ◆ To mitigate the Earthquake Risk:
- ◆ Site Specific Design Spectrum should be developed.
- ◆ Liquefaction potential of sites has to be considered.
- ◆ Seismic Vulnerability of existing structures should be assessed; and
- ◆ Structural retrofitting should be implemented for existing vulnerable structures.

Earthquake Hazard Reduction measures within the framework of a nationwide Earthquake Hazard Reduction Program should be taken (i.e., to prepare earthquake risk profiles in the BSMSN areas on a priority basis, extensive sub-soil investigations and other seismic measures may be hunted for).

## Fire Risk

Significant loss to industries occurs through fire hazard. Whether large or small, fire causes personal.

suffering, damage to plants, equipment and buildings, and loss of business. Fire risk can be assessed in many ways. In this study the external investigation in terms of accessibility and industry type was implied to assess the risk of fire.

MIEZ area was developed as an Industrial area therefore most of the industries are well equipped with fire safety logistic and certification. The BCP team found very little problem during the field visit in MIEZ except central fire alarm and practice of fire drilling. One of the important observations during field visit is that most of the industries developed their factory on the total land coverage permitted except the set-back area regulated by BEZA, which is a concern for fire hazard. On the contrary, BSMSN area is not well established yet and was the subject to carry out the fire safety assessment. Two factors have to be considered to assess the fire risk:

1. Distance & travel time (along the road network) to the industries from the fire stations.
2. Risk of fire hazard based on industry type (raw materials and the products).

Accessibility of the industries has to calculate by measuring the distance of industry structures from

the numbers of fire stations along the road network considering the shortest path. Later these distances were converted to the travel time using vehicle speed per hour. Synthesizing the normalized

travel time with the industry type factor, risk factors were calculated for each industry structure.

This

risk factor has been introduced as Fire Risk Factor (FRF).

## Hazard

The hazard levels for different risks described above are categorized in five levels as shown in Tables 6.8 and 6.9.

**Table 6.8: Classification of Hazard Level**

Hazard Level	Color Code
Not Affected	Dark Green
Low	Bright Green
Moderate	Yellow
High	Orange
Very High	Red

**Table 6.9: Probability of Hazard in MIEZ Area**

Land slide	Bright Green	Dark Green
Salinity	Bright Green	Dark Green
Flood	Yellow	Yellow
Water logging/ Drainage	Yellow	Yellow
COVID-19	Yellow	Yellow
Lightning	Yellow	Yellow
Fire incidences	Orange	Orange
Tidal Surges	Orange	Dark Green
Earthquake	Orange	Yellow
Cyclone	Red	Dark Green

*Source: Stakeholder opinion & secondary sources*

### 6.3.2 Business Impact Assessment

Based on the stakeholder's field visit and feedback, above hazard risk profiles give an idea of probable risks.

For the above risk and damage scenario most likely to occur, the following Vulnerability Mapping Exercise can be used:

**Table 6.10: Vulnerability Map for Critical Hazards at MIEZ Area**

Hazard Level	MIEZ
Land slide	Dark Green
Salinity	Dark Green

Flood	<ul style="list-style-type: none"> <li>◆ Transport connectivity</li> <li>◆ Production processes</li> <li>◆ Public health</li> <li>◆ Supply chain</li> <li>◆ Utility services (gas, electricity, water, waste management, telephone, internet)</li> <li>◆ Evacuation plans</li> <li>◆ Assets</li> <li>◆ Sales</li> </ul>
Water logging/ Drainage	<ul style="list-style-type: none"> <li>◆ Transport connectivity</li> <li>◆ Public health</li> </ul>
COVID-19	<ul style="list-style-type: none"> <li>◆ Production processes</li> <li>◆ Public health</li> <li>◆ Supply chain</li> <li>◆ Sales</li> <li>◆ Financial mechanisms</li> <li>◆ Human resources</li> </ul>
Lightning	<ul style="list-style-type: none"> <li>◆ Human resources</li> <li>◆ Utility services (gas, electricity, water, waste management, telephone, internet)</li> </ul>
Fire incidences	<ul style="list-style-type: none"> <li>◆ Key infrastructure in the area</li> <li>◆ Utility services (gas, electricity, water, waste management, telephone, internet)</li> <li>◆ Emergency response services including alarm and warning systems</li> <li>◆ Transport connectivity</li> <li>◆ Telecommunications</li> <li>◆ Security</li> <li>◆ Fire prevention and protection</li> <li>◆ Public health</li> <li>◆ Evacuation plans</li> <li>◆ Assets</li> <li>◆ Financial mechanisms</li> <li>◆ Supply chain</li> <li>◆ Human resources</li> <li>◆ Production processes</li> <li>◆ Sales</li> <li>◆ Information and data back up</li> <li>◆ Designated personnel/team/leadership in charge of BCM</li> <li>◆ Administrative set up of BEZA, BSMSN, MIEZ, and enterprises therein</li> <li>◆ Engagement and partnership with local community</li> </ul>



## Tidal Surges

- ◆ Key infrastructure in the area
- ◆ Utility services (gas, electricity, water, waste management, telephone, internet)
- ◆ Emergency response services including alarm and warning systems
- ◆ Transport connectivity
- ◆ Telecommunications
- ◆ Security
- ◆ Fire prevention and protection
- ◆ Public health
- ◆ Evacuation plans
- ◆ Assets
- ◆ Financial mechanisms
- ◆ Supply chain
- ◆ Human resources
- ◆ Production processes
- ◆ Sales
- ◆ Information and data back up
- ◆ Designated personnel/team/leadership in charge of BCM
- ◆ Administrative set up of BEZA, BSMSN, MIEZ, and enterprises therein
- ◆ Engagement and partnership with local community

## Earthquake

- ◆ Key infrastructure in the area
- ◆ Utility services (gas, electricity, water, waste management, telephone, internet)
- ◆ Emergency response services including alarm and warning systems
- ◆ Transport connectivity
- ◆ Telecommunications
- ◆ Security
- ◆ Fire prevention and protection
- ◆ Public health
- ◆ Evacuation plans
- ◆ Assets
- ◆ Financial mechanisms
- ◆ Supply chain
- ◆ Human resources
- ◆ Production processes
- ◆ Sales
- ◆ Information and data back up
- ◆ Designated personnel/team/leadership in charge of BCM
- ◆ Administrative set up of BEZA, BSMSN, MIEZ, and enterprises therein
- ◆ Engagement and partnership with local community

Cyclone

- ◆ Utility services (gas, electricity, water, waste management, telephone, internet)
- ◆ Emergency response services including alarm and warning systems
- ◆ Transport connectivity
- ◆ Telecommunications
- ◆ Security
- ◆ Public health
- ◆ Assets
- ◆ Supply chain
- ◆ Information and data back up
- ◆ Designated personnel/team/leadership in charge of BCM
- ◆ Administrative set up of BEZA, BSMSN, MIEZ, and enterprises therein
- ◆ Engagement and partnership with local community

Considering the vulnerability of the critical functions/services/infrastructure, the MIEZ authority can use the following checklist for Business Impact Analysis:

**Table 6.11: Checklist for Business Impact Analysis at MIEZ**

Serial	Key Infrastructure/Function/Services	Disrupted? Yes/No  (With examples)	Disruption Period (With examples) 1 = Less than 4 hours 2 = 4 to 8 hours 3 = > 8 hours < 24 hours 4 = > 24 hours < 2 days 5 = more than 2 days
1	Key infrastructure in the area <ul style="list-style-type: none"> <li>● Fire Station</li> <li>● Power Substations</li> <li>● Central Effluent Treatment Plant</li> <li>● Water Reservoirs</li> <li>● Internal Roads</li> <li>● Warehouses</li> <li>● MIS</li> </ul>	N Y Y N N Y N	– 2 2 – – 2 –
2	Utility services <ul style="list-style-type: none"> <li>● Gas</li> <li>● Electricity</li> <li>● Water</li> <li>● Waste management</li> </ul>	N Y N Y	– 2 – 2
3	Emergency response services including alarm and warning systems	N	
4	Transport connectivity		

	<ul style="list-style-type: none"> <li>• Road connectivity to National Highway</li> <li>• Road connectivity to nearby river ports</li> </ul>	N	
5	Telecommunications <ul style="list-style-type: none"> <li>• Telephone</li> <li>• Internet</li> </ul>	N N	
6	Security	N	
7	Fire prevention and protection	N	
8	Public health <ul style="list-style-type: none"> <li>• Waterborne diseases</li> <li>• Contagious diseases</li> <li>• Smoke, Dust, Noise related hazards</li> </ul>	N N Y	4
9	Evacuation plans	N	–
10	Social and environmental setting	N	–
11	Assets	Y	This part filled in will be shared with the affected enterprises, and BIA Template Part II needs to be used by the enterprises
13	Financial mechanisms	N	Liability arising from damage compensation needs to be considered here, review the insurance policy, claims settlement procedures
14	Supply chain	Y	Mostly a concern for the enterprises, but MIEZ has obligations for keeping the supply chain infrastructure, i.e., road and transport connectivity usable
15	Human resources <ul style="list-style-type: none"> <li>• MIEZ level</li> <li>• Enterprise level</li> </ul>	N Y	Primary care should be provided by the health center, referral can be provided if required
16	Information and data back up	Y	Alternate and remotely located server needs to be in place
17	Designated personnel/team/leadership in charge of BCM		<ul style="list-style-type: none"> <li>◆ Is it officially in the organization structure? Y/N - Yes, pending approval from BEZA and MIEZ</li> <li>◆ Who are they? (As per proposed cluster-based approach and suggested changes in the MIEZ organogram, referring to Figure 6.3 BCM Organogram for MIEZ)</li> </ul>

18	Administrative set up MIEZ, and enterprises therein	<ul style="list-style-type: none"> <li>◆ Is it officially in the organization structure? Y/N, Yes, (cluster based approach and proposed changes in the Organogram is under active consideration)</li> <li>◆ Reporting and Communication channels existing now? Y/N - Yes, officially designated PRO</li> </ul>
19	Engagement and partnership with local community	<ul style="list-style-type: none"> <li>◆ Is there a formal/informal channel set up now? Y/N – Yes</li> <li>◆ Who are they? - OC, Upazila Chairman, UNO</li> </ul>

The checklist, once the exercise is carried out by the MIEZ, will be shared with individual enterprises so that they can use it for enterprise level assessment of disasters on their business operations.

## 6. 4 Area BCP Phase-3: “Design”

### 6.4.1 Components of Disaster Recovery Plan

- **Establish a Business Continuity Management System-** The first step in developing a disaster recovery plan is to establish a business continuity management system (BCMS). The BCMS is a comprehensive system that includes the policies, procedures, and processes needed to prepare for, respond to, and recover from disruptions.
- **Identify Risk Elements-** The next step is identifying risk elements. After identifying the risks, begin to develop mitigation strategies.
- **Develop Mitigation Strategies-** Mitigation strategies are designed to reduce the impact of disruptions on business. Examples of mitigation strategies include backup power generation, off-site data storage, and alternative communications systems.
- **Develop Response and Recovery Plans-** After developing the mitigation strategies, need to develop response and recovery plans. The response plan outlines the steps that should be taken immediately after a disruption occurs. The recovery plan outlines the steps that should be taken.

### 6.4.2 Establish a Business Continuity Management System

The plan should define who in the organization is responsible for disaster recovery processes, with their names and contact details. Critical responsibilities include-

- Ongoing backups and maintenance of business continuity systems.
- Responsibility for declaring a disaster.
- Responsibility for contacting third-party vendors.



- Responsibility for reporting to management and liaising with customers, press, etc.
- Responsibility for managing the crisis and recovering from it.

### 6.4.3 Identify Risk Elements

Disaster risk assessment is estimating the probability of a disaster occurring and the potential loss that could result. It is a crucial component of disaster preparedness and mitigation. It can help communities and businesses reduce the risk of disasters. The purpose of disaster risk assessment is to identify areas that are most at risk and to provide information that can be used to reduce the likelihood or impact of disasters occurring. To plan for recovery, one needs to understand the risk components. This assessment checklist will guide to identify the focus components which need to be incorporated in the plan. The risk elements are-

- Transport connectivity
- Production processes
- Public health
- Supply chain
- Utility services (gas, electricity, water, waste management, telephone, internet)
- Critical equipment failure
- Phone/Internet outage
- Assets

## 6. 5 Area BCP Phase-4: “Plan”

### Training and education

- Develop a training plan and conduct training for all employees.
- Prepare and deliver training seminars and workshops to prepare all response and recovery personnel for their disaster roles and responsibilities.
- Prepare materials to guide response and recovery.
- Trained volunteers to rescue, evaluate and provide first aid.

### Public Awareness

- All employee/owner/responsible committees involved in the plan must be made aware of the existence of the plan, their roles, and responsibilities.

### Land

- Land level should be elevated.
- Reserve retention area.
- Land filling should be done thus to avoid encroaching on and filling natural channels and retention areas.

### **Critical Facilities (Power, Water, Drainage, Sanitation, and Waste Management)**

Critical infrastructure, assets, equipment, and facilities should be established on higher elevations or away from water bodies. For floods, general structural measures to enhance resilience are to-

- Follow the Building Construction Rules.
- Take advanced measures (special drainage system, pumping, elevated) for core infrastructure assets and services.
- Ensure proper quality controls on construction methods, techniques, and supervision.
- Ensure establishment and proper functioning of Drainage Infrastructure like-bridge, culvert, sludge gate, pump house, reservoir etc.
- Elevate key plant buildings and structures.
- Initiate for additional backup system.

### **Road**

Transport infrastructure should be sited in areas with low inundation risks. Construction of transport infrastructure must use national standards for resilience. The most protective standard should be used within MIEZ.

- Structural design must meet standards to ensure a longer service life.
- Ensure proper structural design.
- Ensure alternative Road connectivity.
- In the BSMSN, the slop direction is north-east to south-west and the land shape is linier to east-west. So, the east-west road could be the natural barrier for flood protection. So necessary drainage structure should be installed to primary structure.
- Roads those are not used for heavy vehicles and surface area/footpath should be construct using permeable materials.
- Improved drainage to remove water during floods.

### **Medical Assistance**

- Training, education, and exercises for first responders-doctors, nurse etc.
- Establish field medical centers.

### **Emergency Supplies and Equipment**

- Prepare a strategic plan for the storage and distribution facilitates.
- Identification and storage of emergency supplies and equipment.
- Storage Supporting tools.

### **Solid waste and wastewater Disposal**

- Plans and procedures for disposing of waste materials.
- Controlling run-of.
- System to treat wastewater.

## Communications

- Establish emergency communications system for warning & announcement.
- Identify alternative communication system.

## Utilities

- Estimate power needs to operate critical systems.
- Assess capabilities of system to perform under various hazard scenarios.

## Electricity

- Monitoring and relocating control systems of power stations to a higher position.
- Examining demand for electricity and determining areas that may require uninterrupted power supply in crisis moment.
- Investigating risky spots in factories that may be prone to danger from electricity usage.

## Shelter

- Increased number of shelters.
- Established mechanism to manage and maintain shelters.

## Coordination

- Coordinating with relevant authorities to help facilitating the operation to be smooth and efficient.
- Coordinating with agencies in operations, supporting and agencies outside the area to help support in various aspects.

## 6. 6 Area BCP for MIEZ Phase-5: “Implement”

In this phase response plan and disaster specific recovery plans are presented.

### 6.6.1 Recovery Plan for All Disaster

#### Management system, Personnel & Equipment

Recovery personnel, their roles and how they can be reached during an emergency is another important goal of this plan. Communicate roles and responsibilities to all key stakeholders and keep this documentation accessible to employees and updated regularly. The management team can be playing an important role for reducing the risk level. The team will train their employee time-to –time and they have knowledge about the response activities. The main responsibilities of the team are-

**Table 6.12: Management system and Personnel**

Procedure	Person in Charge
<b>Step 1. Warning</b>	
-Sending official correspondence (email, telephone)	AGM Communications
-Sending officers to the vulnerable areas.	GM Zone
-Issuing disaster alert warning by telephone. -Sending volunteers for on-site coordination.	DGM Admin
<b>Steps 2. Quick Damages Reporting and Emergency Response</b>	
-Commune risk report to authority -In case of serious disaster, the authority can directly report to the central authority	GM Zone BCM Committee
-Compiling and reporting all information about the disaster and plans to the BCM Committee. -Reporting about situation and results of DR to the BEZA and the other relevant agencies. -Organizing relief works. -Organizing the emergency response based upon damage assessments.	GM Zone BCM Committee DGM Admin AGM Emergency response and recovery
<b>Step 3. Damage and Needs Assessment</b>	
-Compiling information from local authority -Reporting to the central authority -Sending officers for joint damage/needs assessment -Collecting and compiling information	DGM (Technical 1) GM Zone DGM Finance & Budget DGM Finance & Budget
-Sharing information with related agencies. -Decision making on disaster response.	BCM Committee GM Zone
<b>Step 4. Damage and Needs Reporting</b>	
-Collecting and reporting damages, needs, and the on-site response.	BSMSN SE AGM Business Impact Assessment
-Sharing with BEZA and other agencies -Decision making on DR and relief activities.	BCM Committee GM Zone
<b>Step 5. Coordinating Emergency Supplies</b>	
-Developing the emergency relief plan and coordinating relief resources based on needs assessment -Making decisions on provision of aid. -Monitoring, supervising, and evaluating the relief performance	AGM Procurement DGM Admin DGM (Technical 1)
-Providing guidelines and implementing emergency and recovery relief. -Monitoring and evaluation.	DGM (Technical 1) DGM Finance & Budget



<ul style="list-style-type: none"> <li>-Developing Disaster Reduction Plans.</li> <li>-Locating and selecting beneficiaries.</li> <li>-Preparing beneficiary lists and distributing relief supply</li> <li>-Distributing relief supplies.</li> </ul>	DGM (Technical 2) BSMSN SE Manager (MIS) Manager (MIS) AGM Logistics
<b>Step 6. Recovery Needs Assessment</b>	
<ul style="list-style-type: none"> <li>-Participating in needs assessment for the recovery period.</li> <li>-Preparing the assessment report and proposal on plans and recommendations on implementation</li> </ul>	DGM Finance & Budget AGM Business Impact Assessment
<ul style="list-style-type: none"> <li>-Compiling Zone needs for recovery.</li> <li>-Sharing information with stakeholders.</li> <li>-Reporting</li> <li>-Mobilize resources and fundraising.</li> </ul>	DGM Admin AGM Communications GM Zone

### Shelter & Food, Medical Care

- Hospitals nearby and in the surrounding will functioning during a disaster. In the hospital, proper facilities must be ensured, notably in the burn unit with appropriate burn treatment-related arrangements.
- Open field medical facilities.
- Offer ongoing medical assistance and initiate treatment.
- Perform water supply system maintenance.

### Route Plan

- To minimize disaster risk in the project area, another evacuation route from MIEZ to its southwest upazila road inside Mugarpara towards Kaikertek Bridge and Regional Road R113 needs to be developed and its might be used as a backup route during a natural and social disaster.
- A backup route should be in place during an emergency.
- Schools in the area or nearby will serve as the primary shelter in case of devastating hazard.

### Emergency Supplies and Equipment

- There should be a storage building for equipment in every block.
- Create an inventory and keep your warehouse in order for quick action.

### Coordination

- Coordinate activities for all parties involved and set up a system for reporting based on a checklist for performing this task on a regular basis at various intervals.
- Schedule regular emergency management committee meetings.
- Ongoing monitoring and evaluation.

## 6.6.2 Disaster Specific Recovery Plan

**Table 6.13: Disaster Specific Recovery Plan**

<p><b>Flood</b></p>	<ul style="list-style-type: none"> <li>○ Considering the topography of the MSMSN and its surrounding area, the land level should be raised.</li> <li>○ Reserved water bodies or canals throughout the majority of the block.</li> <li>○ In order to prevent encroachment on and filling of natural waterways and retention zones, land filling should be done in this approach.</li> <li>○ Elevate important structures and buildings (ETP, Treatment plant, Electric Power Station etc.).</li> <li>○ Maintaining boats and other vehicles in crisis-ready condition.</li> <li>○ Shelter will be provided by the school, administrative building, social structure, club house, etc.</li> <li>○ Erect outpost medical facilities.</li> </ul>
<p><b>Earthquake</b></p>	<ul style="list-style-type: none"> <li>○ Routes for evacuation will be signposted on roads that are 80 feet and above.</li> <li>○ The route name should be posted somewhere that is easy to see during an emergency.</li> <li>○ There should be an open area for gathering or serving as a shelter in an emergency in every block.</li> <li>○ Develop a field medical facility.</li> <li>○ Every block should have a storage facility for emergency supplies.</li> <li>○ Regular earthquake drills should be conducted at least twice a year.</li> <li>○ Open spaces such as parks and playgrounds will be developed so they may serve as temporary shelter.</li> </ul>
<p><b>Cyclone/storm surge</b></p>	<ul style="list-style-type: none"> <li>○ Establish field medical facility</li> <li>○ Utilize school, administrative building, social structure, and club house as refuge.</li> </ul>
<p><b>Fire</b></p>	<ul style="list-style-type: none"> <li>○ The installation of a fire hydrant will take place within a particular range (100 m).</li> <li>○ The design needs to consider the connection between the evacuation route and a water body. A monitoring system must be in place, and its quality must be checked every three months.</li> <li>○ A member of the monitoring committee team should come from BEZA, the local government in the industrial zone, or someone who works in power distribution, for example.</li> <li>○ Create field medical facilities.</li> <li>○ Place a storage facility for emergency supplies in each block.</li> </ul>
<p><b>Hacking</b></p>	<ul style="list-style-type: none"> <li>○ Skilled and trained people should be recruited for update the process</li> <li>○ Enhance security system</li> </ul>

# CHAPTER 7

## ENTERPRISE LEVEL BUSINESS CONTINUITY PLAN FOR MEGHNA BEVERAGE LIMITED

### 7.1 Introduction

The Enterprise level BCP has a similar structure to that of the Area BCP framework consisting of the same six phases: i) Understand ii) Analyze iii) Design iv) Plan v) Implement and vi) Monitor. However, there are differences in details of the phases as discussed below.

### 7.2 Enterprise BCP Phase-1: “Understand”

The phase “Understand” involves understanding the context of the enterprise, its leadership, preferences in the planning process and supporting resources. The following sections describe these items one by one.

#### 7.2.1 Context of the Organization

This section of the BCP contains the basic information about the enterprise, its legal and regulatory context, and the scope of the BCP.

- i. **Organization:** Meghna Beverage Limited is located at Bangabandhu Sheikh Mujib Shilpa Nagar at Mirsharai, Chattogram. The location of Meghna Beverage Limited is shown in Figure 7.1.
- ii. **Legal and regulatory context:** *Under the aegis of the BCP Policy of BEZA proposed in Chapter 4*, the Meghna Beverage Limited shall be required to implement its own Business Continuity Plan.
- iii. **Scope of the BCP:** The scope of the present BCP is to provide plans for continuity of critical operations of the enterprise in case of a natural or man-made disaster so that the down time of operations of the enterprise is minimum and the entire system returns to its normal operation level within a reasonable time frame.

#### 7.2.2 Leadership

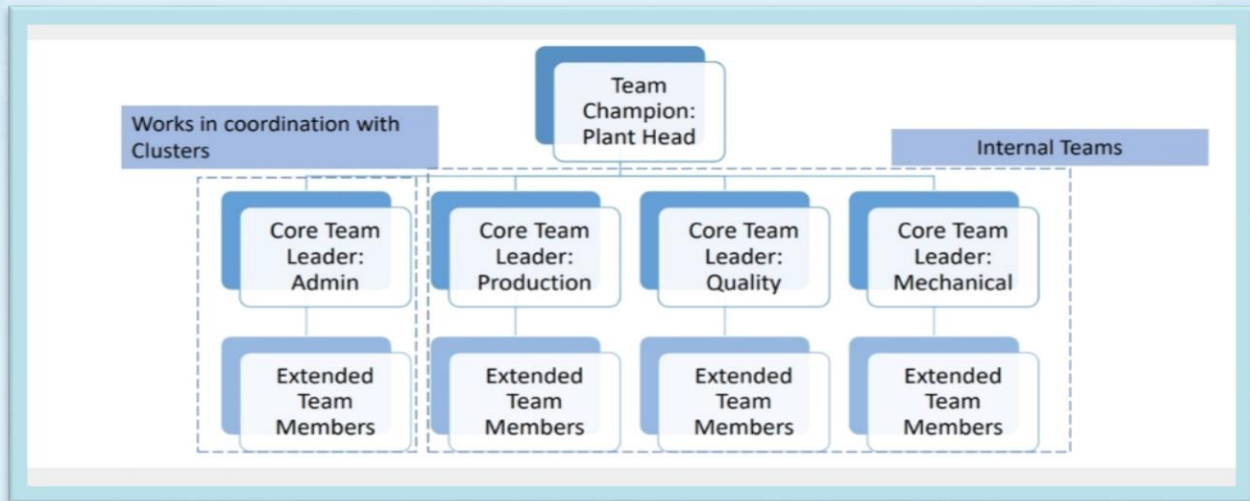
In line with the BCP Policy of BEZA provided in Paragraph 4.2.1.2 (ii) of BCP Framework, MIEZ and enterprises therein will adopt appropriate area-specific parameters of BCP and appropriate organogram, suggested as follows:

- i. **Organogram:** An organogram of the enterprise is placed in Figure 7.2 showing the hierarchy.



**Figure 7.1: Location of Meghna Beverage Limited in MIEZ**





**Figure 7.2: Enterprise Level BCP Structure**

- ii. **BCP policy:** Meghna Beverage Limited presently does not have a BCP Policy of its own. However, in line with the BCP Policy of BEZA provided in Paragraph 4.2.1.2 (ii) of BCP Framework, MIEZ and enterprises therein will adopt appropriate area-specific parameters of BCP and appropriate organogram, suggested as follows:
- iii. **Roles and responsibilities:** The **BCP Implementing Team** is an integral part of the business continuity planning strategy. The Leadership Team is responsible for appointing members to the Team. Currently they have a responsible which should be updated and well-structured to include a Risk event and membership to this team should be revisited. At least two alternates should be designated for each member. Although members will be responsible for recommendations and advice in his or her specialized field, the Response Team will be responsible as a whole for all team decisions.

Roles and Responsibilities include but are not limited to:

- Monitoring the status of current events and crisis that impact (Enterprise) operations, employees, and facilities.
- Make decisions in response to a crisis.
- Liaise with senior management.
- Declares a state of emergency.
- Activates emergency action plan and establishes contact with business unit crisis teams.
- Ensure timely and accurate communication to employees.
- Controls the content, timing, and method of delivery for all news media statements.
- Ensures compliance with insurance requirements including coverage to obtain reimbursement of funds disbursed during a crisis.
- Establish contact with appropriate governmental and health agencies.

- Establish emergency and law enforcement contact lists.
- Compile and maintain comprehensive contact information for all Response & Recovery Team members.
- Ensures the maintenance of payroll and benefits during a crisis.
- Develops plans to meet the needs employees and their families during a crisis.
- Determines the financial consequences of a crisis.
- Ensures the availability of funds to meet contingencies.
- Examines the legal consequences of a crisis and determines corporate legal responsibilities.
- Ensures that all decisions and actions taken by the Team are in compliance with federal, state and local laws.

Each business unit will designate accountable and responsible personnel for their specific area. At least two alternates should be named for each team member. The BCP Team Champion will be responsible for overseeing the business continuity plan in their area.

### 7.2.3 Planning

Understanding of the nature of the enterprise, its critical functions, risks and threats, objectives of the BCP are described in this section.

- Profile of the organization:** A list of products is presented below.

Name of product	Product Family	Source of Raw Materials	Distribution
Fresh	Drinking Water	Local	Bangladesh
Fresh Cola	Beverage (Cold)	Asia/ Europe	Middle East (Dubai, Qatar) Malaysia
Fresh Up Clear Lemon	Beverage (Cold)	Asia/ Europe	Middle East (Dubai, Qatar) Malaysia
Fresh Googly	Beverage (Cold)	Asia/ Europe	Middle East (Dubai, Qatar) Malaysia
Gear	Beverage (Cold)	Asia/ Europe	Middle East (Qatar, Saudi Arabia, Bahrain) India, Malaysia
Club 9 Soda	Beverage (Cold)	Self-Produced CO2	Middle East (Dubai, Qatar) Malaysia

*Source: MGI (2022)*

- Social and environmental setting:** As the related Enterprise Meghna Beverage Ltd. is in the Meghna Industrial Economic Zone, Demographic, and environmental information of the surrounding EZ area will be mentioned here. Here, Environmental and Social Screening for enterprise has been incorporated in the Annex-1. In addition, an Environmental and Social code of Practices (ESCoPs) has been proposed for Enterprises to minimize associated environmental and social risks (Annex-2).

**Table 7.2: Social and Environmental Setting**

<b>Social</b>	
Area specific info	The MIEZ falls under the Sonargaon Upazila's Mograpara Union. Total Household size is about 3629 those are located in 57 villages. The MIEZ and its surrounding site have semi-urban and rural socioeconomic aspects viz. concrete made single and multi-storied buildings, various types of industries, small cottage industries, various types of local markets, shops, hotels & restaurants.
Demography	Total population in Sonargaon Upazila is 416046 (Male =201450, Female = 166839) and under the Mograpara Union total population is 19883 (Male = 9883, Female = 10000) [17]. The literacy rate is about 55% in the Union. Total Household size is about 3629 those are located in 57 villages.
Socio-cultural resources	The Sonargaon Panam City (Nagar), a historical heritage site and also the old Capital of Bengal is only 3.1 km from the MIEZ. Baro-Bhuyan Palace of Lord Isa Khan, Graveyards, remnants of old ancient city is also exists in the this archaeological site. This area is a historical site housing a number of archeological monuments.
Hospital/clinic	One community clinic and 8 private clinics located in the Mograpara Union. But one hospital and childcare facility exist in the MIEZ
Educational institution	Government Primary School 7, Higher Secondary School 2, College 2, Madrasa 10
Shelters for Disaster	There is no disaster related shelter/infrastructure available in the Mograpara union, but to rescue from disaster a Fire Service and Civil Defense unit is located within the MIEZ.
<b>Environmental</b>	
Water bodies (river, canal, ponds)	The River Meghna flows in the close proximity (3-4 km) of the MIEZ. Besides few ponds exist in the villages. In addition, a lake known as 'Central Lake' exists in the MIEZ.
Physical environment: Water quality (Surface and Underground), air quality, noise level	Ambient Noise Level measured in different industrial units/ enterprises of the MIEZ. The maximum level measured at daytime was 121 dBA while minimum level was 64 dBA. Again, the maximum noise level at night was 122.6 dBA and minimum was 47.2dBA.[18]
<b>Disasters</b>	
Cyclone and storm surge	During the period 1960 to 2021, twenty-five cyclones hit the coast of Bangladesh. The location of the project is not in the coastal area. So there is no risk of the effects of storm surge.
Earthquake	MIEZ site falls under zone 2 which is a moderate earthquake zone. The Zone-II includes the greater districts of Dinajpur, Bogra, Dhaka and Chittagong, and the shocks of intensity of VIII are possible.

iii. **Critical functions:** *"The critical functions performed in the Meghna Beverage Ltd. at MIEZ are listed below:*

**Table 7.3: List of Critical Functions**

<b>Function</b>	<b>Allowable down time (days)</b>
<i>Purchasing</i>	7
<i>Production</i>	3
<i>Marketing and sales</i>	10

Finance	15
Information management and communication	1
Human resources management	1
Public relations	4

iv. **Critical infrastructure:** “A list of critical infrastructure are listed below.

Critical infrastructure	Facilities
Building 1	Multi Storied Building
Building 2	Multi Storied Building
Soft Drink Manufacturing Process	Sugar Syrup Clarification, Water Microbial Stabilization, Carbonation, Bottle Blower, Bottle Washer, Bottle Filler, Final Packaging
Bottled Water Manufacturing Process	Water Filtration, Tank Venting, Carbonation, Bottle Blower, Bottle Washer, Bottle Filler, Final Packaging
Electric substation	REB 15 MW with Max capacity 35 MW; 01 MIEZ Powerplant, 01 Substation
Water Supply	Under Extraction, Water Level Measuring Instrument
WTP	Chlorination, Ozone Treatment, UV Ray Treatment, Activated Carbon Filtration, Reverse Osmosis, 5 other filtration Process

“  
**Source:** MGI (2022), Stakeholder Consultation and Relevant other sources from MIEZ

v. **Risks and threats:** Characterization of impacts according to impact has been scaled as shown below.

Characterization of Impacts	
Impact Scale	Number Code
Catastrophic/Very High	5
Major/High	4
Moderate	3
Minor/Low	2
Insignificant/Not Affected	1

vi. **Risk Perception Matrix:** A Risk Perception Matrix, based on perceptions of likelihood and intensity is shown below.

Qualitative Risk Perceptions			
	Risk Exposure	Perception of likelihood (1-5)	Perception of intensity (1-5)
<b>Natural Hazards</b>	River Flood	1	3
	Flash Flood	1	3
	Cyclone	3	2
	Storm Surge	3	3





### 7.2.4 BCP Objectives

While conducting our observation to selected Economic Zone MIEZ at specific Enterprise Meghna Beverage Ltd, we must tell that every situation is unique and there should be an anatomy in the design before the BCP implementation which should be a robust model maintaining continuous improvement initiative until it reaches to its acceptable maturity state.

However, there are some principal goals in the study that form the core of objectives for the BCP as follows.

- ◆ A Well-defined practical way of managing Disaster and recovery.
- ◆ Prioritizing Potential Disaster with proper measurement of affect, and possible prevention, including proper Electrical and Mechanical backups.
- ◆ Calculate and detection of new potential threats, a natural byproduct of routine inspections.
- ◆ Analyze the process for any deviation and identify any gap in the entire Value chain including poor performance at any specific function.
- ◆ Improvement initiative with flexible corrective action and technical need-based fine-tune which might include holding a “lessons learned” brainstorming session and securing proper well-established policies for future demonstration.
- ◆ Control and maintain the improved process and future process performance continuously.

### 7.2.5 Support

Functional teams are proposed for Meghna Beverage Limited for implementation of BCP.

**Table 7.7: Functional Team and Its Role**

BCP Functional Team	Major Roles and responsibilities
BCP Executive Management Team	Declares that a disaster has occurred, authorizes the execution of BCM through teams and oversee the execution of BCM during the emergency. This team is to provide all sorts of arrangements required implementing BCP. Two teams along with different sub-teams perform under this management team those are i) command and control team (with supporting sub-teams like: crisis management team, BCP facility team and recovery management team) and ii) task-oriented team (PR and communication, Transport, Damage assessment, IT and telecommunication, Machine equipment and operation, and Facility security) need to be formulated under the BCP Executive Management Team
Command and Control Team	This team will ensure smooth execution and operation: facilities, equipment, personnel, procedures, and communications those are required during an emergency under the BCP Execution Management Team. This team will also ensure public/private/ institutional collaboration within and across the EZ and sectors and outside the EZ (for example, for industrial symbiosis networking), facilitate stakeholder engagement, and monitor and report on achievements.

Crisis Management Team	The Crisis Management Team is formulated in order to protect enterprise and related assets from adverse effects of crisis. This team devises strategy and course of actions to come out of difficult times as soon as possible [1].
BCP Facilitation Team	This team will support other teams with budget, finance, administration, and logistics support to ensure smooth implementation of BCP during an emergency or disaster.
Recovery Management Team	This team comprises statures group of team members to control recovery operation during an emergency or a disaster in EZ. This team is responsible to maintain recovery procedures and coordinating the recovery and resumption of business functions, process, or system
Task Oriented Team	This Task Oriented team will execute their responsibility during and emergency. The formulation of task-oriented team will be PR and communication, Transport, Damage assessment, IT and telecommunication, Machine equipment and operation, and Facility security which will play their role under the BCP Executive Management Team
Damage Assessment	Assess the extent of the damaged occurred due to the emergency and prepare the report for the Executive of the BCP team
IT and telecommunication Team	Brings back online the affected system (IT) and rectifies operational problems at an alternative site. It also manages the transition of information system back to the primary operation facility or new facility.
Transportation Team	Arrange all sorts of arrangement for transporting personnel, lodging, assets, goods and other necessary items at the alternative site for offsite safe storage
Mechanical Equipment Operation Team	Provides emergency support during an emergency for repair and reconstruction of damaged facility.
Security Team	Provides extended security and emergency facilities to the alternative sites as well as oversee for overall security of the affected sites. It also provides security support during delivery of items from affected facility to the offsite storage.
Public, Media, and communication	Provides assistance to customers during an emergency situation/ disaster occurs and provide time to time updates until the operation resume at the primary operating facility.

### 7.3 Enterprise BCP Phase-2: “Analyze”

In this phase, risk assessment is conducted in a methodical approach. For the assessed risks, impacts on business, in the present course of affairs, are estimated which provides a baseline value. Based on the assessed risks and business impacts, a business continuity plan is developed. Two parts of Business Impact Analysis (BIA) template is provided below with examples:

**Table 7.8: Part I - Business Impact Analysis (BIA) Template for Enterprises**

Question	Yes	No
<p><b>If the transport network was disrupted, would there be an impact on production or output volume?</b>                      Consider the impact on the output loss, production delays, inventory shortage or buildup, delay in shipment and/or failure to meet supply deadline.  <b>Impact Assessment Example:</b>                      Output Loss: xx units per day                      Production Delay: 2 days                      Inventory shortage/buildup: 2 days                      Delay in shipment: 2 days for current consignment</p>	<b>Yes</b>	
<p><b>If the Transport Network was disrupted, would there be an impact on costs and revenue?</b>                      Consider the impact on the cost of production going up, loss of revenue in the short, middle, and long run, financial penalties, loss of future orders, reduced market share.                      Example: Production cost raised by 10% due to wastage and delay                      Revenue Loss: 5%</p>	<b>Yes</b>	
<p><b>If the Transport Network was disrupted, would there be a financial impact?</b>                      Example: the financial obligations to the banks, customers, and suppliers, on credit rating, financial or other penalties.</p>	<b>Yes</b>	
<p><b>If the Transport Network was disrupted, would there be an impact on supply chain, and logistics?</b>                      Example: impact on the incoming and outgoing consignments of raw materials and finished goods, connections to the transportation network, access to ports.</p>	<b>Yes</b>	
<p><b>If the Transport Network was disrupted, would there be an impact on human welfare?</b>                      Example: the impact on the health, safety and wellbeing of staff, clients, customers, and the community.</p>		<b>No</b>
<p><b>If the Transport Network was disrupted, would there be an impact on security?</b>                      Example: the safety of staff, clients, customers, the community and buildings and premises.</p>		<b>No</b>
<p><b>If the Transport Network was disrupted, would there be an impact on the environment?</b>                      Example: the impact on flora and fauna, waste/recycling, contamination of land and watercourses etc.</p>		<b>No</b>



Question	Yes	No
<p><b>If the Transport Network was disrupted, would there be a legal impact?</b>            Example: the impact of breaches of statutory duties or regulatory requirements. <i>If disrupted for only 2/3 days, probably no impact, but if disruption is for a longer period, then possibly yes</i></p>		No
<p><b>If the Transport Network was disrupted, would there be a reputational impact?</b>            Consider the impact on credibility and public perception of the service and press and media interest.</p>		No
<p><b>Does Transport Network provide an emergency or civil protection response?</b>            Consider whether the service or function is required to respond to an emergency and take action to reduce, control and mitigate the effects of the emergency.</p>		No

Question	Within 0 to 24 hours*	Within 24 to 48 hours	Within 48 hours to 1 week	Within 1 week to 1 month
<p><b>If the service or function is disrupted, how quickly would it need to be recovered?</b>            Some services may have greater criticality at certain times of the year; in such instances opt to use the worst-case scenario.</p>		36 hours (To be reassessed after 12 hours)		

**Table 7.9: Part II - Business Impact Analysis Template for Enterprises**

Requirements	Examples of Key requirements (business as usual)
<p><b>Interlinked Functions</b>            List the functions and processes which will be disrupted and incur further losses and disruption due to disruption in any specific function (e.g., minimum order quantity for a certain raw material could be changed, or placing orders to suppliers for packaging materials could be delayed, if there is a production delay)</p>	<ul style="list-style-type: none"> <li>• C&amp;F or shipping agent notified in case of anticipated delay</li> <li>• Concerned/associated departments are notified</li> </ul>
<p><b>Notifications</b>            List the institutions that need to be notified on a priority basis e.g., workplace accident or injury reporting to BEZA/Department of Inspection for Factories and Establishments (DIFE), to the insurance companies, to clients, suppliers, utility services), and have the reporting templates ready</p>	<ul style="list-style-type: none"> <li>• Communications channels always remain open</li> <li>• Concerned person/office to be notified is well documented, and available</li> <li>• Insurance coverage updated</li> <li>• Reporting template prepared</li> </ul>

<p><b>People</b> List the number of staff normally required. The list should include managers, staff and any specific or specialist roles i.e., contractors and might include specific qualifications.</p>	<ul style="list-style-type: none"> <li>• List prepared and in place</li> </ul>
<p><b>Buildings, premises, and work environment</b> List the buildings currently occupied. The list should include any hub and spoke arrangements, off-site stores etc.</p>	<ul style="list-style-type: none"> <li>• Communications channels remain open at all times</li> </ul>
<p><b>Key suppliers (supplies) and partners</b> List the key suppliers and partners that support the service internally and externally sourced. This includes those commissioned to deliver services on behalf of the organization. Key supplies might include production components, food products and utilities etc.</p>	<ul style="list-style-type: none"> <li>• Concerned person/office to be notified as deemed necessary</li> </ul>
<p><b>Transportation</b> List any vehicles used including use of personal vehicles.</p>	<ul style="list-style-type: none"> <li>• List internal vehicles available at hand, and have them ready for rapid use, as and when necessary</li> </ul>
<p><b>Information and data</b> List the essential electronic or paper-based information or data.</p>	<ul style="list-style-type: none"> <li>• RFID tags can be useful to track inventory, in case of rapid relocation of stock</li> </ul>
<p><b>Equipment &amp; consumables</b> List key equipment and consumables including plant and machinery, personal protective equipment etc.</p>	<ul style="list-style-type: none"> <li>• Have the forklifts, and manual loaders ready if the stock/inventory need to be relocated at a safer position</li> </ul>

### 7.3.1 Risk Assessment

Likelihood and intensity of each type of risk will be assessed quantitatively based on primary or secondary data. The findings of the assessment can be shown in a table.

Table 7.10: Risk Assessment	
Risk Impact Mapping	
Number Code	Probability Scale
5	Almost Certain
4	Likely
3	Moderate
2	Unlikely
1	Rare

An assessed risk matrix is presented here. Any major contradiction between the assessed risk matrix and perceived risk matrix should be resolved through a stakeholders' consultation. Risk assessment Probability Scale is tabulated below

**Table 7.11: Quantitative Analysis**

	Risk Exposure	Impact Categories			
		Operation	People	Property	Environment
<b>Natural Hazards</b>	River Flood	4	2	3	3
	Flash Flood	3	2	3	3
	Cyclone	3	2	2	3
	Storm Surge	3	3	3	4
	Salinity Intrusion	1	5	1	5
	Earthquake	3	3	4	3
	Landslide	2	1	5	3
	Lighting Thunder	3	3	3	3
	Tsunami	3	3	3	3
<b>Health Crisis</b>	Communicable Diseases	1	3	1	1
	Loss of key staff due to illness	3	3	1	2
<b>Security</b>	Cyber attacks	4	1	1	1
	Terrorist attack	2	3	1	1
	Theft	1	1	3	1
	Vandalism	1	2	3	1
<b>Man-Made Hazards</b>	Accidents – Machine damage	5	2	2	1
	Poisonous gas emission	3	5	1	5
	Infrastructure damage	3	1	5	1
	Fire	4	4	5	4
	Movement restriction	5	2	2	2
	Natech Disaster	3	2	3	2
<b>Support System Failure</b>	Power Cut	3	1	1	1
	Gas Supply Disruption	3	1	1	1
	Water Supply Disruption	3	1	1	1
	ETP Malfunction	3	1	3	3
	Internet Support Failure	3	1	1	1
<b>Access to Essential GoB Services</b>	Inaccessibility to Land Port	1	1	1	1
	Inaccessibility to Airport	3	1	1	1
	Unavailability of Custom service	3	1	1	1
	Unavailability of Banking service	3	1	1	1
<b>External Forces Influence</b>	Supply chain disruption	4	1	1	1
	Reputational damage	1	2	1	1

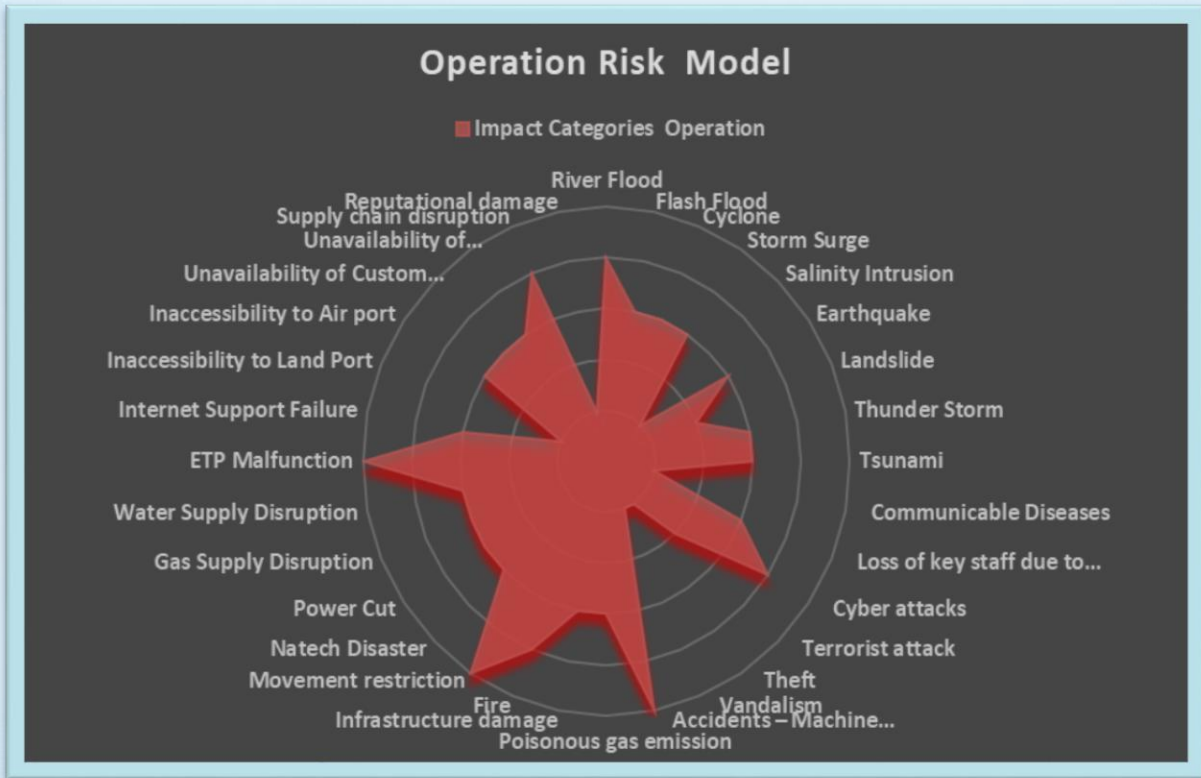


Figure 7.4: Risk Mapping: Impact Category Operation

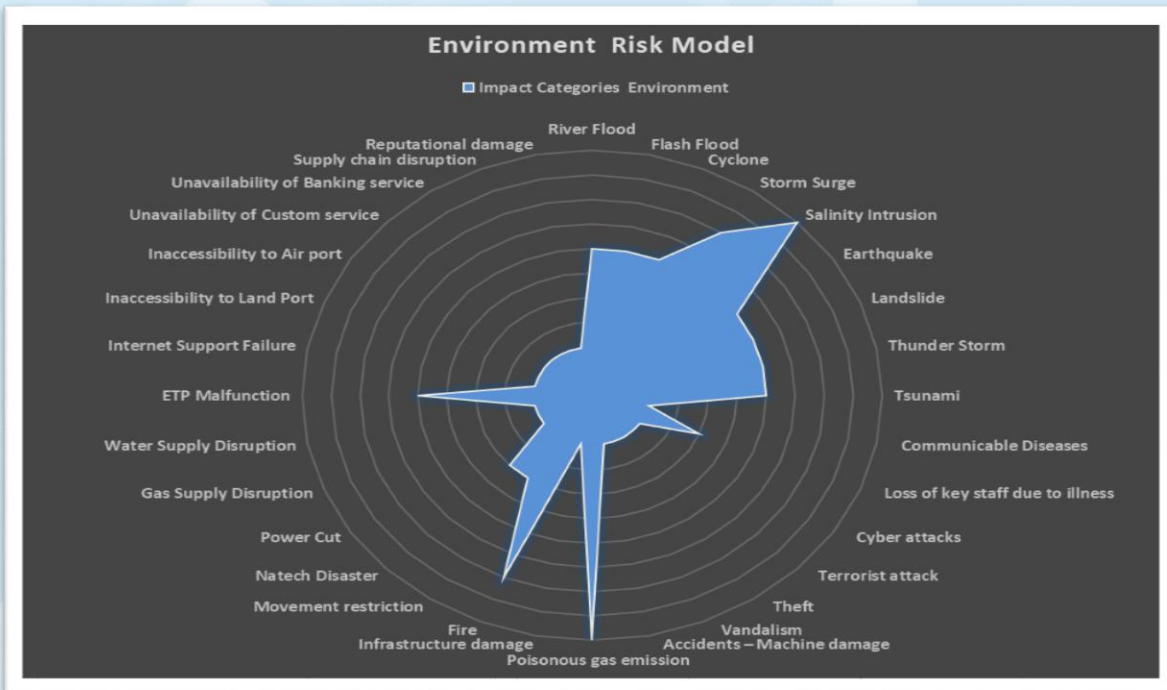


Figure 7.5: Risk Mapping: Impact Category People

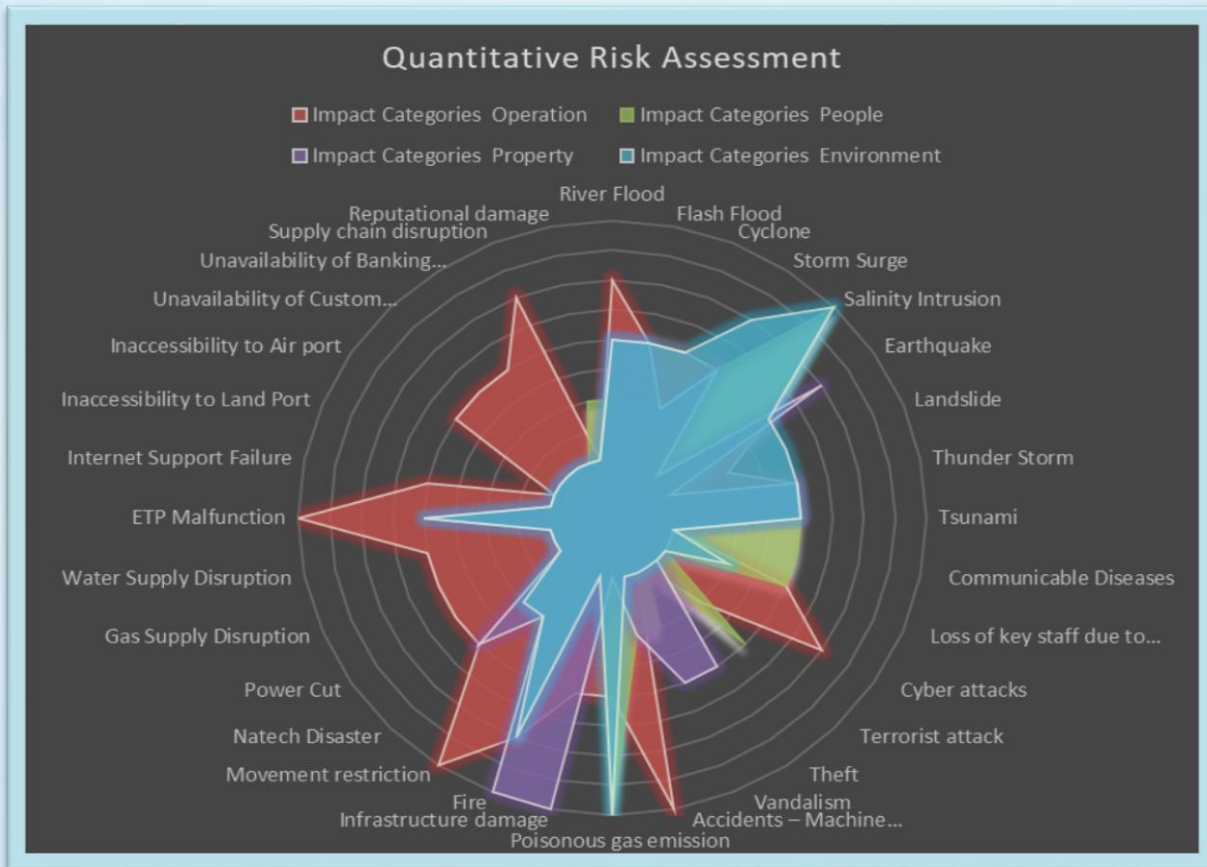




**Figure 7.6: Risk Mapping: Impact Category Property**



**Figure 7.7: Risk Mapping: Impact Category Environment**



**Figure 7.8 Formulation of Risk Model Enterprise Level**

### 7.4 Enterprise BCP Phase-3: “Design”

The following table will work as an overview of key action for risk management to be considered. Enterprise’s Risk Management Need Assessment ensures that these key items are addressed by the detailed supporting action items found below

Table 7.12: Key Actions				
	Key Actions	Phase	Responsibilities	Status
<b>A.</b>	<b>Maintain Awareness and Communicate</b>			
1	Health and Safety Resource Team should monitor for health threats via official bulletins or web sites.	All	Plant Head, Admin Team	Okay
2	Provide employees, labor organizations, staff, and decision makers with the most up-to-date information available by documenting specific characteristics of the Risk or disaster, such as the following:			
a.	Mechanism(s), speed, and ease of transmission, and mode(s) of transmission, etc.	All	Admin Team, Safety Committee	Need to Maintain Documentation

	Key Actions	Phase	Responsibilities	Status
b.	Maximum Time the disaster or threats remains active.	All	Safety Committee	Standard 25 Mins for any Fire Hazard
c.	Expectations of employees, supervisors, and managers to help reduce the risk of spreading the Risk.	All	Plant Head, Safety Committee	Okay
3.	Initiate a business continuity planning process to establish accountabilities, and identify the criticality of operations including mutual interdependencies, the loss of which would have a direct and serious detrimental impact on the business. The occurrence of a severe storm or other emergency during a risk should be considered.	All	Plant Head, Admin Team, Safety Committee, and another internal External Team	Development Stage
4.	Identify those functions critical to continued operations, and identify the people needed to fill those positions. Pre-screen critical staff to ensure their willingness to act as a proactive. Involve human resources staff as well as established mechanisms such as joint health and safety committees early.	Alert	Plant Head, Safety Committee, Production and Technical Team	Need to maintain proper documentation
5.	Communicate early and regularly to staff and include recommendations to minimize potential transfer of potential threats within company facilities, so that these measures can be practiced and internalized.	Alert	Safety Committee	Okay
6.	Collaborate with local public health unit for staff performing critical functions before the event of a Threat or risk.	Pre-Disaster	Safety Committee	Okay
<b>B.</b>	<b>Develop Plans</b>			
1.	Develop appropriate five phase response plans and procedures including:			

	Key Actions	Phase	Responsibilities	Status
a.	Initiating conditions for the recognition of the threat and appropriate response levels.	Alert	Plant Head, Safety Committee, Admin Team	Okay
b.	Identify critical functions of the organization that must be kept in operation, e.g., control rooms, power plant operations, system switching.	Alert	Plant Head	Okay
c.	Identify functions of the organization that can be suspended, e.g., meter reading [consider resulting need to estimate bills, training, etc.	Alert	Plant Head	Okay
d.	Define the roles and responsibilities of employees, labor organizations, staff, supervisors, managers, and staff medical personnel during a disaster.	Alert	Plant Head, Safety Committee, Admin Team	Okay
e.	Develop an emergency communications plan that includes key contacts, back-ups, medical contacts, communication chains, and processes to track and communicate business and employee status.	Alert	Plant Head, Safety Committee, Admin Team	Need to maintain proper documentation
f.	List(s) of staff critical to basic functionality of the organization.	Alert	Plant Head	Okay
g.	Put in place plans to have an increased number of employees work from their home. Ensure I.T. systems infrastructure can support this action.	Alert	Plant Head	Okay
h.	Plan and procedures should include providing support and assistance from human resources staff to employee families.	Alert	Plant Head, Safety Committee, Admin Team	Okay
2.	Consider the need to separate the work force to establish independent locations	Alert	ED Technical, Plant Head	Development Stage



	Key Actions	Phase	Responsibilities	Status
3.	Consider expanding the use of teleconferencing and videoconferencing to limit the frequency of face-to-face meetings.	Alert	Plant Head, Safety Committee, Admin Team	Okay
4.	Consider security issues and the limitations law enforcement agencies will face during disaster.	Alert	Plant Head, Safety Committee, Admin Team	Okay
5	Consider developing joint operational plans with service providers, suppliers, and key customers.	Alert	ED Technical, Plant Head	Okay
6	Evaluate potential financial and budget impacts of interrupted operations, reduced revenues as well as unusual supply, material, or personnel costs.	Alert	Production Team Plant Head	Need to maintain proper documentation
7	Evaluate potential insurance costs for increased medical costs.	Alert	Safety Committee	Okay
8.	Consider the need to send home non-critical staff.	Alert	HR Team	Okay
9.	Consider the need and conditions for more extreme measures such as sequestering on-site critical staff.	During Disaster	ED Technical, Plant Head	Okay
<b>C.</b>	<b>Develop Policies</b>			
1.	Develop/update staff work policy, including possible provisions from an area where a Disaster has occurred. This would apply to work and non-work-related activities.	Alert	CLO, Plant Head, Safety Committee, Admin Team	Okay
2.	Develop / update meeting's Agenda/policy.	Alert	CLO, Safety Committee, Plant Head	Okay
3.	Develop a visitor's policy including a sign-in process that is to be implemented in the event of any threat.	Alert	CLO, Plant Head	Okay

	Key Actions	Phase	Responsibilities	Status
4.	Consult with health & Safety authorities to update confidentiality policies to manage staff that potentially has been exposed to disaster to allow effective exposure tracking to be completed.	Alert	Safety Committee, Plan Head	Okay
5.	Develop / update telecommuting policy for office staff.	Alert	Plant Head, Admin Team	Okay
6.	Develop / update policies for employee compensation and sick-leave absences	Alert	Plant Head, Admin Team, HR Team	Okay
7.	Develop / update workforce deployment policies regarding teams and crews working together and the potential need to keep employees separated.	Pre-Disaster	Plant Head, Safety Committee, Admin Team	Okay
<b>D.</b>	<b>Drills and Exercises</b>			
1.	Periodically test and verify preparedness plans and procedures via a simulation exercise, tabletop exercise, or process walk through.	Pre-Disaster	Plant Head, Safety Committee, Admin Team	Okay
2.	Test the IT infrastructure to verify its capability to perform under Potential Threat conditions	Pre-Disaster	Plant Head, Safety Committee, Admin Team, IT Team	Okay
<b>E.</b>	<b>Equipment and Facilities</b>			
1.	Specific Team that will work on equipment, common areas, workstations, etc. Maintenance	Pre-Disaster	Plant Head, Safety Committee	Okay
2.	Determine what personal protective equipment will be effective and consider acquiring sufficient quantities (masks, gloves, and gowns). Availability of critical personal protective equipment may approach zero during the Disaster period.	Pre-Disaster	Safety Committee	Okay

	Key Actions	Phase	Responsibilities	Status
3.	If on-site cafeteria, stock up on water, beverages, and food, especially items that require heating.	Pre-Disaster	Admin Team	Okay
4.	If appropriate, isolate the building, post signs stating temporary quarantine at all exits, and restrict electronic card access to critical staff.	Disruption	Plant Head, Safety Committee, Admin Team	Okay
<b>F.</b>	<b>Response Actions</b>			
1.	By Employees			
a.	When an employee has exposed to a disaster, the employee is to seek medical attention and advise his/her supervisor.	During-Disaster	Safety Committee, Admin Team	Okay
2.	By the employer when Disaster occurs			
a.	Advise the exposed employees to contact their doctor and advise their supervisor.	During/Post-Disaster	Plant Head, Safety Committee	Okay
b.	Supervisor contacts the company medical or OHS responsible to follow up on the employees.	During/Post-Disaster	Plant Head, Safety Committee, Admin Team	Okay
c.	Implement a process such that all employees/visitors to critical facilities are subject to an appropriate screening questionnaire to aid in identifying whether they are a potential risk (i.e., have you visited a high-risk location in the past week?). Post screening questionnaire(s) at all entrances.	During/Post-Disaster	Plant Head, Safety Committee, Admin Team	Okay
d.	If appropriate, contract a cleaning service/agency and request the disinfection of the affected employee's workstation and shared work areas as well as all shared equipment and facilities (including washrooms, kitchen areas, and meeting rooms). Assess the need for separation of staff.	During-Disaster	Safety Committee, Admin Team	Okay

	Key Actions	Phase	Responsibilities	Status
e.	Close non-critical common areas, such as exercise room, or even the cafeteria. Determine how employees will be accommodated.	During-Disaster	Safety Committee, Admin Team	Okay
f.	Assess the need to direct staff to maintain an appropriate distance from Vulnerable Area.	During-Disaster	Safety Committee, Admin Team	Okay
g.	Assess the need for complete separation of staff including the activation of any backup facilities.	During-Disaster	Safety Committee, Admin Team	Okay
h.	Assess the need to vacate non-critical staff from the site.	During-Disaster	Safety Committee, Admin Team	Okay
i.	Provide each workstation with a Safety Kits. Provide each workstation with Safety instructions on use.	All	Safety Committee	Okay
j.	Provide regular communication to all staff of the latest medical advisories and recommend adherence to all actions suggested.	All	Safety Committee, Admin Team,	Okay
k.	Provide on-site critical operations staff with personal protective equipment.	All	Safety Committee, Admin Team	Okay
l.	If appropriate, isolate the building, post signs stating temporary quarantine at all exits, and suspend electronic card access.	During/ Post-Disaster	Plant Head, Safety Committee, Admin Team	Okay
m.	Notify all staff on site to leave their full name, employee ID, and after-hours contact number(s), including numbers where they may potentially be located, such as parents, other family, etc. Instruct all employees when they will be allowed to return to work, i.e., the following business day, not until notified, etc.	During/ Post-Disaster	Plant Head, Safety Committee, Admin Team	Okay



	Key Actions	Phase	Responsibilities	Status
n.	Have visitors provide their home and site/company as well as an after-hours contact number(s) for follow-up.	During/ Post-Disaster	Plant Head, Safety Committee, Admin Team	Okay
G.	By Medical Resource			
a.	Liaise with senior management.	All	Plant Head, Safety Committee, Admin Team	Okay
b.	Provide regular communication to all staff on the latest OHS advisories and recommend adherence to all suggested actions.	All	Safety Committee, Admin Team	Okay
c.	Provide regular communication to all staff on any additional disaster's specific requirements or information.	All	Safety Committee, Admin Team	Okay
d.	Advise any exposed employee to contact their doctor and to adhere to the advice given.	During-Disaster	Safety Committee	Okay
e.	Advise any exposed employee to contact their direct supervisor immediately.	During-Disaster	Safety Committee	Okay
f.	Advise the exposed employee not to return to work until directed to do so by their supervisor and to follow policies in place.	During/ Post-Disaster	Safety Committee	Okay
g.	Request exposed employees to keep supervisors informed of their condition.	During/ Post-Disaster	Safety Committee	Okay

Source: NERC (2022)

## 7.5 Enterprise BCP Phase-4: “Plan”

### 7.5.1 Swot Analysis

The SWOT analysis is very helpful in understanding the internal and external environment that the companies have to operate & fight within the system. Therefore, the basic thinking behind this analysis is that strengths are used to exploit opportunities and mitigate threats during any unwanted scenarios, while the impact of weaknesses either needs to be addressed to take advantage of opportunities or minimized to reduce the potential damage from external threats.

**Table: 7.13: SWOT Analysis**

Strengths (Internal+)		Weaknesses (Internal-)	
1	Strong Fire Fighting Team	1	Inactive Fire Alarm System
2	Fire Hydrant System	2	No Additional Evacuation or Emergency Exit though Existing facility sufficient
3	Proper amount Fire Vehicle	3	Watering facility on High Top Floor is not available
4	Proper Medical Support	4	Rescue Equipment (eg.High Rescue Ladder for Rescue)
5	Proper Ambulance Support	5	N/a
6	In House Safety Committee for Emergency Response	6	N/a
Opportunities (External+)		Threats (External-)	
1	Integrated Rescue Services among different Stakeholders	1	Traffic Issue during disaster

### 7.5.2 Failure Mode and Effects Analysis (FMEA)

FMEA is the functional driven approach for the system analysis to identify the potential failure mode and their cause and effects. The following table is demonstrating the method of implementing FMEA in the enterprise level.

Table 7.14: Failure Modes and Effects Analysis								
Zone		Meghna Industrial Economic Zone			05 = High			
Enterprise		Meghna Beverage Ltd			01 = Low			
Product/ Process Step / Risk/Hazard	Potential Failure Mode	Potential Failure Effects	SEVERITY	Potential Causes	OCCURRENCE	Current Detection Controls	DETECTION	R P N
What is the risk under investigation?	What are the ways the Key Input go wrong?	What is the impact on the Key Output Variables (Core goals, Customer Requirements)?		What causes the Key Input to go wrong?		What are the existing controls and procedures that prevent either the cause or the Failure Mode?		
Earthquake	Fire Generate in the facility	A line production has been delayed	5	Packer Wrapping Process has been stopped	4	No preventive but only reactive approach	5	14
Earthquake	Fire Incident occurs in the facility	Full Factory Shut down	5	SWOT Analysis (Weakness)	3	SWOT Analysis (Strength)	1	09

Source: ASQ (2022)

## 7.6 Enterprise Phase-5: “Implement”

In this phase Implementation plan, exercise & testing and training & awareness plans are specified.

### 7.6.1 Implementation Plan

Table 7.15: Implementation Plan	
Resources Required for Recovery:	
People (Numbers, skills, knowledge, alternative sources)	Strong Safety Team, Fire Fighting team and Maintenance Team
Data /systems (Backup and recovery processes, staff and equipment required)	RFID system and strong IT Data Cell Should incorporate effectively
Property (Potential relocation or work-from-home options)	As per Capacity Need and Decision from Plant Head

Resources Required for Recovery:	
<p>Communications (Methods of contacting staff, suppliers, customers, etc)</p>	Need to maintain a key Contact Lists or group for instant messaging including suppliers and customers separately as per requirements and business need
<p>Equipment (Key equipment recovery or replacement processes; alternative sources; mutual aid)</p>	Well-equipped Electrical and Mechanical Backups, In house Maintenance team,
<p>Supplies (Processes to replace stock and key supplies required; provision in emergency pack)</p>	Local Machine & raw materials supply. As well as Critical parts replacement through designated supplier has to be informed

For the scenarios developed in the FMEA plans are chalked out based on the strategies mentioned in Section 7.4 to achieve business continuity objectives stated in Section 7.2.4. Action plans for different scenarios are tabulated below.

Table 7.16: FMEA Implementation						
		Enterprise	Meghna Beverage Ltd			
		Last update	22			
Actions Recommended	Responsible	Actions Taken	SEVERITY	OCCURRENCE	DETECTION	RPN
What are the actions for reducing the occurrence of the cause, or improving detection?	Key Responsible Person	What are the completed actions taken with the recalculated RPN?				
Back-up	<b>ED Technical, Plant Head</b>	Required supplies will be stockpiled beforehand.	5	1	1	7
Diversify	<b>ED Technical, Plant Head, Admin Team</b>	Alternate source of supply should be secured.	4	2	1	7
Reduction	<b>Plant Head, Admin Team, Safety Team</b>	Production should be made resistant to fire occurrence in the surrounding area.	5	2	1	8



### 7.6.2 Exercise & Testing Plan

Testing can be as simple or complicated as necessary to ensure the plan is a viable tool to mitigate risk. Two types of testing are recommended for each business unit's business continuity plan:

#### BCP Tabletop Exercise

A table-top exercise simulates an emergency in an informal stress-free environment. The participants meet to discuss general problems and procedures in the context of an emergency scenario. The focus is on training and familiarization with roles, responsibilities, and procedures (Ref: BCP Team Charter Risk Management Approach). The exercise requires minimal commitment of time, cost, and resources. This is a good way to acquaint key personnel with their unit's emergency responsibilities and procedures.

**Table 7.17: Critical Function Analysis**

Critical function:	Packer Wrapping
Responsibility: Maintenance Team	
FMEA Severity: 05 Occurrence: 04 Detection Control: 05	RPN :14
Potential impact on organization if interrupted:	Line Production has been stopped
Likelihood of interruption to organization:	Production delay to the targeted supplier
Recovery timeframe: (How quickly must this function be recovered to avoid lasting damage)	1 week

#### BCP Functional Testing

The functional exercise simulates an emergency in a more realistic manner. The goal is of this exercise is to test or evaluate the capability of one or more functions in the context of an emergency event. Players practice their response to an emergency by responding in a realistic way to carefully planned and sequenced messages given to them by simulators. All decisions and actions by players occur in real time and generate real responses and consequences from other players. The guiding principle is to mimic reality. The atmosphere is stressful because of the real-time actions and the unplanned problems that typically arise. This exercise tests many of the functions as with a full-scale test but without the inherent costs. The process is often lengthy and requires careful scripting and planning.

An integrated functional test across all business units will be coordinated following the completion of the business unit plans.

### **BCP Functional Testing - Alert**

- Monitor health information for threats.
- Liaise with senior management.
- Provide regular communication to employees on the latest health advisories and recommend adherence to all suggestions.
- Provide regular communication to employees on any other Threat specific information.
- Provide employees with information about the threat Affects including protection, response Suggestions and information in the Unit.
- Identify critical functions and key personnel; pre-screen staff and function if needed.
- Communicate regularly with employees about Potential Threats to minimize and educate the whole Unit.
- Initiate business continuity planning.
- Develop response plans and procedures for critical business units.
- Consider the need to separate the work force to preserve the team.
- Consider teleconferencing and videoconferencing to limit any communication Timeline.
- Consider security issues and law enforcement limitations during a Disaster Scenario
- Consider developing joint operational plans with service providers, suppliers, and customers.
- Evaluate potential financial impact of interrupted operations, reduced revenue, and interrupted supplies.
- Evaluate potential insurance cost increases due to medical costs.
- Consider the need to send home non-critical staff if needed.
- Develop / update the travel policy, meeting, sign in/out.
- Develop / update a policy for meetings.
- Develop / update a visitor sign-in policy.
- Consult with health and Safety authorities to update confidentiality policies to manage staff exposed to the Hazard and Risk
- Develop / update a telecommunication policy.

### **BCP Functional Testing - Pre-Disaster**

- Monitor health or Safety information for threats (BCP Team)
- Liaise with senior management.
- Seek government-backed loan guarantees and temporary waivers of regulatory, financial, and environmental requirements.
- Provide regular communication to employees on the latest health advisories and recommend adherence to all suggestions.
- Provide regular communication to employees on any other Risk and Hazard specific information.
- Provide employees with information about the Effect on specific risk.
- Communicate regularly with employees about Safety habits to minimize accidents Disaster.
- Encourage employees to prepare personal readiness plans.
- Work with local or international officials on the count for managing critical functions.
- Develop / update workforce policies for teams and crews working together or in group, given the potential need to Contain any risk and Hazard.
- Periodically test and verify business unit plans and procedures.

- Test the IT infrastructure's capability to support increased telecommuting, teleconferencing and video conferencing.
- Provide each workstation with all Safety Tools and Equipment
- Determine what person protective equipment will be effective and acquire sufficient quantities early.
- Provide critical operations staff with an ample supply of personal protective equipment.
- For the cafeterias, stock up on water, beverages, and non-perishable foods.

### **BCP Functional Testing - During-Disaster**

- Monitor Health & Safety information for threats (BCP team)
- Liaise with senior management.
- Provide regular communication to employees on the latest health & Safety advisories and recommend adherence to all suggestions.
- Provide regular communication to employees on any other Disaster specific information.
- Emergency Action Center is activated.
- Provide employees with information about the effect and SOP to follow.
- Communicate Continuously with employees about health & safety Protocol to minimize effect and control systematically.
- Employees are to seek medical attention as needed.
- Company response plan is activated when a disaster occurs.
  - Advise Exposed employees to accident need to consult with their doctor and to notify their supervisor.
  - Advise exposed employees to accident not to return to work until directed to do so, and to follow all policies in place.
  - Supervisor contacts company medical coordinator to follow up on the employee
  - Ensure that on-site critical operations staff have adequate personal protective equipment.
  - Implement a screening process for employees and visitors at critical facilities to identify potential risk.
  - If appropriate, request the Safety service and protocol of critical workstation and all share work areas, equipment, and facilities.
  - Assess the need for staff to maintain an appropriate distance from that process.
  - Assess the need for separation or isolation of any staff or Unit.
  - Assess the need to vacate non-critical staff from the site.
  - Close non-critical common areas including cafeterias.
  - Consider the need and conditions for more extreme measures such as sequestering; provide accommodations as needed.
  - Provide regular communication to employees about the latest medical advisories and recommend adherence to suggested actions.
  - If appropriate, isolate the building and suspend electronic card access. Notify staff on site to leave their name and all potential contact numbers. Instruct all employees when they will be allowed to return to work. Instruct visitors to provide their company and potential contact numbers.
  - Request employees to keep supervisors informed of their condition.



### **BCP Functional Testing - Maximum Disruption**

- Monitor health & Safety information for threats (BCP Team).
- Liaise with senior management.
- Sustain action plan from Phase 3.
- Provide regular communication to employees on the latest health & Safety advisories and recommend adherence to all suggestions.
- Provide regular communication to employees on any other Disaster specific information.
- Communicate regularly with employees about Safety habits to minimize Risks.
- If appropriate, isolate the building and restrict access to critical staff only.
- Request employees to keep supervisors informed of their condition.

### **BCP Functional Testing - Prolonged Recovery**

Monitor health & Safety information for threats (BCP Team).

- Liaise with senior management.
- Provide regular communication to employees on the latest health & Safety advisories and recommend adherence to all suggestions.
- Provide regular communication to employees on any other Disaster specific information.
- Communicate regularly with employees about Safety habits to minimize infections.
- If appropriate, lift restrictions on access to the buildings.
- Request employees to keep supervisors informed of the Process condition.
- Company medical coordinator advises local health authorities of employee affected during any disaster.
- Employee support teams are deployed.
- Inventories and resources are re-established.
- Review lessons learned and implemented appropriate changes in the business continuity plan.

Source: <https://dojmt.gov/?s=wp+content>

### **7.6.3 Training & Awareness Plan**

To make the BCP effective all the stakeholders should be aware of it. Moreover, for its proper implementation, different education and training programs should be introduced for different sections of stakeholders.

As a leading EZ authority, BEZA shall ensure proper planning, implementation, and monitoring system to keep BCP and BCM functional. Therefore, BEZA shall ensure minimum level of Trainings on BCP and BCM for all EZ entity.

BEZA shall ensure that all relevant personnel involved with BCP implementation and monitoring (both Area and EZ entity) are getting proper training, education, updates, and awareness of the BCP activities as relevant with their job function.

To cover large portion of EZ authority, BEZA should prepare an independent BCP Executing Cell that will work directly under the Chairman of BEZA formulate trainings.



## Training

Building capacity of BEZA, EZs as well as enterprises, an all-round BCP training plan has to be prepared. In addition, preparing training plan and contents the flowing issues need to be considers:

- Targeted people trying to reach.
- Priory audiences.
- Knowledge depth of audiences.
- Complexity of contents.
- Content review and update.
- Time, location, and mode of training etc.

BCP implementing authority (BEZA), area/entity and tenants/enterprises must have proper capacity on BCP. Three different layers of training modules are proposed while implementing, monitoring, and make the BCP sustainable at EZs:

1. BCP & BCM training for BEZA
2. BCP & BCM training for EZ entity
3. BCP & BCM training on BCP for tenant

## Training Type

The BCP awareness training knowledge offer core values to BEZA, EZs and enterprises including creating response and recovery knowledge, increased employee awareness of emergency response, crises management process, increasing development efficiency and effectiveness, integrating risk management of Business Program. A time efficient and effective learning experiences across entire BEZA and EZs can be enable by utilizing a well-developed BCP development method.

**Table7.18: Training types based on situation for BCP**

Hands on/skill-based trainings	Organize hands-on training to address more complex skills, Business Impact Assessment, BCP documentation, call tree execution and crisis communication execution, first aid performance etc.
Drills/walkthroughs	Evacuation and shelter-in-place drills are important life safety process.
Learning-by-doing	Embedded, learning-by-doing study tours (3–5-day long study tour) in different EZs those successfully runs BCPs such as Thailand
Certificate	BEZA, EZs and tenants/enterprise professionals that are responsible planning, executing, assessing, or auditing Business Continuity Plan (BCP) and Business Management Plan (BCM) can get a “crash course” or certificate course” in standards, best practices and theory by participating in a certification prep course such as ISO 22301:2019 or BS 25999-1:2006. Based on requirement Introductory, Intermediate and Advanced courses could be offered for BEZA, EZs (area) and enterprises
HR Orientation Participation	Deliver a short presentation during new hire orientation. Alternatively, Human Resources can ensure that new employees received BCP knowledge while new hire orientation presentation.

Web-based Awareness Courses	This is particularly for newly recruited professionals or useful for annual refresher awareness purpose. This computer-based capacity building training/awareness program will cover key aspects of Business Continuity Plan.
Identify Training Needs	Based on levels, type, duration, target audience of trainings, a gap analysis and training need should be assessed in order to make BCP execution successful.

Source: Yardis (2022)

## 7.7 Enterprise Phase-6: “Monitor”

Performance of the entire BCP is evaluated in this phase. This includes monitoring of the action plans, exercise & testing program, training & awareness program. Moreover, the Yearly Monitoring activities should also reflect in this phase. Necessity of modifications of the business continuity objectives, risk matrix and business impacts are also assessed by an internal audit. Top management will also review the entire process of BCP. A BCP Risk Register has to be installed for clear monitoring and control.

**Table 7.19: Enterprise BCP Risk Register**

Project name: BCP IMPLEMENTATION						Enterprise		Meghna Beverage Ltd			
Project Location: MIEZ											
ID	Date raised	Risk description (Failure Mode, Potential Causes and Effects)	Impact Scales	Impact after the risk occurs	Severity Based on Probability Scale	Responsible Person	In house detection and control to reduce the risk	Recommended Support Action to be taken during the risk happens.	Progress on actions	Status	Additional resources
Earthquake	September 22	Fire Incident occurs from earthquake	Catastrophic (Very High)	Factory shut down, production delay	05	Plant Head, Safety Team	In house fire fighting procedure	Integrated rescue service from MIEZ as well as External Sources	19 Mins has been taken to control the fire	Moderate	External Medical and local fire Fighting Team as a support
2	[enter date]	Tba	Tba	Tba	Tba	Tba	Tba	Tba	Tba	Tba	Tba

### 7.7.1 Internal Audit

Every two years there will be an internal audit by the Enterprise to determine if any change is needed in the BCP objectives, risk matrix or probable business impacts.

### 7.7.2 Management Review

Every three years the top management of the enterprise will review the BCP framework and suggest modifications.

# CHAPTER 8 PILOTING

## 8.1 Introduction

According to the terms of reference of the assignment the team of consultants were supposed to pilot the proposed BCP frameworks at a study area. As per consultation with the stakeholders including the Technical Committee of BEZA, Meghna Industrial Economic Zone (MIEZ) was selected as the study area for piloting. To pilot the Enterprise Level BCP, Meghna Beverage Limited was selected as the target Enterprise. The piloting was conducted at MIEZ on 22 September 2022.



**Figure 8.1: Piloting at MIEZ**





**Figure 8.2: Fire Drill at MIEZ**

## **8.2 Methodology**

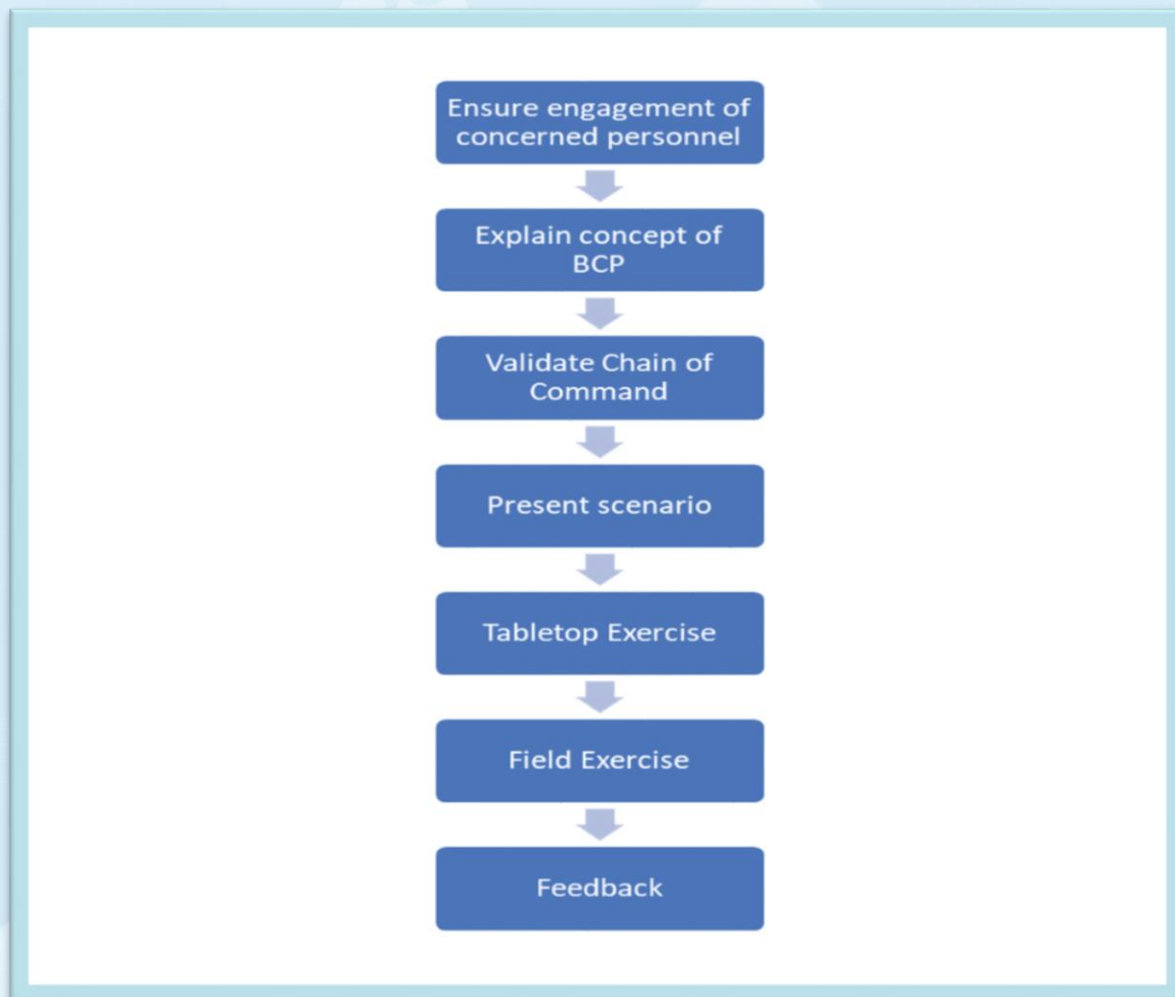
The main objective of the piloting was to test the level of understanding of the BCP framework at the area and enterprise levels and implement ability of the framework during a time of disaster. For that purpose, all the relevant persons were involved in the piloting program both in the area and enterprise levels. At the very beginning of the program, the basic concept of the BCP was explained to the participants of the piloting exercise. Then the chain of command proposed in the BCP was validated. Then a disaster scenario was introduced to the participants. The participants engaged in a Tabletop Exercise (TTX) where they simulated the instructions that are supposed to be delivered during an actual disaster situation following the proposed chain of command. After the TTX, field exercises were conducted for firefighting, route selection for vehicles, evacuation, assembly, medical services etc. Finally, feedback was received from the MIEZ Authority. The sequence of activities conducted during piloting is shown Figure 8.3.



### 8.3 Scenarios

Initially four scenarios were considered based on their relative likelihood in MIEZ as compared to other risks. The scenarios were those of fire, earthquake, transport disruption and toxic gas emission. Finally, an earthquake scenario with secondary fire and liquefaction incidences was selected as the scenario for piloting (Figure 8.4). The scenario is described below.

- Time: 11.45 a.m.
- Epicenter: Madhupur
- Magnitude: Mw = 6.0
- Intensity at Sonargaon, Narayanganj: MMI = VII
- Secondary Hazard: Fire at one location (Warehouse of Meghna Beverage)
- Liquefaction: One location (at western extension)
- Casualty: None
- Injury: 10 people



**Figure 8.3: Sequence of events in the piloting program**

## 8.4 Tabletop Exercise

For the tabletop exercise, the chain command shown in Figure 8.5 was followed. Some of the personnel in the chain of command could not attend the event. On behalf of them, other officials played their roles during the tabletop exercise. The entire episode of passing instructions from one person to another was recorded.



Figure 8.4: Location of fire, liquefaction, and detour of fire truck

## 8.5 Evacuation

A fire was simulated with a fogger machine in levels 4 to 6. As soon as the fire was detected, a manual alarm was set off. Workers started to evacuate the premises. Volunteers engaged in helping others to evacuate and search for people who could be trapped. For example, a role play was conducted where one person was trapped in an elevator and he was rescued from the elevator. The volunteers also evacuated the injured people. The evacuated people assembled in a pre-defined assembly point. They lined up in ques according to their departments in the Meghna Beverage Limited. A head count was conducted to ensure that all the people could evacuate. Volunteers searched for the missing people and reported.

## 8.6 Fire Fighting

Fire trucks rushed to the spot when they were informed from the factory. However, since there was a liquefied area along the way they had to take a detour. In the meantime, the in-house fire team of the Meghna Beverage Limited who are composed of volunteers took part in a drill where they used fire extinguishers to suppress an artificially created fire. The fire team of MIEZ used the nearby fire hydrants.

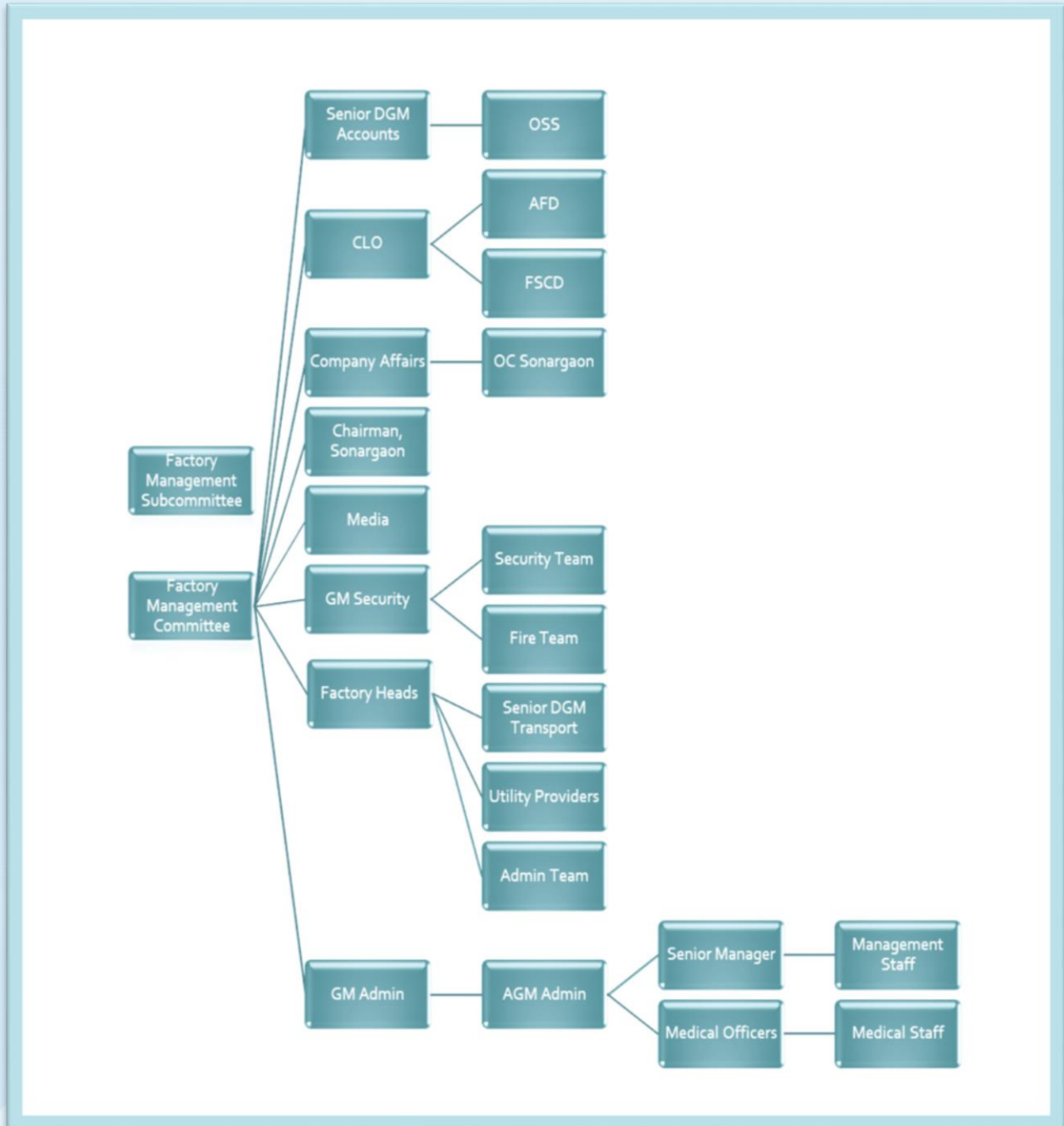


Figure 8.5: Chain of Command

## 8.7 Medical Service

As soon as the fire broke out, the medical team prepared an open space for attending to injured people. The volunteers evacuated the injured people to the space prepared by the medical team. A doctor and medical assistants gave first aid to the victims. Those who were seriously injured were taken to the medical center by ambulance. Two registers were maintained to take account of the injured people: one by the volunteers and the other by the medical team. At the end these two registers were tallied. Whereabouts of the injured people were then informed to their colleagues waiting at the assembly point.

## 8.8 Feedback

After completion of the TTX and the field exercises all the relevant people had a meeting to discuss the entire exercise. The meeting was attended by the Executive Director (ED) of the Meghna Group of Industries. The ED made suggestions to make changes in the chain of command for more efficient emergency response. The ED appreciated the cluster-based approach proposed in the BCP. One area for improvement that was identified is that in case of an earthquake there is a need for a central evacuation center and shelter where people may have to stay for days or even longer durations. Presently there is no such arrangement at MIEZ. The MIEZ authority is actively considering preparing such facilities.



# Chapter 9 CONCLUSIONS & RECOMMENDATIONS

## 9.1 General

As part of the efforts for promoting resilience in business, the NRP undertook the assignment of developing guideline and piloting multi-hazard Business Continuity Plans (BCP) for economic zones under Bangladesh Economic Zones Authority (BEZA) and piloting in two designated economic zones, namely, Bangabandhu Sheikh Mujib Shilpa Nagar (BSMSN) and Meghna Industrial Economic Zone (MIEZ). Five consultants devoted 12 months to complete the assignment. An esteemed Technical Committee formed by BEZA supervised the deliverables of the consultants.

The consultants conducted a thorough literature review of the best practices around the world, all relevant standards, laws, and regulations. They collected an enormous amount of data and literature from the concerned authorities. 14 meetings were held, three workshops were organized, and four visits were made to the sites to prepare the BCP. Finally, based on ISO 22301: 2019 a BCP framework was customized for the economic zones of BEZA.

Two versions of the BCP framework were prepared: one for the Area level BCP applicable for an economic zone and another Enterprise level BCP applicable to an individual factory/plant within an economic zone. The area BCP framework was applied to the BSMSN and MIEZ and the enterprise level BCP framework was applied to the Meghna Beverage Limited. Finally, both the frameworks were piloted at MIEZ on 22 September 2022 for an earthquake scenario with secondary fire and liquefaction disasters. All the feedback from the piloting and previous stakeholder engagements were taken into account and the BCP frameworks were updated. The proposed BCP framework has to be taken as a living document requiring regular updating. The framework thus proposes a monitoring mechanism for effective updating of the entire business continuity management system. Finally, a set of policy recommendations are made in the next chapter. This chapter summarizes some recommendations which are important for successful implementation of the BCP.

## 9.2 Recommendations

In a number of previous studies, conducted in different projects of the Government of Bangladesh, business continuity plans were recommended for effective disaster management in the private sector, for economic growth of the country and especially for the purpose of attaining the objective of graduation to a middle-income country. Also, during the stakeholder engagements, all the stakeholders agreed to the necessity of a business continuity plan for the industrial zones of Bangladesh. The present study proposes a BCP framework applicable to the economic zones under BEZA. For successful implementation of the BCP framework following recommendations are made.

### 9.2.1 Strategic Policy Options

The following strategic options may be considered by the BEZA:

1. Provision for legally binding BCPs should be in place at the earliest, for the economic zones and enterprises under BEZA.
2. Institutional arrangements including restructuring of management at BEZA, command centers, and communication channels, should be made at BEZA, and its zones for ensuring adequate responsibility vested in BCP implementation.
3. BEZA should consider establishing a BCM Committee and various Working Groups formed by technical experts of various disciplines, representatives of investors, regulatory bodies, and utility providers, and infrastructure development agencies for developing and implementing Area BCPs and overseeing the implementation at the area and enterprise levels.
4. BEZA should consider arranging a number of day-long orientation sessions for groups of 20~25 investors on the BCP framework, once it is developed and approved. Once the full BCPs are in place, such orientation sessions should be a part of regular and routine activities.
5. Various benefits of implementing BCPs at the enterprise level, such as, having BCPs would be preparatory work for the enterprises to obtain ISO 22301 and similar international certifications adding value to their businesses, can be disseminated to the investors.
6. BEZA can consider offering the technical services for developing BCPs in exchange of a reasonable fee for the enterprises. Further consultation with the stakeholders may be organized to discuss and agree on the amount and basis of such fees, and scope of such services.
7. BEZA is urged to consider setting up financial arrangements, such as, Trust Funds, Emergency/Contingency Funds, in addition to adapting the variations of Workers' Welfare Funds currently maintained by Export Processing Zones (EPZs).
8. BEZA can also consider offering incentives, such as reduced rates for utility services to the enterprises having BCPs in place.
9. The enterprises under BEZA may consider participating in the Employment Injury Protection Scheme launched in June 2022 by the Ministry of Labour and Employment, to spread the risk coverage in case of accidental injury and death taking place at the workplace due to accidents and disasters.

### 9.2.2 Recommendations for BEZA

- (i) Through the adoption of an appropriate policy by BEZA, there should be regulatory compulsion. Policy Brief for BCP goes into greater detail regarding this subject.
- (ii) BEZA can take the initiative to progressively and with a long-term strategy implement the created BCP framework to all of its economic zones and the businesses inside them.
- (iii) The BCP framework can be integrated with the Management Information System (MIS) of BEZA.

- (iv) A Business Continuity Management (BCM) Committee with inclusion of representatives from the utility and other service providers should be established at BEZA's head office to supervise BCP activities throughout all of its zones.
- (v) BEZA can prepare dedicated human resources who will have the capacity to develop BCPs for zones and enterprises.
- (vi) BEZA should explore the financing mechanisms and incentive measures mentioned under the Strategic Policy Options provided in the previous section.
- (vii) BEZA should disseminate the BCP framework among all stakeholders and organize workshops for awareness development and encourage buy-ins from the stakeholders/investors.
- (viii) BEZA should regularly organize training programs for capacity building of the officials of the economic zones and the enterprises for implementation of the BCP.
- (ix) All approach roads and other transportation systems for all economic zones should be built in such a way so that congestion to the national highways and connectivity to the nearby roads/railways/waterways could be avoided.

### **9.2.3 Recommendations for BSMSN**

- (i) BSMSN can consider adoption of the organogram proposed in the BCP framework.
- (ii) BSMSN can adopt the cluster-based approach of disaster response.
- (iii) An Incident Command System (ICS) should be set in place.
- (iv) An Emergency Operation Center (EOC) should be set up as a priority.
- (v) Establish an emergency communications system for warning & announcement.
- (vi) Review existing building construction rules of BEZA to ensure compliance with BNBC 2020 and establish mechanisms by assigning dedicated persons and units to ensure regular and periodic audits and inspections at all phases of construction.
- (vii) To minimize disaster risk in the project area, two regional highways toward Feni and Port Connecting Road should be recommended in addition to the national highway.
- (viii) The rail connectivity layout (curvature) should be made realistic.
- (ix) Keep provision of using water bodies for transport purposes in case of an emergency.
- (x) Debris disposal management systems should be designed to meet the requirements of different disaster situations.
- (xi) Prepare a contingency plan for different hazards addressing evacuation routes considering liquefiability of soil and debris management.
- (xii) Prepare a shelter management policy considering the schools as shelters.
- (xiii) Prepare storage of equipment for emergency response at distributed locations and keep an inventory of them.
- (xiv) Design and install an area wide and properly designed fire hydrant system.
- (xv) The hospital in the BSMSN should have a state-of-the-art burn unit and capacity to treat patients affected by toxic gas emission. There should be proper safeguard against contagious diseases and pandemics.



- (xvi) Establish field medical centers.
- (xvii) An area wide lightning protection system should be designed with a sufficient number of lightning arrestors at suitable locations.
- (xviii) There should be a coordination committee at the BSMSN level participated by all the investors and representatives of the local administration and local government bodies so that they can be apprised of risks caused by different factories and a combined plan of action can be developed.
- (xix) BSMSN Authority should organize regular drills and exercises.
- (xx) Provide training to selected volunteers from different enterprises and maintain a database of the volunteers.

#### 9.2.4 Recommendations for MIEZ

- (i) MIEZ can consider adoption of the organogram proposed in the BCP framework.
- (ii) MIEZ can adopt the cluster-based approach of disaster response.
- (iii) An Incident Command System (ICS) should be set in place with a central digital monitoring system.
- (iv) An Emergency Operation Center (EOC) should be set up as a priority.
- (v) Establish an emergency communications system for warning & announcement.
- (vi) Establish mechanisms to enforce building construction rules.
- (vii) Another evacuation route from MIEZ to its southwest upazila road inside Mugarpara towards Kaikertek Bridge and Regional Road R113 needs to be developed.
- (viii) Debris disposal management system should be designed to meet the requirements of different disaster situations.
- (ix) Prepare a contingency plan for different hazards addressing evacuation routes and debris management.
- (x) Designate an assembly point for shelter and prepare a shelter management policy for earthquakes and other disasters.
- (xi) Prepare storage of equipment for emergency response.
- (xii) Facilitate a hospital, with which MIEZ has an MoU, to have an advanced burn unit and capacity to treat patients affected by toxic gas emission and proper safeguard against contagious diseases and pandemics.
- (xiii) Establish field medical centers.
- (xiv) An area wide lightning protection system should be designed with a sufficient number of lightning arrestors at suitable locations.
- (xv) There should be a coordination committee at the MIEZ level participated by all the investors and representatives from the local administration and local government bodies so that the investors can be apprised of risks caused by different factories and a combined plan of action can be developed.
- (xvi) MIEZ Authority should organize regular drills and exercises for different hazard scenarios.



### 9.2.5 Recommendations for Meghna Beverage Limited

- (i) Meghna Group of Industries can consider adoption of the organogram proposed in the BCP framework.
- (ii) The risk management protocols prescribed in the BCP framework can be adopted by the Meghna Beverage Limited.
- (iii) The Failure Modes and Effects Analysis (FMEA) proposed in the BCP should be practiced by the enterprise.
- (iv) Meghna Beverage Limited should install smoke detectors in the warehouse and other appropriate locations.
- (v) Automatic alarm system should be installed.
- (vi) Evacuation routes should be properly demarcated.
- (vii) People working on elevated platforms should use safety belts for earthquake like situations.
- (viii) Meghna Beverage Limited should regularly assess risks and business impacts.
- (ix) Communicate with employees with different risk scenarios and prepare them through the proposed training modules.
- (x) Conduct regular drills and exercises for different risk scenarios.
- (xi) Conduct proposed functional testing during the exercises.
- (xii) Maintain proposed enterprise BCP risk register.

### 9.3 Action Matrix

For proper implementation of the recommendations an action matrix is being proposed in the study which assigns the relevant agency who is supposed to implement the recommendation, the policy to be followed during implementation and the time frame by which the recommendation is to be implemented.

<b>Issue/Action/Recommendation</b>	<b>Policy/Plan/Regulation</b>	<b>Relevant Agency/Ministry</b>	<b>Time Horizon (Short = 0~2 Yrs., Mid = 3~5 Yrs., Long = &gt; 5 Yrs.)</b>
1. Adopting Business Continuity Plan (BCP) as an integral and mandatory requirement for managing and operating economic zones <ul style="list-style-type: none"> <li>• Provide BCP related services to investors for a reasonable fee</li> </ul>	BEZA Policy Charter, Licensing Agreement with the private sector operators	Bangladesh Economic Zones Authority (BEZA), All economic zones including	Short-, and Mid-Term

Issue/Action/Recommendation	Policy/Plan/Regulation	Relevant Agency/Ministry	Time Horizon (Short = 0~2 Yrs., Mid = 3~5 Yrs., Long = > 5 Yrs.)	
<ul style="list-style-type: none"> <li>Oversee implementation of BCP and BCP Management Cycle at all levels</li> </ul>		the privately managed ones operating under BEZA		
2. Restructure the organizational management, recruitment, and placement plan for human resources with the long-term perspective in mind, so that the people working for BEZA can look forward to a long-term career at BEZA	Human Resources Plan at BEZA	BEZA	Restructuring begins in the Short-Term	Recruitment and Human Capital Development Plan needs to focus on Mid- and Long-Term
3. Creation of emergency/risk/recovery/resilience funds to meet the disaster recovery costs	The Securities & Exchange (Amendment) Act, 2000; General Financial Rules	BEZA, Development Partners, Feasibility Reports	Short-, and Mid-Term	Money Market Instruments like Bonds or Debentures need to be for Long-Term (10~20 Years)
4. Introduction of new insurance products to meet compensation obligations, and improve risk coverage	Workers Welfare Fund Rules; the Insurance Corporations Act, 1973	BEZA, Ministry of Finance, Securities & Exchange Commission, Bangladesh Bank, Insurance Development and Regulatory Authority	Short and Mid-Term	Insurance Products need to be sustainable in the Long-Term
5. Establish alternative connecting roads with. The nearest national highways or ports, where there is none at present	Long-term transport sector master plan proposed in the Bangladesh Perspective	Ministry of Road Transportation and Bridges; Ministry of Local Government, Rural	Short- and Mid-Term	Long-Term connectivity perspective needs to be in the planning process

Issue/Action/Recommendation	Policy/Plan/Regulation	Relevant Agency/Ministry	Time Horizon (Short = 0~2 Yrs., Mid = 3~5 Yrs., Long = > 5 Yrs.)	
	Plan 2021-2041	development, & Cooperatives; RHD, LGED		
6. Assess environmental and social impacts	PPTA	Ministry of Planning; ERD	In all projects and programmes	
<p>7. A detailed assessment of hazard, vulnerability, and risk (HVRA) of all the industrial zones of Bangladesh should be conducted against earthquake as well as flood, cyclone, storm surge and water logging considering climate change; similar HVRA studies should also be taken up for:</p> <ul style="list-style-type: none"> <li>• All transport networks connecting the industrial hubs and different ports</li> <li>• For all critical utility lines in the industrial zones</li> </ul>	May be incorporated in the subsequent 5-Year Plans	BEZA, BEPZA, BIDA; Ministry of Disaster Management and Relief; Ministry of Environment	Short-, and Mid-Term	Long-Term connectivity perspective needs to be in the planning process
8. Risks concerning operations of the major sea, land and airports should be assessed and necessary contingency plans should be chalked out	Long-term transport sector master plan proposed in the Bangladesh Perspective Plan 2021-2041	Ministry of Planning	PPDs should be initiated in the Short-Term	Mid- and Long-Term
9. Constitute a Disaster Coordination Cell at BEZA	Bangladesh National Building Code 2020; National Tripartite Plan of Action on Fire Safety &	BEZA, Ministry of Commerce, DIFE, FBCCI, CCCI, BGMEA, BKMEA	Short-, and Mid-Term	

Issue/Action/Recommendation	Policy/Plan/Regulation	Relevant Agency/Ministry	Time Horizon (Short = 0~2 Yrs., Mid = 3~5 Yrs., Long = > 5 Yrs.)	
	Structural Integrity; National Plan for Disaster Management (NPDM) 2021-2025			
10. Form disaster response teams at appropriate levels including factory levels	Disaster Management Act 2012	BEZA, Zones Authorities, and Factory Management in association with emergency services	Short-, and Mid-Term	
11. Make a policy decision to adopt technical standards for making all the factories and key transport infrastructure and transportation network to withstand design flood and earthquake levels as mentioned in the Bangladesh National Building Code (BNBC)	May be incorporated in the subsequent 5-Year Plans	Ministry of Works; All relevant ministries and agencies	Short-, and Mid-Term	Long-Term perspective needed for sustainable infrastructure
12. Levels of all major road and rail network should be above 100-year return period flood levels considering worst scenario of climate change	May be incorporated in the subsequent 5-Year Plans	BEZA, BEPZA, BIDA; Ministry of Disaster Management and Relief; Ministry of Environment	Mid-, and Long-Term	Long-Term perspective needed for sustainable infrastructure
13. Future industrial zones should consider all riverine and flash floods including climate change effects	May be incorporated in the subsequent 5-Year Plans	BEZA, BEPZA, BIDA; Ministry of Disaster Management and Relief; Ministry of Environment	Mid- and Long-Term	Must be aligned with country's long-term requirements based on industrial growth assessment



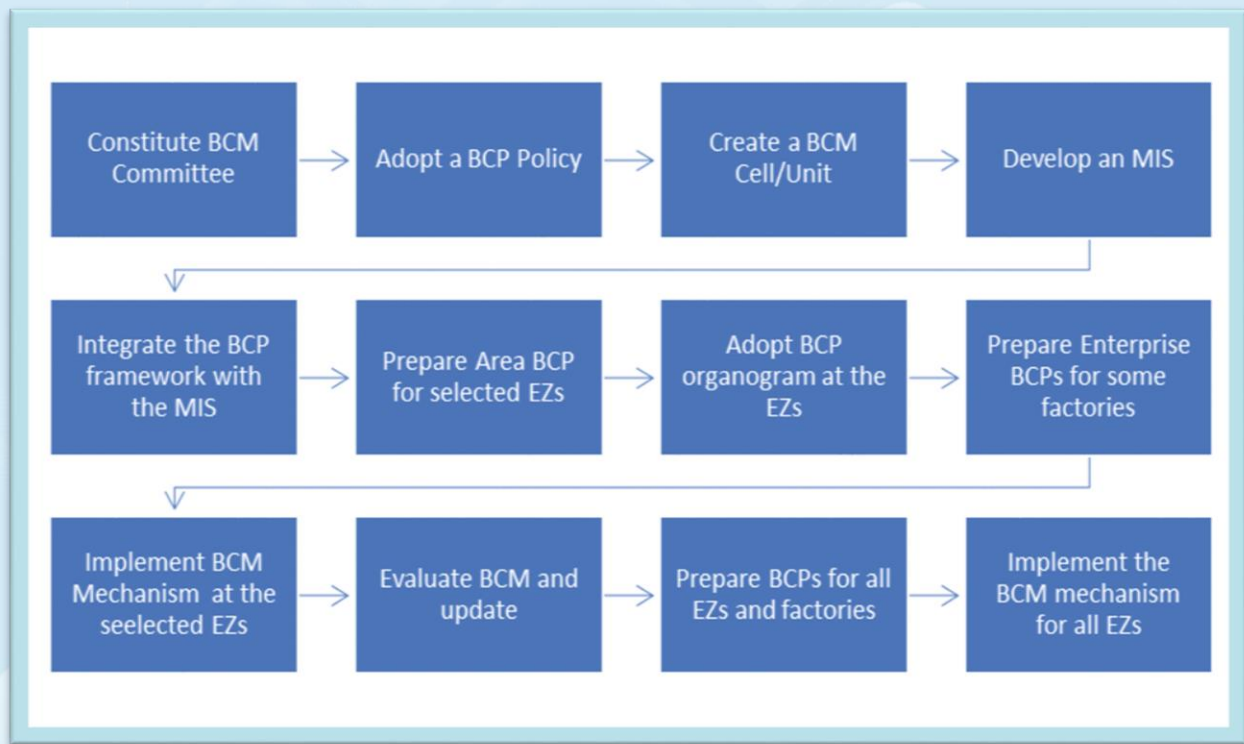
Issue/Action/Recommendation	Policy/Plan/Regulation	Relevant Agency/Ministry	Time Horizon (Short = 0~2 Yrs., Mid = 3~5 Yrs., Long = > 5 Yrs.)	
14. construct proper drainage and water reservoirs within and around industrial zones	May be incorporated in the subsequent 5-Year Plans	BEZA, City corporations and municipalities	Short-, and Mid-Term	Drainage maintenance will require long-term planning
15. Ensure availability of disaster data by making it mandatory for all consulting firms and implementing agencies to submit all data files to the line agency/ministry with a copy of the same to the Planning Commission of the government. This should be made a part of standard operating procedure for archiving the disaster data in the future	May be incorporated in the subsequent 5-Year Plans	Planning Commission, Ministry of Disaster and Relief, Department of Meteorology, all relevant ministries, and agencies	Short-, and Mid-Term	
16. Programs should be taken up to develop awareness on and reduce vulnerability against any other shocks caused by exogenous factors, such as, COVID-19 pandemic	The Epidemic Diseases Act 1897	All relevant ministries	Short-, Mid- and Long-Term	Long-Term planning required for capacity building to the Healthcare and Public Health Sector, including Medical Education

## 9.4 Way Forward

All recommendations mentioned in the previous sections will have to be implemented to develop a successful BCP structure in the economic zones of BEZA. However, to initiate the entire gamut of activities a specific way forward is deemed necessary. Following steps may be followed as a way forward to establish a business continuity management mechanism at BEZA (Figure 9.1).

- i. BEZA can form a high-powered committee (or the technical committee formed to monitor the present project may continue) to establish the Business Continuity Management (BCM) Mechanism at all economic zones of BEZA.
- ii. BEZA should adopt a BCP policy to make BCP compulsory at every economic zone and enterprise.

- iii. A BCP cell/unit may be created with dedicated human resources for the purpose of facilitating implementation of BCP at different economic zones. The cell/unit will work under the guidance of the BCM committee.
- iv. A Management Information System (MIS) should be developed for BEZA. The MIS must be an IT based platform for all management related activities. One Stop Service (OSS) may be a part of the MIS.
- v. The proposed BCP framework can be integrated with the MIS for convenience of administering BCP at all economic zones and enterprises.
- vi. For some selected economic zones, Area BCP may be prepared in detail. For preparing detail Area BCP, detail risk profiling of the area and supply-chain resilience should be prepared for the area.
- vii. The organogram proposed for administering BCP at the economic zones should be constituted at the selected economic zones.
- viii. Enterprise BCPs should be prepared for some factories at the selected economic zones.
- ix. The BCM mechanism should be implemented at the selected economic zones.
- x. The monitoring methods of the BCM should be employed and the BCPs should be evaluated. After evaluation, necessary modifications to the BCPs should be made.
- xi. BCPs should be prepared for all economic zones and enterprises.
- xii. A complete BCM mechanism should be employed for all economic zones.



**Figure 9.1: Way forward to establish the BCM mechanism**

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## ANNEX

### ANNEX 1

### Environmental and Social Screening Checklist for Business Continuity Plan (BCP): Enterprise

#### (A) Background information: Enterprise

1. Name of Enterprise:	
2. Location:	
3. Production Capacity or Size:	4. Year of Establishment:
5. Company address:	6. Telephone number
7. Email:	8. Website (if any):
9. Executing Agency:	10. Sector (Category)

#### (B) Environmental and Social Screening Checklist

Sl. No.	Screening Questions	FC	PC	NC	Remarks
	<b>Environmental and Social Assessment</b>				
1.	The Enterprise has a procedure in place to assess environmental and social impacts and risks				
2.	The Enterprise has a review process in place to determine any adverse impacts				
3.	The Enterprise has EMS (ISO 14001/relative) to mitigate environmental and social impacts				
4.	The Enterprise has appropriate action plan documents prepared and disclosed				
5.	The Enterprise defined responsibilities/ Management Representative for implementing Environmental and Social Management Program				
	<b>Pollution Prevention, Resource Efficient and Waste Management</b>				
6.	The Enterprise apply specific pollution prevention and control management techniques				
7.	The Enterprise suspected, detected, or declared pollution with a request for remedial actions				

Sl. No.	Screening Questions	FC	PC	NC	Remarks
8.	The processes and operations of the Enterprise are free of significant fugitive air emissions.				
9.	The Enterprise entity incorporated resource conservation and energy efficient measures				<ul style="list-style-type: none"> <li>• Energy (ISO 5001)</li> <li>• LEED</li> <li>• Others: EDGE</li> </ul>
10.	The Enterprise has a plan/systems in place to enhance resilience of water supply systems through water saving, recycle and reuse (5% minimum) or Zero discharge plan				
11.	The Enterprise operates functional wastewater treatment plant (central or common ETP and STP) that comply regulatory standards				
12.	The Enterprise implement waste management system (collection, storage, segregation), waste inventory, waste dispose of through approved vendor				<ul style="list-style-type: none"> <li>• Collection, storage, segregation</li> <li>• Waste inventory</li> <li>• Waste dispose of through approved vendor</li> </ul>
<b>Chemical Management System</b>					
13.	The Enterprise has dedicated Chemical Management System				
14.	The Enterprise maintained MSDS for all chemicals				
15.	The Enterprise ensure secondary containment for all chemicals				
16.	The Enterprise has stored chemicals as per compatibility chart				
<b>Occupational Health and Safety</b>					
17.	The Enterprise provide a safe and healthy working environment				
18.	The Enterprise set up procedures to ensure Occupational and Health and Safety to prevent accident, injury, and disease (communicable and non-communicable) by minimizing the cause of hazards				<ul style="list-style-type: none"> <li>• Hazard Identification and Risk Assessment (HIRA)</li> <li>• Corrective and Preventive Approach</li> <li>• Good Manufacturing Practice</li> <li>• Root Cause Analysis</li> <li>• 5S</li> <li>• Preventive maintenance</li> <li>• PMP</li> <li>• Kigen</li> </ul>



Sl. No.	Screening Questions	FC	PC	NC	Remarks
19.	The Enterprise has an emergency prevention, preparedness, and response arrangement system				
20.	The Enterprise has a procedure for documentation and reporting on occupational accidents, diseases, and incidents				
21.	The Enterprise ensure fire safety management				
	<b>Workforce protection</b>				
22.	The Enterprise ensure child labor is not used directly or sourced through contractor				
23.	The Enterprise ensure that young workers (15-18) are not employed in dangerous work				
24.	The Enterprise check the ages of all employees				<ul style="list-style-type: none"> <li>• Birth certificate</li> <li>• Recommendation from Doctor</li> </ul>
	<b>Emergency Response Planning</b>				
25.	The Enterprise has an emergency response procedure				
26.	The Enterprise engage dedicated manpower (internal) to manage emergency				
27.	The Enterprise clearly defined chain of incident commander				
28.	The Enterprise is equipped with required machineries and services				<ul style="list-style-type: none"> <li>• Fire safety measures</li> <li>• Medical facility</li> <li>• ICU equipped ambulance</li> <li>• Emergency rescue and response team</li> <li>• Internal security system</li> </ul>
29.	Enterprise has linkage with external authority or organization to support during emergency				<ul style="list-style-type: none"> <li>• EZ management</li> <li>• Medical hospital(s)</li> <li>• Fire services</li> <li>• Paramilitary/police</li> </ul>
	<b>Human Resource</b>				
30.	The Enterprise has an appropriate human resource policy that ensure safety and security for all				
31.	The Enterprise implemented a grievance mechanism to review and address employee complaints				

Sl. No.	Screening Questions	FC	PC	NC	Remarks
32.	The Enterprise comply with the National Law (Labor Law, 2018/06 or BEZA Act, 2010) in allowing workers to form and join organizations				<ul style="list-style-type: none"> <li>• BEZA Act, 2010</li> <li>• BLL, 2018/06</li> </ul>
	<b>Monitoring and Reporting</b>				
33.	The Enterprise established procedures to monitor regular basis the key characteristics and performance of the BCP and BCM				<ul style="list-style-type: none"> <li>• Internal monitoring</li> <li>• External monitoring</li> </ul>
34.	An appropriate E&S performance indicators reported on a regular interval				<ul style="list-style-type: none"> <li>• Quarterly</li> <li>• Biannually</li> <li>• Annually</li> </ul>
35.	The Enterprise has EHS team for monitoring E&S performance				
36.	The enterprise has a regularly reviewed and exercised emergency procedures				
	<b>Training and Capacity Building</b>				
37.	The Enterprise conducted trainings for establishing BCP and E&S Management				
38.	The Enterprise conduct trainings on Chemical Management System				
39.	The training includes emergencies and drills; and working with external agencies such as fire services to minimize E&S risk				
40.	The Enterprise conduct trainings on Occupational Health and Safety (Root cause analysis, HIRA, CAPA, 5S, Kigen, PMP, GMP)				

\*FC- Full Compliance; PC- Partially Compliance; NC-Non-Compliance

**Prepared by:** Name, Designation, Signature

**Environmental and Social Code of Practices for Enterprises  
to Implement Business Continuity Plan (BCP)**

Activity	Impacts	Mitigation Measures/ Management Guidelines
<b>Waste Management</b>		
Waste Management	Soil contamination, water pollution and drainage congestion from the improper management of wastes. Storage, and burn/burial of waste at project sites may damage the topsoil	<p>The Enterprise shall:</p> <ul style="list-style-type: none"> <li>● Prepare a proper waste management plan with a program/mechanism for various specific waste streams (e.g., reusable waste, flammable waste, debris, food waste etc.).</li> <li>● Minimize the production of waste following 3R (Reduce, Recycle and Reuse) approach. Segregate and reuse or recycle all the wastes, wherever practical.</li> <li>● Provide dedicated covered waste collection bins at appropriate locations to ensure safe storage.</li> <li>● Remove collected wastes for dispose in approved waste disposal sites.</li> <li>● Prohibit burning of solid waste at the enterprise.</li> <li>● Waste mapping and inventory should be conduct by the enterprise submitted to the EZ management entity in every quarter.</li> <li>● Ensure environmentally sound disposal of all waste including fecal sludge.</li> <li>● Set up a prearranged mechanism for post disaster related waste.</li> <li>● Use appropriate PPEs before handling wastes (gloves, mask, apron, safety boots).</li> <li>● Execute waste management program and trainings on safe handling, collecting, storing and safe disposal.</li> </ul>
Hazardous Waste	Pose health hazards and cause soil contamination due to improper waste management practice	<p>The Enterprise shall:</p> <ul style="list-style-type: none"> <li>● Provide sufficient numbers of containers for collecting chemical wastes, appropriately labelled for safe transport to an approved chemical waste depot.</li> <li>● Store, transport, and handle all chemicals avoiding potential spillage.</li> <li>● Ensure availability of Material Safety Data Sheets (MSDS) for all materials (chemicals).</li> <li>● Provide secondary container/construct concrete or other impermeable flooring to prevent seepage/spills of lube oil, machine oil, and lubricants. Store at approved locations before safe transportation for off-site recycle, ruse or treatment via approved vendors.</li> <li>● Provide appropriate PPEs during handling wastes (gloves, mask, apron, and safety boots).</li> </ul>

Activity	Impacts	Mitigation Measures/ Management Guidelines
Construction Wastes	Lack of or improper waste management practice may hazard for the workers, generates air and water pollution and other environmental impacts.	The Enterprise should assure that: <ul style="list-style-type: none"> <li>• Either re-use or dispose the waste generated during construction depending upon the nature of waste</li> <li>• Dispose of the wastes in designated place that could not be re-used safely</li> <li>• Prepare waste mapping and keep records of waste inventory.</li> <li>• Adopt waste management practices and reviewed by EHS Personnel or independent body.</li> <li>• Arrange sufficient amount of PPEs (gloves, mask, apron, safety boots/shoe) for workers during handling construction wastes.</li> <li>• Impart waste management (sorting, storing, and segregation) related trainings to the workers.</li> </ul>

### Water Resource Management

Water resource management	Scarcity of water may be arisen due to unplanned water consumption. Salinity intrusion may disrupt availability of fresh water supply Seasonality affect may differ water available in different location of the EZ	The Enterprise shall: <ul style="list-style-type: none"> <li>• Track baseline of available water resources in the case of business as usual.</li> <li>• Set up targets (reasonable percentage) for water saving percentage.</li> <li>• Establish a monitoring system to track water quantity (water efficiency and rainwater harvesting) and circularity of water (wastewater recycling and reuse).</li> <li>• Get advice or hire expert professional to monitor and suggest water efficiency, recycling, reuse, and rainwater harvesting.</li> <li>• Conduct and execute capacity development/ technical sessions for related members of staff.</li> </ul>
Discharges from production activities	Water resource- surface and groundwater quality may be deteriorated due to generated wastewater	The Enterprise shall: <ul style="list-style-type: none"> <li>• Install/construct drainage system in the enterprise that required for sediment and erosion control.</li> <li>• Collect sewerage related waste to treat through STP.</li> <li>• Operate and monitor ETP/CETP and STP treatment plant to treat generated wastewater.</li> <li>• Check and test treated wastewater to ensure quality as per standard.</li> <li>• Manage generated solid wastes (sludge) from CETP and STP into reusable products (for example fire briquettes from sludge cakes).</li> </ul>
Hazardous Material and Waste	Water pollution from the storage, handling and disposal of hazardous materials and general construction waste and accidental spillage.	The Enterprise shall: <ul style="list-style-type: none"> <li>• Follow the wastes management guidelines.</li> <li>• Minimize the generation of sediment, slurry, oil and grease, organic matter, litter, debris, and any form of waste (particularly petroleum and chemical wastes).</li> </ul>



Activity	Impacts	Mitigation Measures/ Management Guidelines
<b>Noise and Vibration</b>		
Noise and vibration can be caused by machinery and vehicles movement	Noise and vibration may have an impact on people, property, and the natural environment	<p>The Enterprise shall:</p> <ul style="list-style-type: none"> <li>● Ensure Noise levels of all machineries, or vehicles are within the standard limits (ECR, 1997/2017 or WHO Guidelines).</li> <li>● Maintain all vehicles in order to keep it in good working order in accordance with manufactures maintenance procedures.</li> <li>● Ensure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, etc.</li> <li>● Organize loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site.</li> <li>● Modify equipment to reduce noise (for example, noise control kits, lining of truck trays or pipelines).</li> <li>● Install acoustic enclosures around generators to reduce noise levels.</li> <li>● Fit high efficiency mufflers to appropriate construction equipment.</li> <li>● Employ best available work practices on-site to minimize occupational noise levels.</li> <li>● Provide trainings on noise limits, use of horns and sirens. Insert signage to aware on noise pollution.</li> <li>● Ensure use of protective gears (ear mufflers/ earplugs to protect from noise).</li> </ul>
<b>Air Quality Management</b>		
Air, dust or fugitive flumes may generate due to improper management of traffic, production process	Working area air quality can be adversely affect to the ecosystem, surrounding environment and human health	<p>The Enterprise shall:</p> <ul style="list-style-type: none"> <li>● Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition.</li> <li>● Procure safe and clean fuel to reduce air pollution from emissions.</li> <li>● Recover waste heats from hot flue gas (exhausts) from power station or generators.</li> <li>● Set up standard air emission (partials, aerosols, gases, and odor) guidelines (WHO, ECR 1997/ 2017) both for indoor and outdoor.</li> <li>● Monitor and measure air quality by internal laboratory, external independent firms sporadically, at regular intervals, or continuously.</li> </ul>
GHG gas emission	Contribute to the global warming and induce disasters related to climate change	<p>The EZ management entity shall:</p> <p>Source primary electricity/energy from renewable resources (purchase off-site renewable energy through a power purchase agreement (PPA)).</p>

Activity	Impacts	Mitigation Measures/ Management Guidelines
<b>Occupational Health and Safety</b>		
Occupational Health and Safety (OHS) Best practices	Enterprise operational activity may pose health and safety risks to the workers and site visitors leading to severe injuries and deaths. The population in the proximity of the EZ site and the construction workers will be exposed to a number of (i) biophysical health risk factors, (e.g. noise, dust, flumes, chemicals, construction material, solid waste, wastewater, vector transmitted diseases etc.), and (ii) road accidents from traffic	<ul style="list-style-type: none"> <li>• The EZ management entity and construction contractor shall:</li> <li>• Implement suitable safety standards for all workers and site visitors which should not be less than those laid down on the international standards (e.g. International Labor Office guideline on ‘Safety and Health in Construction; BEZA Act, 2010, Bangladesh Labor Law 2018/06, BSCI or SA8000)</li> <li>• Execute risk and hazard assessment on materials, process and equipment.</li> <li>• Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular construction activity and specific classes of hazards in the work areas.</li> <li>• Provide personal protective equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection.</li> <li>• Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones.</li> <li>• Ensure trainings on PPE with records.</li> <li>• Safety procedures include provision of information, training for workers those are involved in hazardous operations and proper performance of their job.</li> <li>• Light, air, noise, temperature assessment records.</li> <li>• Ensure sufficient toilets with manpower ration and clean frequently.</li> <li>• Appoint an environment, health, and safety manager to look after the health and safety of the workers.</li> </ul>
Injuries due to major or minor accidents	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims	<p>The Enterprise shall:</p> <ul style="list-style-type: none"> <li>• Ensure health care facilities and first aid facilities are readily available.</li> <li>• Ensure first aid boxes at first-aid stations and should be easily accessible throughout the place of work.</li> <li>• Arrange training for first aider and equipped with proper first aid facilities.</li> <li>• Prepare document and reports accidents, injuries, diseases, and incidents.</li> <li>• Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, in a manner consistent with good international industry best practice.</li> <li>• Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures.</li> <li>• Provide safe machinery and ensure safe working area or production places for workers.</li> </ul>

Activity	Impacts	Mitigation Measures/ Management Guidelines
<b>Road Transport and Road Traffic Management</b>		
Vehicular movement	Increased traffic due to use of road by different kind of vehicles, those will affect the movement of normal road traffics and the safety of the road-users.	<p>The Enterprise shall:</p> <ul style="list-style-type: none"> <li>● Prepare a traffic management plan in traffic diversion and management, and ensure that the plan is in line with the EZ's traffic management plan.</li> <li>● Provide signs at strategic locations parking area/parking bay.</li> </ul>
	Accidental release or spillage of fuels and chemicals	<p>The Enterprise shall:</p> <ul style="list-style-type: none"> <li>● Provide sufficient facility to store used engine oil or spilled fuels.</li> <li>● Restrict the transport of oversize loads.</li> <li>● Operate road traffics/transport vehicles, if possible, to non-peak periods to minimize traffic disruptions.</li> <li>● Aware drivers and related personnel to enforce on-site speed limit.</li> </ul>

<b>Social Accountability Guidelines</b>		
Implementation of social accountability	Labor unrest, dissatisfaction, turmoil, vandalism even ratios can be arisen due to lack of social accountability	<p>The Enterprise shall:</p> <ul style="list-style-type: none"> <li>● Ensure social management policy and procedures are available as per the BEZA act, Labor Law, 2016/08 and or BSCI and SA8000</li> <li>● Ensure child labor is not used directly or sourced</li> <li>● Ensure that young workers (15-18) are not employed in dangerous work</li> <li>● Check the ages of all employees</li> <li>● Ensure that forced labor is not used directly, or through contractors or the supply chain.</li> <li>● Ensure that unacceptable prison labor is not used</li> <li>● Ensure freedom of association and right to collective bargaining (if allows by the BEZA Act, 2010, Labor Law 2018/06</li> <li>● Implement equal opportunity and no discrimination</li> <li>● Maintain equal opportunity for male and female workers including pregnant women</li> <li>● Ensure the Social Responsible Person prepare audit report on a regular basis</li> <li>● Ensure all the entities have grievance mechanism policy and procedure with responsible person</li> <li>● Grievance committee established for the workers</li> <li>● Grievance mechanism established and operating smoothly</li> </ul>

Activity	Impacts	Mitigation Measures/ Management Guidelines
<b>Emergency Response</b>		
Implement Emergency Response procedure	Asset loss, manpower loss, accident, injury, productivity loss	<p>The Enterprise shall:</p> <ul style="list-style-type: none"> <li>● Prepare an Emergency Response Plan (Based on IFC EHS-Community Health Safety guideline, Standing Orders on Disaster, 2019, and National Plan for Disaster Management, 2021) to mitigate any kind of prevailing risk and hazards</li> <li>● Ensure responsibility of the team to deal with catastrophic accidents, natural calamities, breakout/ spread of fires, accidental release of hazardous chemical or manmade unrest (student agitation).</li> <li>● Ensure the emergency response team's responsibilities are to immediately meet when an emergency situation is reported and to determine the course of action.</li> <li>● Ensure the emergency response team is prepared for any kind of emergency situation arise</li> <li>● Develop a list of contact information for all internal and external resource. The list should include name, description, location and contact details (phone number, email) for each of the resources and maintained annually</li> <li>● Communicated with relevant organizations (Fire service, Hospital, Police station, Ambulance, Suppliers, Mechanics or others) at any emergency situation</li> <li>● Prepare emergency response plan for each type of emergency (fire, natural calamity, cyclone, tidal surge, earthquake, accidental release of chemicals, or turmoil's/ agitation)</li> <li>● Conduct mutual aid agreements with other government or private entity to allow for sharing of personnel and specialized equipment</li> <li>● Identify training needs based on roles and responsibilities, capabilities and requirements of personnel in an emergency</li> <li>● Impart refresher training on hazard and risk identification, risk assessment and mitigation rescue &amp; recovery etc.</li> <li>● Develop and updated training plans to address needs, particularly for firefighting, spill response and evacuation</li> <li>● Record keeping on training activities and the outcomes</li> </ul>



Activity	Impacts	Mitigation Measures/ Management Guidelines
<b>Fire Safety Management System</b>		
Implement Fire Safety Management System	May cause economic loss, loss of human life as well as property	<p>The Enterprise shall:</p> <ul style="list-style-type: none"> <li>● Implement Fire Management Policy and Procedure as per the ISO 23932-1: 2018 and BNBC 2020, BEZA Bangladesh Economic Zones Construction of Building Rules, 2017.</li> <li>● Uphold updated fire certificates from prescribed agencies like FSCD.</li> <li>● Ensure the regular inspection conducted by internal or external authority.</li> <li>● Ensure the emergency response plan with evacuation routes, assembly areas, list of Fire firefighting equipment list and maintenance records are updated, emergency telephone numbers are available.</li> <li>● Impart firefighting trainings and fire drill regularly and maintain records.</li> <li>● Conduct emergency evacuation drills and alarm testing to evaluate the effectiveness.</li> <li>● Train all workers and staffs how to operation the fire alarm systems with clear instructions.</li> <li>● Develop training plans to address needs, particularly for firefighting, spill response and evacuation.</li> <li>● Ensure that the escape routes easily identifiable and free from obstructions.</li> <li>● Ensure that the exit doors are labelled, unlocked and designed to open outwards.</li> <li>● Ensure that the fire extinguishers are fully charged and inspected monthly.</li> <li>● Ensure that the enterprise engaged fire/safety wardens on each floor of the factory.</li> <li>● Ensure that the enterprise has functional automatic sprinkler system.</li> <li>● Ensure that sufficient amounts of fire hydrants are available and functioning.</li> <li>● Ensure that sufficient amounts of fire pumps are available and functioning.</li> </ul>
<b>Chemical Management System</b>		
Chemical Storage	Unsafe chemical storage or store in an open area may affect the physical environment and harmful for human health	<p>The Enterprise shall:</p> <ul style="list-style-type: none"> <li>● Store required amounts in order to reduce waste.</li> <li>● Safe storage (in dry, cool temperature) with sufficient air circulation at chemical store. Ensure temperature and humidity records to storing at a suitable condition.</li> <li>● Ensure proper ventilation/ air circulation in the store.</li> </ul>

Activity	Impacts	Mitigation Measures/ Management Guidelines
		<ul style="list-style-type: none"> <li>● Use proper PPE (gloves, mask, goggles, safety shoe) before handling chemical.</li> <li>● Ensure Material Safety Data Sheet (MSDS) and labelling for all chemicals.</li> <li>● Provide absorbent materials to control accidental release of chemicals.</li> <li>● Ensure secondary containments for all chemicals.</li> <li>● Ensure eyewash station for accidental spillage or contact with workers.</li> <li>● Provide training to related staffs on the safe chemical storage.</li> </ul>
Transport and disposal	<ul style="list-style-type: none"> <li>● Unsafe disposal may pollute surface and ground water</li> <li>● Uncontrolled disposal cause soil contamination</li> </ul>	<ul style="list-style-type: none"> <li>● Dispose chemicals as per given instruction (on the MSDS).</li> <li>● Dilute chemicals and dispose into the treatment plant if available otherwise dispose into the soak-well, do not dispose chemical into surface water.</li> <li>● Provide training to related staffs on the safe transportation and disposal of chemicals.</li> </ul>

**Potential Risk of Pandemics (COVID-19) or communicable and non-communicable disease**

Release Pandemics, Communicable disease, or non-communicable disease	Lack of awareness and knowledge in health care among worker laborer poses a risk of transmitting pandemics (COVID and other communicable disease)	<p>The Enterprise shall:</p> <ul style="list-style-type: none"> <li>● Enforce health and hygiene protocols: hand washing, wearing a mask for all workers and labourers.</li> <li>● Conduct all types of business operation as well as construction activities as per plan to minimize risks.</li> <li>● Ensure use of personal protection equipment (PPE), such as safety boots, masks, gloves, protective clothing, goggles etc. where required.</li> <li>● Ensure adequate ventilation facilities (HVAC) at all working areas, dormitories, and camps.</li> <li>● Ensure safe and reliable water supply that meets the national standards.</li> <li>● Arrange hygienic sanitary facilities and sewerage system.</li> <li>● Follow the wastes management guidelines</li> <li>● Implement OHS safety standards for all those laid down on the international standards (WHO and CDC guidelines) as well as national guidelines (for example: Bangladesh Government Covid-19. response guidelines, DGHS and MoHFW or Labor Law 2018/06).</li> </ul>
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